

Manufacturing Execution System



Workflow and Screen Overview

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Revision History

Date	Author	Description of Changes Made
Mar 5 th , 2014	Saleh Isa Saleh	Initial Release
1 st June, 2015	Abdul Wahab	Updated Crucible Management and Oracle Screens
26 th Sep, 2016	Amol Joshi	Updated PHD, Integration, Reports section

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1. Introduction

1.1 Purpose and Scope

Purpose of this document is to describe current MES workflow and describe functionality of Individual screens.

1.2 Referenced Documents

1.3 Terms and Acronyms

Term/Acronym	Description
AP	Accounting Period
Batch	Same as Cast Same as Furnace Content Id In the SAP environment, a batch is a bundle
Billets	Cut piece of log seen as final product
BTCL	Batch Characteristics (message to SAP)
Bundles	Number of billets, standard ingots or Properzi ingots stacked and strapped together or one piece of rolling slab, T Ingot or one crucible of liquid metal that is sent to customers
Calciner	
Cast Line	In use at Casthouse 2
Casting	Act of solidifying liquid metal in different materials (ingots, logs, slabs)
CH	Casthouse
Closed Furnace	Casting has been completed and furnace is available for allocation
CRST	tells SAP that PO is closed and will not get produced (message to SAP)
Cutting on Spare	On the Hertwich, whenever there is a problem and the operator cannot cut automatically, they cut on "spare" which means that they create the bundles manually
DC	Direct Caster
Downstream Customers	Customers for liquid metal delivery.
Ear Sample	Sample taken during first inspection – Ear refers to the shape of the sample
FTV	Furnace Tending Vehicle
GR	Goods Received (SAP Message)
GRR	Goods Received Reversal (SAP Message)
Hertwich	Log processing system that entails inspection, homogenization and sawing, updates CUS_* tables
HP	High Purity
Log	Tubular shaped piece of aluminum of different diameter that will be sawed into billets
Make to order	Production for an existing sales order. (Tables: CUS_BH_MRP_01, CUS_BH_MRP_02)

Make to stock	When there is no sales order for the cast, it will be stocked until matching order is available. These orders start with '0010'. (Tables: CUS_BH_CPO_01, CUS_BH_CPO_02)
MGRR	Material Receipt Reversal
MES	Manufacturing Execution System
Movement	Activity that moves a quantity of material from one equipment to the other at a specific point in time during a certain amount of time
MRP	Material Resource Planning
Not Casted	Not all holes in the caster are always used, but in the database, there is a default amount of holes per caster. Operators must indicate which logs have not been casted. It is usually 1 or 2 logs.
Off Spec	The target chemical specification for the alloy not met.
Open Furnace	Furnace that does not have any process allocated to it.
Packing Format	Count of bundle items
PB	Production Balance
PIZSEI	
PM	Production? Maintenance
PROD	Product Info(message to SAP)
PRM	Plant Reference Model
PS	Production Scheduler Receives orders from RPMS for 2 casthouses and assigns them. Note: PE_K35_FURNACE_SCHEDULE.filter_data_import procedure gets data from production scheduler and puts it into table TPE50_PS_OUTPUT
QA	Quality Assurance
Reduction Line	
RIngot	Also known as Rolling Slab
RPMS	Refining and Petrochemical Modeling Solution It plans orders for 2 casthouses and feeds it into production scheduler.
SAPPO	This is order number stored in SAP. If order is issued from planning stage, it will be 500 series (ex: 000005003561), if SAP order is requested from MES then it will be 600 series (ex: 000006002351)
Scheduler (Inside and Outside)	Inside scheduler – RPMS / PS or bypass solution
SIngot	Standard Ingot
TAC	Treatment of Aluminum Crucibles
Tare Weight	
TILT	Tilting
TIngot	
UBH	Universal Business Highway Note: Initially all was supposed to go through UBH but due to limitations SAP communicates through UBH but Legacy system writes to tables directly
Wash Cast	Cast performed between alloy changes in the furnace. Some material from a wash cast is sold but the majority is re-melted
WIP	Work in Process (Unfinished goods)

1.4 Intended Use

MES Development Team.

2. System Requirements

2.1 Hardware Environment Requirements

2.2 Software Environment Requirements

Components of live system:

- SAP
- UBH
- New MES (IIS)
- PHD Server
- Oracle Database release PROD

Components of dev. system:

- QA
- UBH
- New MES(IIS)
- PHD Server
- Oracle Database release(copy of PROD)

Note: UBH provides a bridge between SAP and Oracle. SAP downloads process orders using different parameters (Messages). When work is complete, Tracking sends back the data to SAP using these messages again.

3. System Administration Functions

3.1 Configuration Hierarchy

NA.

3.2 Installation and De-installation

Currently there is no installation media for New MES.
Files are manually, copied into Standard folder on dev and production systems.

3.3 Startup and Shutdown

NA

3.4 Security Configuration

Handled by IT Department, Security Section.

4. Workflow Overview

Casthouses produce different products:

CH2: RIngot (Rolling Slab),SIngots (Continuous Casting),Properzi
CH3: Billets

To begin production furnace must be filled/charged with liquid metal.

4.1 TILT and TAC

Charges and movement of crucibles that are used, to fill up furnaces are managed and monitored using **TAC** and **TILT** screens.

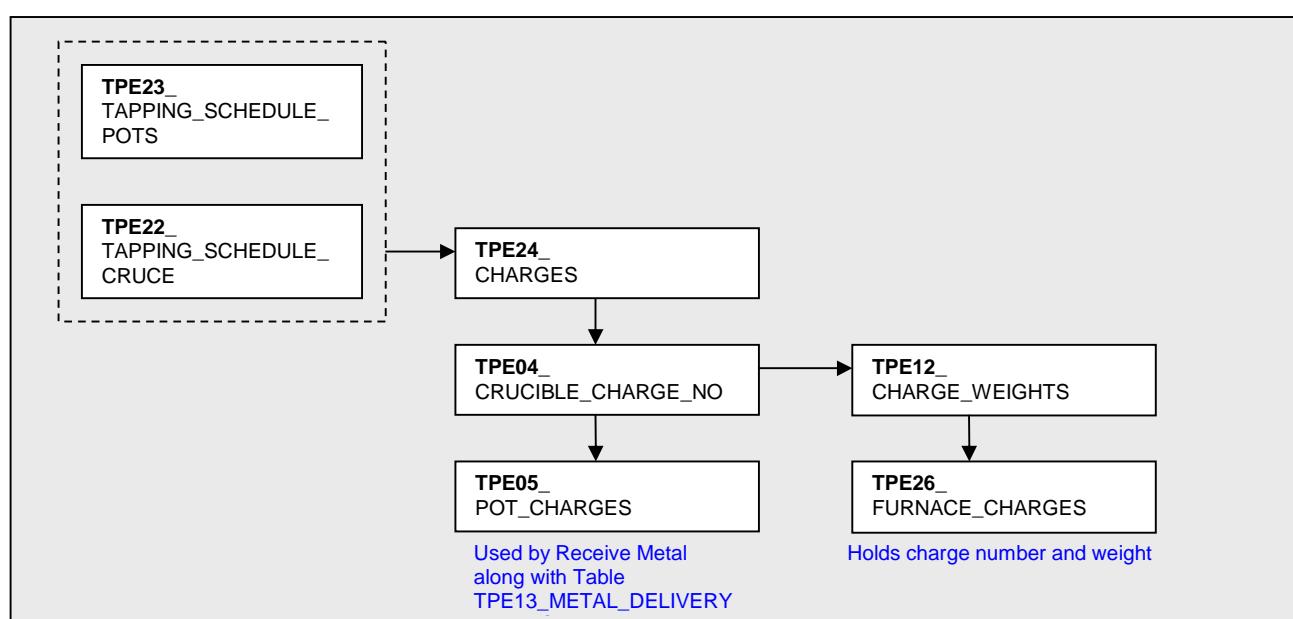
Size of the crucible used depends on the reduction lines.

1. Lines 1, 2 and 3 are using small crucibles (contains up to 5000kg of liquid metal)
2. Lines 4 and 5 uses large crucibles (contains up to 13000kg of liquid metal)

Due to physical constraints, the crucibles used, as follows:

1. small crucibles are sent to Tilt Station or Casthouse 2
2. large crucibles are sent to TAC station, Casthouse 2, Casthouse 3 and Downstream Customers

Crucibles charged using guidelines produced by **Tapping Schedule (TILT)**. It specifies contents of which pots should be, mixed to achieve highest purity alloy. If required charges are not on the tapping schedule, **Create Crucible Charge (TAC/TILT)** can, be used to manually, create them.



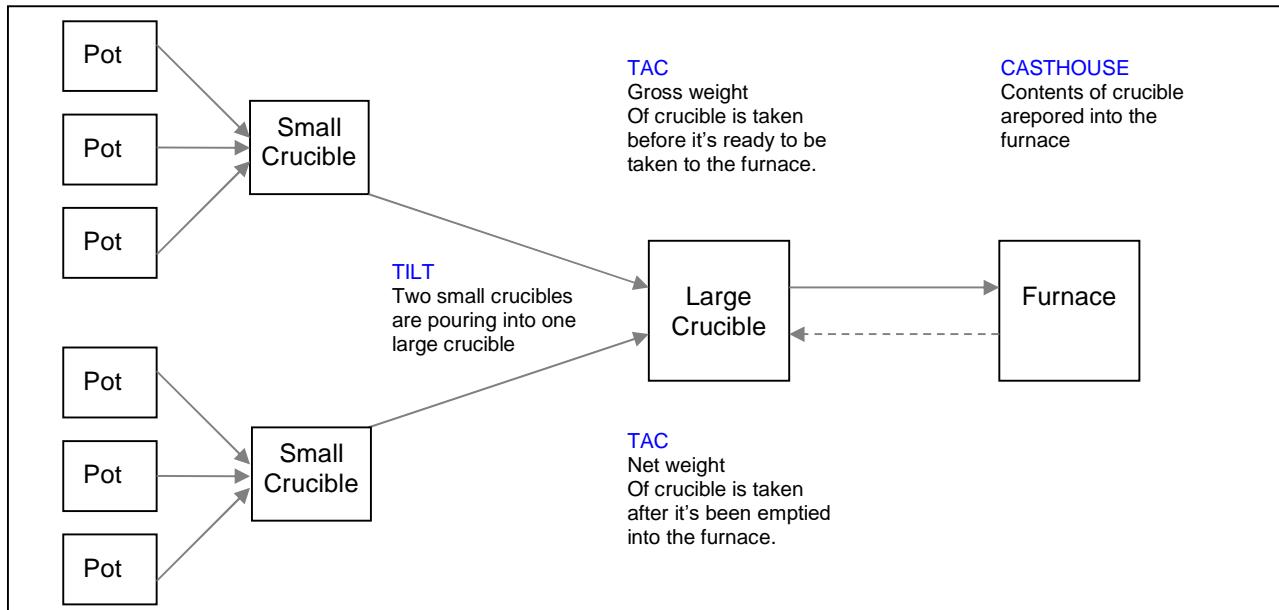
Small crucibles poured into large crucibles at TILT station. Operator assigns large crucible to LC Line using **Large Crucible (TILT)** screen.

Next step is to assign charge to small crucibles and to a tilt station. This can be done from **Small Crucible (TILT)** screen. **Weight Crucible (TILT)** screen is used to update weight of the small crucible. Once weight is updated the small crucibles will be visible on the Large Crucible screen on the bottom grid.

Charges are assigned to large crucibles using **Receive Metal (TAC)**. These charges are later allocated to furnaces using **Allocate Charge (TAC)**.

When large crucible transported to TAC Station its gross weight taken. After the contents poured into the furnace, crucible's tare weight taken at TAC. Weight of the crucible is recorded using **Weight Crucible (TAC)** screen. An automated function reads all the information directly from the PLC and updates the system before and after its contents emptied into the furnace. If weight needs to be manually corrected **Re-Weight Crucible (TAC)** screen, used to enter the value.

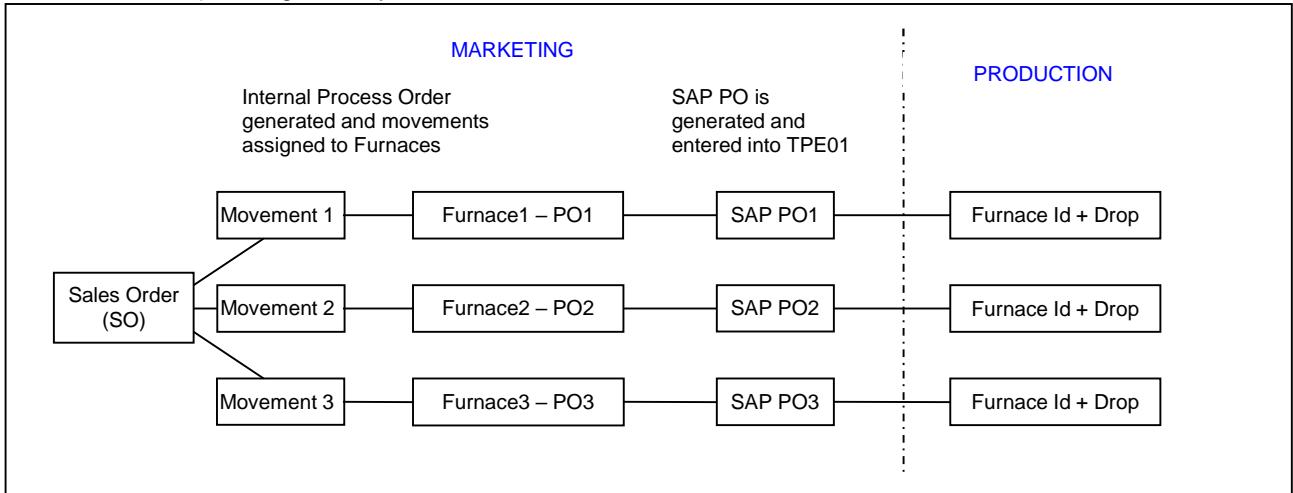
Finally, crucible returns to TILT, reduction line 4 or 5 for new pour.



As the content of the crucibles poured in the furnaces, **CASTHOUSE** screens used to monitor production.

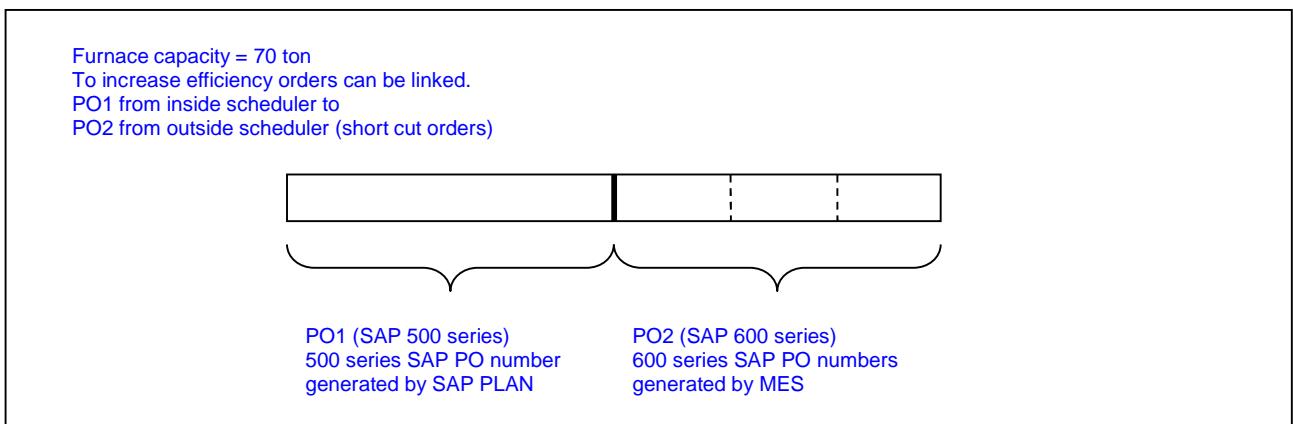
4.2 Process Order.

When Sales Order received, it needs to be divided into movements. For sales order to be complete, all movement must be complete. Each movement can be allocated to one time slot. A “Movement” is, signified by a record, and a “Movement Group” is, signified by the same “Movement ID”.

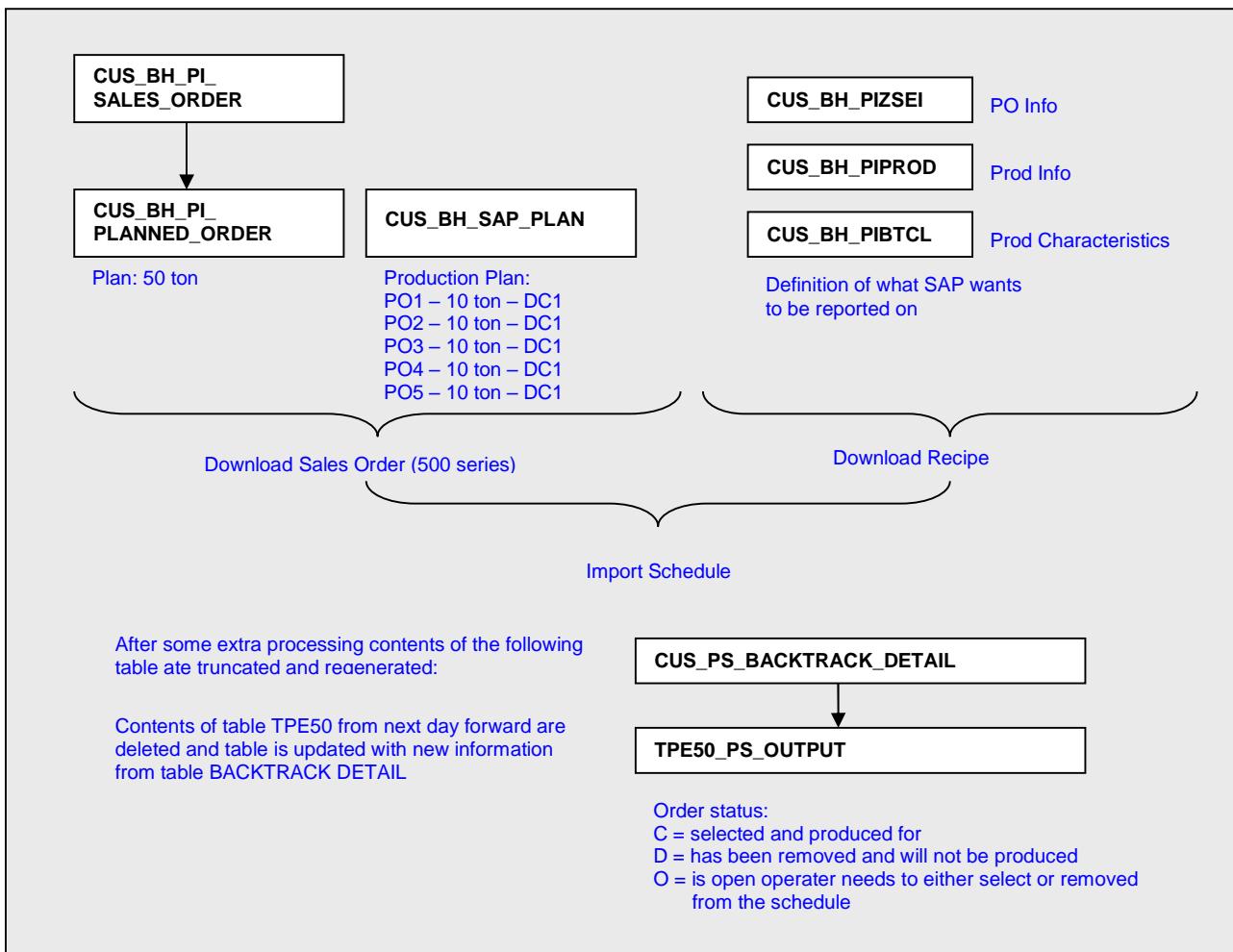


As the operator chooses a “Movement” within a “Movement Group”, the redundant “Movements” within that group are “deleted”. This is indicated in Table TPE50 (Status: O, D, O). the screen that is used to select movements is **Sales Order Planning**.

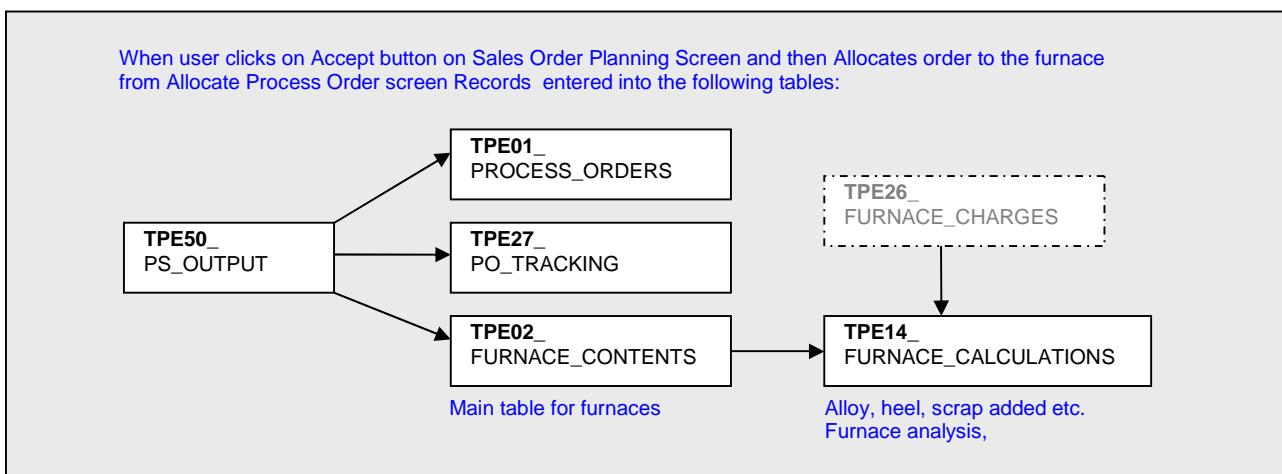
This screen also allows to link orders from inside and outside scheduler.



SAP / RPMS and Production Scheduler separate sales orders into the most cost effective process orders. Currently, RPMS and Production Scheduler are disabled, and bypass solution used for scheduling.



Next step is to assign Process Order to a specific furnace with unique cast batch number. This is, done with **Allocate Process Order** screen. In case of Wash Cast, **Allocate Wash Cast** screen will be, used. Operator can also choose to allocate Sales Orders directly from SAP using **Allocate Adhoc PO** screen.



Under Process Order menu, there are two screens used to monitor the process.

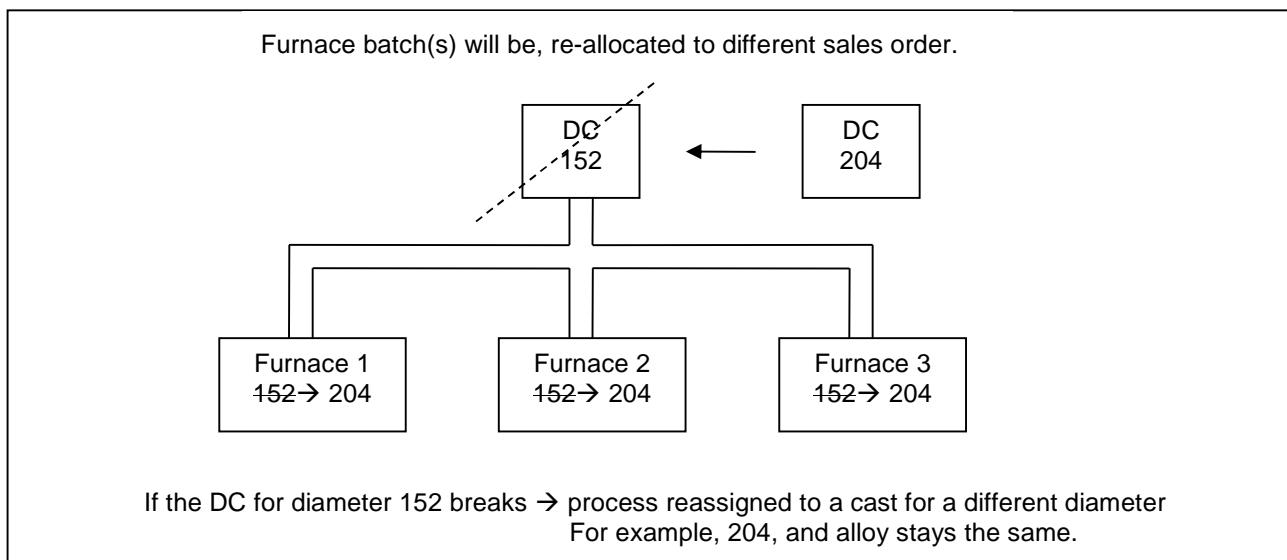
Planned Batch screen shows info on current casts and sales orders on the shop floor.

Sales Order Tracking screen shows all confirmed bundles on that sales order.

4.3 Furnace Group Menu.

From **Manage Furnace** screen operator can access **Furnace Calculator** to determine which alloy components need adjusting? There are two simulator screens **Add Alloy** and **Add Scrap**. Operator can use these screens to simulate results of adding certain alloy combinations and scrap pieces from the shop floor to the furnace. If simulation is successful, the amounts can be, added to the furnace. Samples sent periodically for LIMS testing and once furnace stage is complete operator can close batch and proceed to the Casting stage.

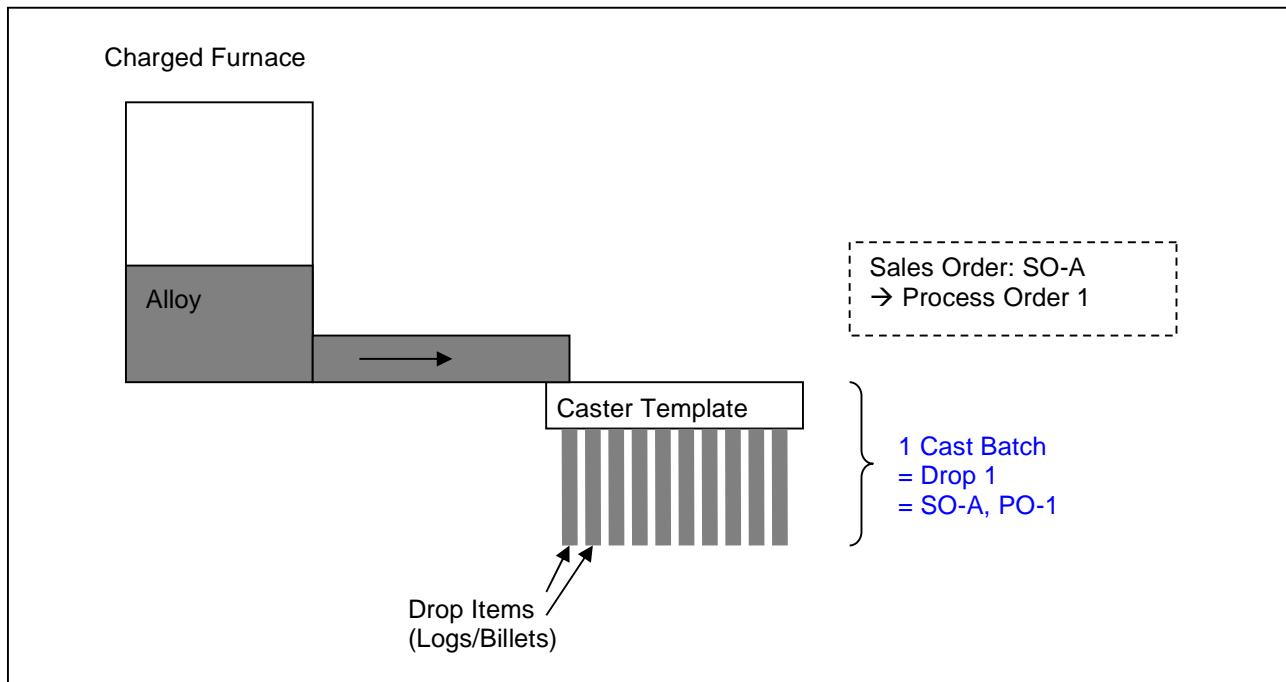
Prior to Allocating a process order, **FurnaceDC** screen used to assign station and diameter of the caster to the furnace. If there is a problem with the DC and the station needs to be changed, then another sales order for a different log diameter but same alloy has to be allocated to the furnace, Furnace DC screen is used to change caster assignment to match another order.



4.4 Casting.

Drops created during casting stage. Each drop consists of drop items (logs). There are different stations that can be, used on a caster table to produce material of different shapes and dimensions. There are also different casting lines used for ingots. Typically, there will be one batch produced from one furnace.

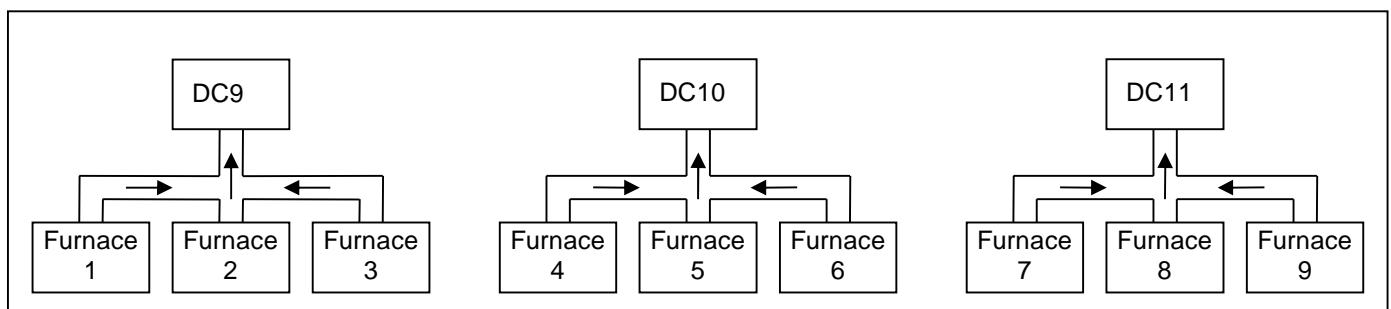
Occasionally if drop 1 aborted or if there is enough metal in the furnace, drop 2 will be, created. Under normal circumstances we will have **1 Cast Batch = 1 Drop = 1 Process Order**.



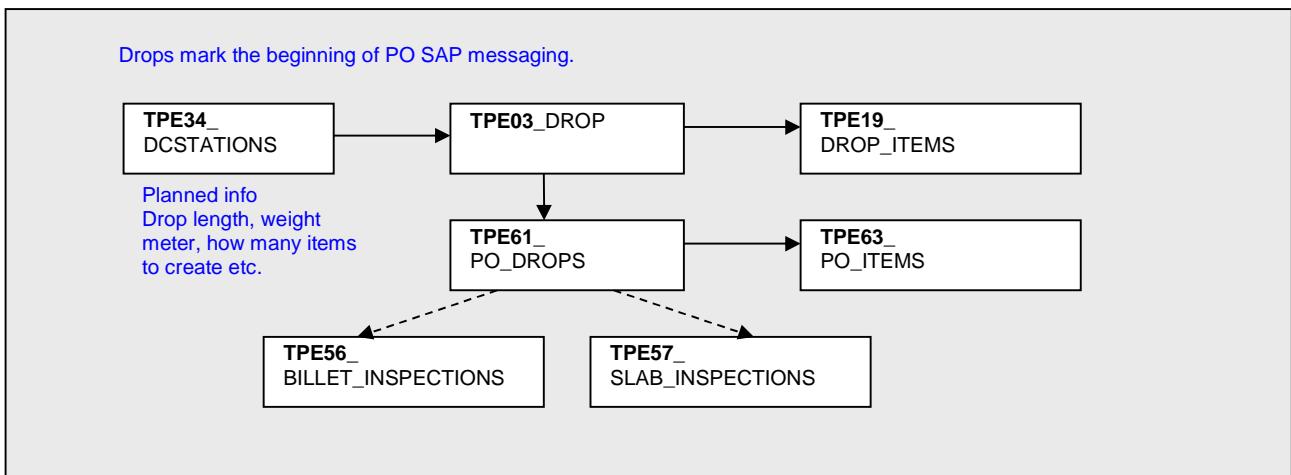
In Casthouse 3, there are three casters and each caster connected with three furnaces. One furnace is usually casting, second is settling and the third one is being charged.

Note: The minimum settling time is as follows:

- Billet - CH 3 : 30 minutes
- Rolling Slab : 45 minutes
- 4xxx alloy : 45 minutes
- T Ingot : 15 minutes



After process order has been, allocated to the batch from **casting** screen and cast is complete it can be closed. However, on certain occasions it might be necessary to allocate another purchase order to the cast batch. Allocation performed from **Process Order Re-Allocation** screen.



When drops are completed, logs (drop items) need to be inspected. There are three inspection stages. **Pre-Inspection** screen is used to indicate logs that were not casted (caster holes were physically blocked). This is important for Cast recovery/efficiency calculations.

At pre-inspection stage operator can choose to abort cast. If cast is not, aborted logs can be, inspected individually or pre-inspection can be closed to complete this phase. All logs that have completed pre-inspection are, moved to the first inspection stage.

Cast Recovery screen allows the user to review the efficiency of the cast.
Cast Tracking show information on last two casts.

4.5 Finished Products Group Menu

In **First Inspection**, screen operator can review all casts. Here logs can be marked as scrap, partial scrap or work in progress (WIP). In case certain cast is off spec it might be necessary to perform, Alternative Alloy Check to reallocate that cast batch to a different sales order where alloy will be a match.

Logs can be, inspected individually or operator can choose to set status of all logs to a certain status and inspect all of them at once. Inspecting a batch for the first time will register an "Ear sample" record in the LIMS. In order to move logs to the second inspection stage the status needs to be, changed to Normal or Partial. At that, time records will disappear from First Inspection screen.

In second inspection stage, logs are, cut into billets and bundles are, created. To inspect logs at this stage operator would use **Second Inspection** screen, which is similar to First inspection screen. From here operator can also perform Alternative Alloy Check and if necessary re-allocate logs to different orders. In Second Inspection, logs can be, inspected individually or operator can choose to set status of all logs to a certain status and Close Inspection and corresponding Purchase Order.

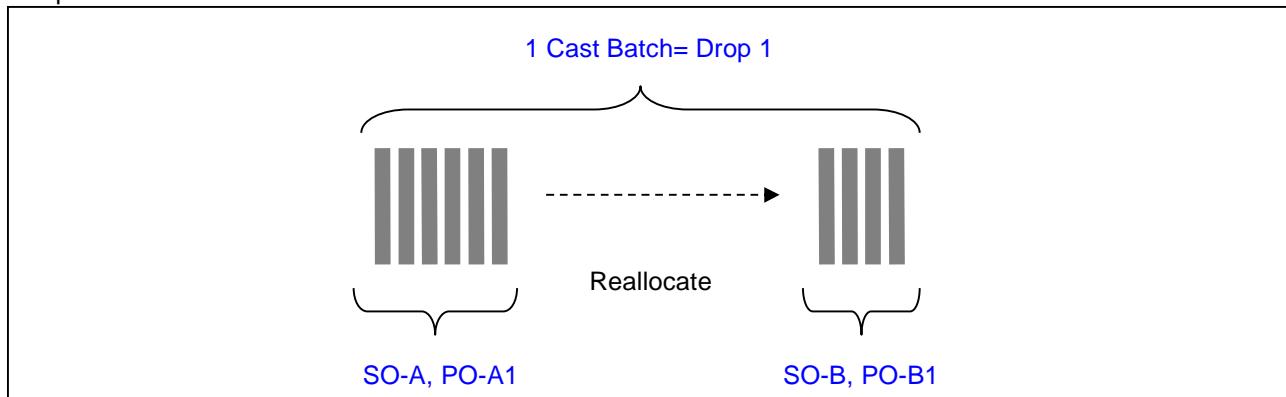
On certain occasions, it might be necessary to reverse log status to an earlier inspection stage. Through **Inspection Reversal** screen ([CH Admin GroupMenu](#)), logs can be reversed to second or first inspection stage only.

If logs need to be, reallocated, **Logs Re-Allocation** screen can be, used to see a list of Sales Orders, which can be, used for re-allocations.

Depending on circumstances, if current alloy is off-spec, it might be necessary to re-allocate the log to another Sales Order for a different alloy but the same diameter in which case operator would use **Sales Order Re-Allocate** screen (“Alt Alloy Check” button). On other occasions logs may have to be re-allocated to sales order with the same specs (alloy, diameter) in which case operator would use **Process Order Re-Allocation** screen (“Re-Allocate SO” button).

In both cases Sales Order needs to be, selected, then Purchase Order is, created for this Sales Order and logs to be re-allocated are associated with this new Purchase Order.

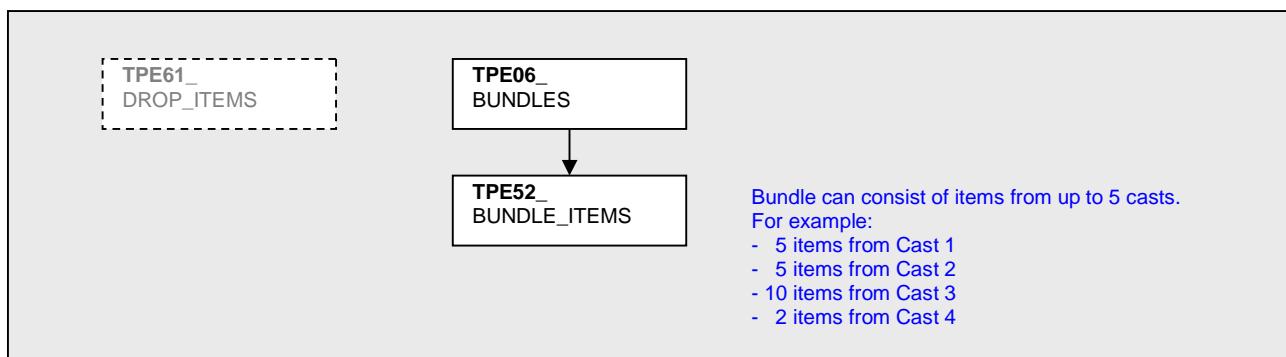
If drop items are, re-allocated to a different Process Order, same batch and drop number can appear on more than one process order.



Once logs are cut, the data is either, entered directly to the database or manually from **Manual Bundle Entry** screen. **Bundles Management** screen can be, used for managing bundles. In order to bundle billets together, alloy, diameter and length must be the same.

Labels for confirmed bundles are, printed automatically or manually from **Print Bar Code Label** screen.

Once products are, bundled it is possible to transfer bundles from one sales order to another. For bundles that are on-spec, this can be, done using **Bundle Transfer** screen. If it is, necessary to transfer bundles that are off-spec operator would use **Bundle Off-Spec Override** screen.



Bundle Batch Confirm screen is, used to for standard ingots, which are, inspected as bundle rather than individual pieces.

Under Finished Products Group Menu, there are three screens to monitor the process:

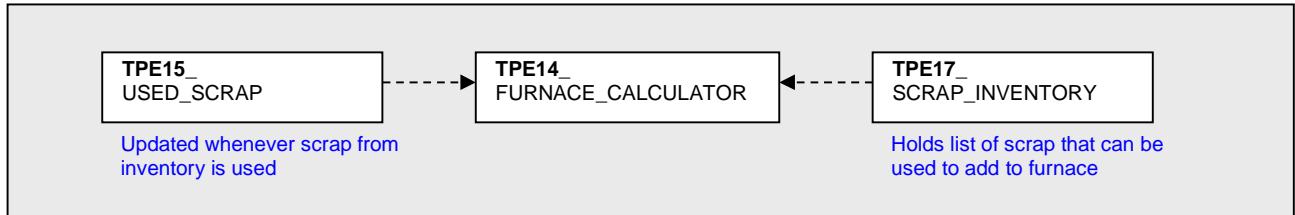
Inspection History screen can be, used to view history of the cast regardless of the production stage that the cast is in now.

Logs On Hold screen shows casts with logs that are currently on hold and **(Obsolete)**

Logs in WIP shows casts with logs that have status of “work in progress”. **(Obsolete)**

4.6 Casthouse Scrap Screens

New MES provides three scrap management screens. **Add Scrap Inventory** screen can be, used to add to the stockpile on the shop floor. **Scrap Sold(Obsolete)** screen is, used to track scrap pieces that are, sold to the customer.



When metal is, poured from the furnace into the caster, the dross that is, created on the surface of the metal needs to be, scraped and is, processed by an external company. **Sows Process(Obsolete)** screen is, used to track this material as it has sent out to be, processed by another company.

5. Reduction

5.1 Reduction Tracking

1.1.1. Crucible Inspection System

Is a system that completely automates the process of tracking and finding out which crucible is due to inspection, demolish, relining, and baking, with zero effort from the client side. In which I have added an animated graphical user interface that distinguishes each stage by different flashing animated crucible image, plus adding a different interval for critical measure; like crucible exceed pre-heating time.

Furthermore, each single confirmed step, will be recorded by, user, time and date, and shift, for easier evaluation purposes.



1.1.1. Crucible Cleaning System

Here is where due to cleaning crucible blinks for TAC operators. In which the user does not need to go through the hassle of searching and keeping note of what crucible need to be, sent, to reduction services. All what a user need to do is click on the send for cleaning button. Consequently, the process will be, achieved, with zero effort.

Crucible Cleaning: TAC Station

This page is showing you crucibles summary:

Name	Weight (MT)	Last Cleaning Date	Sending Date	Receiving Date	Updating Date	History	Status	Edit	TAC
A01	12.17	Mar 06, 2012 09:38:28 AM	16/03/2012			View History	Sent		12.09
A02	12.13	Mar 06, 2012 09:38:28 AM	07/03/2012	07/03/2012	07/03/2012	View History	Confirm		
A03	12.15	Mar 06, 2012 09:38:28 AM	16/03/2012			View History	Sent		12.23
A04	12.25	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A05	12.22	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		12.50
A06	11.98	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A07	11.64	Mar 13, 2012 09:03:06 AM				View History	To Send for Cleaning		
A08	12.33	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A09	12.59	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A10	12.71	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A11	13.46	Mar 06, 2012 09:38:28 AM	07/03/2012	07/03/2012	07/03/2012	View History	Confirm		
A12	13.45	Mar 06, 2012 09:38:28 AM	12/03/2012	13/03/2012	13/03/2012	View History	Confirm		12.37
A13	14.03	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A14	13.99	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A15	13.52	Mar 06, 2012 09:38:28 AM	07/03/2012	07/03/2012	07/03/2012	View History	Confirm		
A16	14.18	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		
A17	14.02	Mar 06, 2012 09:38:28 AM	07/03/2012	07/03/2012	07/03/2012	View History	Confirm	0	
A18	12.16	Mar 06, 2012 09:38:28 AM				View History	To Send for Cleaning		

1.1.2. Tapping Schedule

See TILT section.

1.1.3. Create Crucible Charge

See TILT section.

6. Tilt

6.1 Tilt Tracking

6.1.1. Large Crucible

This screen is, used to assign large crucible to large crucible station. Operator would first select crucible number, station, and LC from the dropdowns and click on “Create Charge” button.

The screenshot shows the TILT Station software interface. At the top, there is a blue header bar with the ALBA logo on the left and the text "TILT Station" in the center. Below the header, there is a navigation menu with links: "TILT", "Create Charge", "Crucible Information", "High Purity Charges", and "Action Log". The main content area is titled "TILT Main Screen". It contains several input fields and dropdown menus:

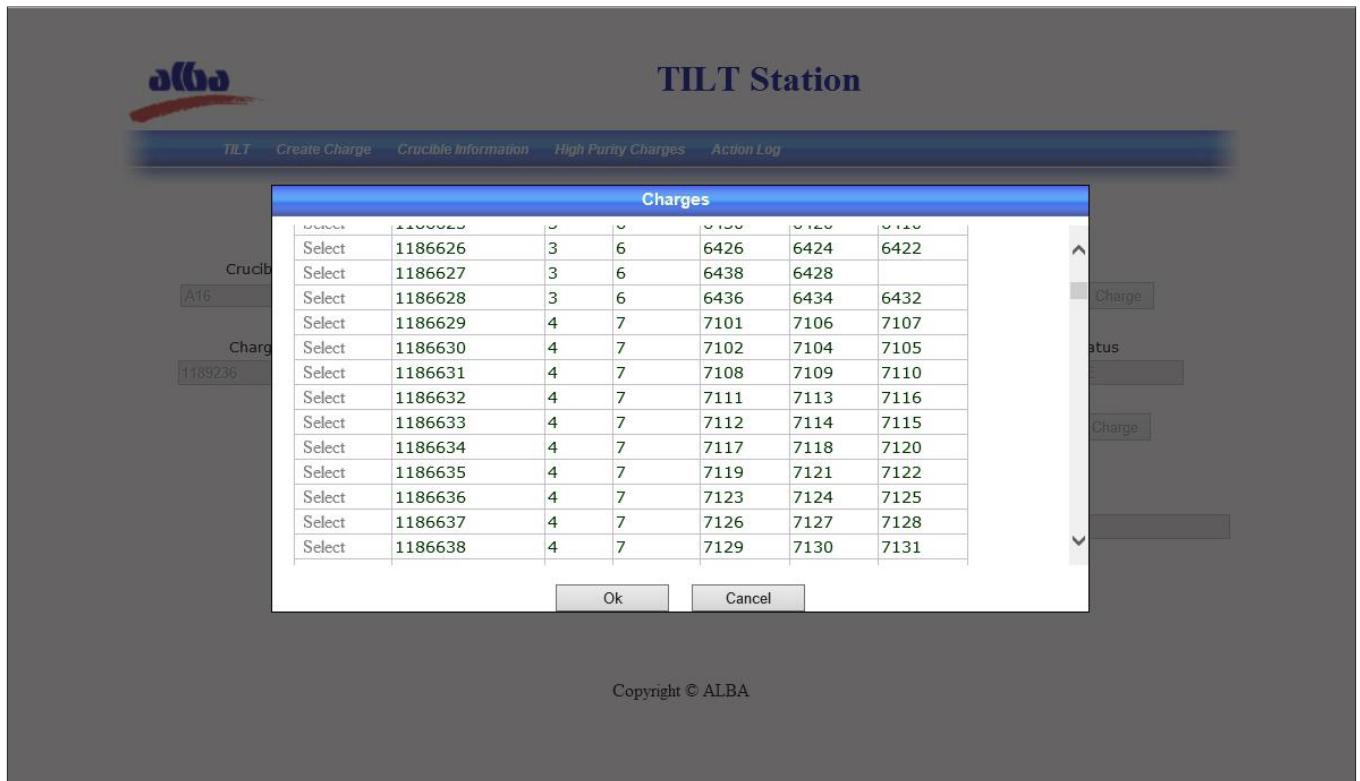
Crucible No	Station No	Large Crucible	
A16	TM2	LC3	<input type="button" value="Create Charge"/>
Charge No	Date Created	Created By	Status
1189236	3/9/2014 8:50:53 AM	U11708	TILT_CRUCE

Below these fields, there is a button labeled "Close Charge". In the center of the screen, the text "Small Charges" is displayed. At the bottom right, there is a field labeled "Sum: 0". At the very bottom center, the copyright notice "Copyright © ALBA" is visible.

6.1.2. Small Crucible

In the new version of MES, the same main screen used to assign charges to small crucibles and to assign small crucibles to TILT stations.

Operator clicks on “Small Charges” link button, and a charge list will popup. Once he/she selects the desired charges, “Ok” button should be, clicked.



6.1.3. Weight Crucible Tilt

Again, in the new version of MES, the same main screen is, used to update the weight of the small crucible. Here operator first selects the small crucible that was carrying the specific charge, which has been, already selected. Then update the weight. Upon verification, he can close the charge, which mean, it will appear there in TAC system.

The screenshot shows the TILT Station software interface. At the top, there is a logo for 'alba' and a navigation bar with links: TILT, Create Charge, Crucible Information, High Purity Charges, and Action Log. The main screen is titled 'TILT Main Screen'. It displays several dropdown menus: 'Crucible No' (A16), 'Station No' (TM2), and 'Large Crucible' (LC3). Below these are fields for 'Charge No' (1189236), 'Date Created' (3/9/2014 8:50:53 AM), and 'Created By' (U11708). To the right, there is a table for 'Large Crucible' weights:

Pot	Weight
2156	1500
2154	1500

The total sum for the large crucible is listed as 3000. Below this, there is a section for 'Small Charges' with a table:

Charge No	Crucible	Net Weight	Details	Edit
1185695	Select Crucible ▼	3000	Details	Edit
1186631	Select Crucible ▼	9900	Details	Edit

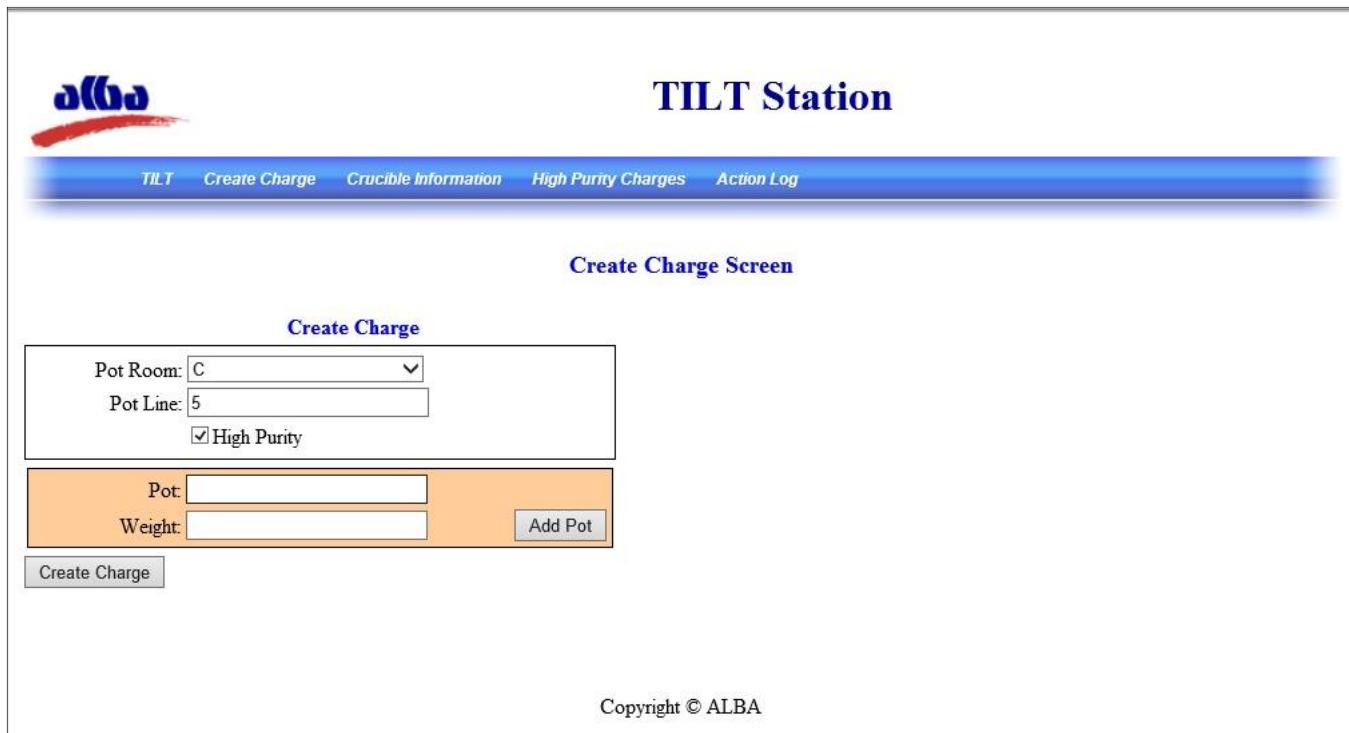
The total sum for the small charges is listed as 12900.

6.1.4. Tapping Schedule

TAPPING SCHEDULE								
				Shift Date: 22/09/2016 Shift: Morning				
				HP grade is metal with Fe% < .075 Si% < .09				
				Cell arrangement criteria: CRUCE FULL CHECK				
Line 4, Room 8, Group GT6								
CRUCIBLES				POTS				
Charge	FE	SI	HP	Number	FE	SI	Tapping Time	Tapping QTY
1553751	0.0905	0.0299		8137	0.0942	0.0323		
				8138	0.0881	0.0325		
				8139	0.0893	0.0248		
1553752	0.0965	0.0416		8140	0.1062	0.0501		
				8141	0.0908	0.0339		
				8142	0.0925	0.0409		
1553753	0.0910	0.0277		8143	0.0841	0.0223		
				8144	0.0950	0.0290		
				8145	0.0940	0.0319		
1553754	0.0803	0.0235		8146	0.0802	0.0242		
				8147	0.0717	0.0218		
				8148	0.0890	0.0244		
1553755	0.0927	0.0398		8149	0.0902	0.0241		
				8150	0.0913	0.0546		
				8151	0.0965	0.0408		
1553756	0.1080	0.0434		8152	0.1160	0.0314		
				8153	0.0993	0.0288		
				8154	0.1086	0.0701		
1553757	0.1089	0.0332		8155	0.1036	0.0351		
				8156	0.0867	0.0307		
				8158	0.1364	0.0337		
1553758	0.0892	0.0394		8159	0.0907	0.0251		
				8163	0.0943	0.0641		
				8164	0.0826	0.0290		
1553759	0.0655	0.0300	HP	8160	0.0741	0.0255		
				8161	0.0599	0.0298		
				8162	0.0624	0.0348		
1553760	0.0703	0.0278	HP	8165	0.0544	0.0353		
				8166	0.0824	0.0247		
				8167	0.0741	0.0235		

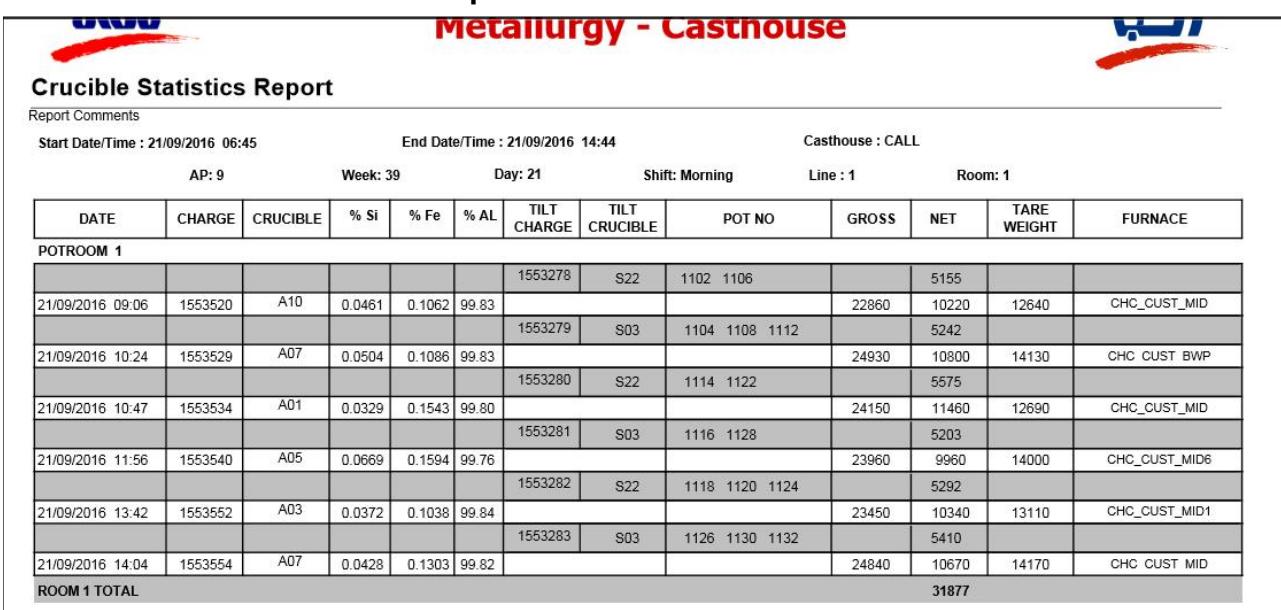
6.1.5. Create Crucible Charge

This screen usually used, to manually, create charges that were not on the tapping schedule.



The screenshot shows the 'Create Charge' screen of the ALBA TILT Station software. At the top, there's a logo and a blue header bar with menu items: TILT, Create Charge, Crucible Information, High Purity Charges, and Action Log. Below the header, the title 'TILT Station' is displayed in large blue letters. The main area is titled 'Create Charge Screen'. It contains a form with fields for 'Pot Room' (C), 'Pot Line' (5), and a checked checkbox for 'High Purity'. Below this is another section with 'Pot' and 'Weight' fields, and an 'Add Pot' button. A 'Create Charge' button is located at the bottom left of the form. The background is white with some orange highlights around the input fields.

6.1.6. Crucible Statistics Report



The screenshot shows the 'Crucible Statistics Report' for the Metallurgy - Casthouse. The title is at the top center. Below it, there's a 'Report Comments' section and a summary table with columns for Start Date/Time (21/09/2016 06:45), End Date/Time (21/09/2016 14:44), Casthouse (CALL), AP (9), Week (39), Day (21), Shift (Morning), Line (1), and Room (1). The main part of the screen is a large table with a header row for 'DATE', 'CHARGE', 'CRUCIBLE', '% Si', '% Fe', '% AL', 'TILT CHARGE', 'TILT CRUCIBLE', 'POT NO', 'GROSS', 'NET', 'TARE WEIGHT', and 'FURNACE'. The table is divided into sections: 'POTROOM 1' and 'ROOM 1 TOTAL'. The data rows show various entries with columns for date, charge number, crucible number, and various weight measurements. The 'ROOM 1 TOTAL' row at the bottom right has a value of 31877.

DATE	CHARGE	CRUCIBLE	% Si	% Fe	% AL	TILT CHARGE	TILT CRUCIBLE	POT NO	GROSS	NET	TARE WEIGHT	FURNACE
POTROOM 1												
21/09/2016 09:06	1553520	A10	0.0461	0.1062	99.83	1553278	S22	1102 1106		5155		
						1553279	S03	1104 1108 1112		22860	10220	12640 CHC_CUST_MID
21/09/2016 10:24	1553529	A07	0.0504	0.1086	99.83	1553280	S22	1114 1122		5242		
						1553281	S03	1116 1128		24930	10800	14130 CHC_CUST_BWP
21/09/2016 10:47	1553534	A01	0.0329	0.1543	99.80					5575		
						1553282	S22	1118 1120 1124		24150	11460	12690 CHC_CUST_MID
21/09/2016 11:56	1553540	A05	0.0669	0.1594	99.76					5203		
						1553283	S03	1126 1130 1132		23960	9960	14000 CHC_CUST_MID6
21/09/2016 13:42	1553552	A03	0.0372	0.1038	99.84					5292		
						1553284	S22	1128 1132 1136		23450	10340	13110 CHC_CUST_MID1
21/09/2016 14:04	1553554	A07	0.0428	0.1303	99.82					5410		
ROOM 1 TOTAL												31877

7. TAC

7.1 TAC Tracking

The TAC management screen is the main TAC station screen which can be used to receive metal, allocate/deallocate metal charge to furnace, send metal charge crucibles to downstream customers, show open furnaces, show open sales orders, check charge analysis , create manual charge and assign weights to charge.

7.1.1. Receive Metal

A paper based ticket is attached to the crucible after tapping of liquid metal from reduction line pots that consists of the crucible no to which the charge was poured. The tapping schedule consists of the charge tapping schedule see 6.1.4 for details. This ticket is received at the tac station control room from where the following screen is used to assign the crucible no to the charge mentioned in ticket. When the crucible no is assigned to charge no, it is considered as received at TAC. Operator will choose a charge no to receive and choose the appropriate charge no to assign and save to complete.

TAC Station: Crucible Management

Crucible Management Create Charge

Print Others | Open Sales Orders | ChargeAnalysis | ShowLogs | Allocations

Charge Information

Charge No	1362513	Crucible No	SELECT	Clear	Save	Close Charge	Print Ticket	
ChargeNo	1362513	Crucible	DateCreated	WeightSo	TotalWeight	DateWeighted	ST	FE
	5/23/2015 7:16:45 AM				9900		0.0555	0.0904
							0.0555	0.0904

Material Type

<input checked="" type="radio"/> CastHouse	<input type="radio"/> DownStream	SELECT	SalesOrder	Allocate
--	----------------------------------	--------	------------	----------

Allocated Furnace

FID	FURNACENAME			
NO ALLOCATION FOUND				
Add	Delete	Clear	Weight	Furnace

Results

PROPERTY
RESULT

Pot Information

GHT	ID	PotName
3342	3300	RD5_POTD062
3343	3300	RD5_POTD063
3344	3300	RD5_POTD064

Refresh Analysis

WES TAC



Charge No ▾

Crucible No ▾

Register Crucible

A new feature developed in the new MES shown below to avoid manual paper work, that is to be accessed from a wireless device that will be used by the reduction line while tapping i.e the reduction line operator will assign charge to crucible instantly as and when the metal is tapped into crucible from the pot room.

7.1.2. Allocate Charge

This screen is used to allocate charge to furnace by clicking on add button in the allocate furnace section. This will pop-up the list of all the furnaces that are open and require liquid metal, showing the current allocated weight and the required weight of metal. The operator chooses the furnace to assign charge to furnace.

Note that the crucible which charge is about to be allocated to the furnace should have been weighed once at the TAC to record the gross weight. The operator allocates crucible charge to the furnace. It is possible to allocate entire charge to one furnace or split it over 2 or more furnaces but the same charge would not be allocated to the same furnace twice (Contents of one crucible would only be poured into the same furnace once). If more than one furnace is charged for a single crucible then it needs to be re-weighed in between pours and finally when it's empty.

For normal casting, the weight entered should not exceed the allowable weight (capacity) of the furnace. For continuous casting there will be no limit on how much weight can be allocated to the furnace. As charges are added the current weight of the furnace will show on the Furnace Manage screen under Current Weight for the batch to which this furnace is currently assigned.

Operator can remove an allocation before closing a charge by clicking on the "Delete" button. This action will remove the selected allocation.

Closing a charge means completing the allocation , this will release it from this screen and will be available in furnace manage . This usually means that this charge has been sent to allocated furnace in casthouse.



TAC Station: Crucible Management

[Crucible Management](#) [Create Charge](#)

[Print Others](#) | [Open Sales Orders](#) | [ChargeAnalysis](#) | [ShowLogs](#) | [Allocations](#)

Charge Information

Charge No	<input type="text" value="1363276"/>	<input type="button" value="..."/>	Crucible No	<input type="text" value="A06"/>	<input type="button" value="Clear"/>	<input type="button" value="Save"/>	<input type="button" value="Close Charge"/>	<input type="button" value="Print Ticket"/>
-----------	--------------------------------------	------------------------------------	-------------	----------------------------------	--------------------------------------	-------------------------------------	---	---

ChargeNo	Crucible	DateCreated	WeightSource	Status	TotalWeight	DateWeighted	SI	FE
1363276	A06	5/25/2015 8:23:05 AM	Tilt Station 9	TI LT_COMPLETE	11289	5/25/2015 8:24:08 AM		
1363089	S18	5/24/2015 1				5 8:24:08 AM	0.0647	0.0745
1363090	S22	5/24/2015 1				5 8:24:08 AM	0.0331	0.0592
Open Furnaces								
			FID	FURNACENAME	CURRENT_WEIGHT	REQ		
Select	462981	CH2_REMELT_FUR01	48030	18970				
Select	463007	CH2_REMELT_FUR02	5000	62000				
Select	462982	CH2_REMELT_FUR03	44514	22486				
Select	463001	CH2_REMELT_FUR04	4000	63000				
Select	462943	CH2_REMELT_FUR06	50000	22000				
Select	462983	CH2_REMELT_FUR07	55000	17000				
Select	462947	CH2_REMELT_FUR08	65357	6643				
Select	462944	CH2_REMELT_FUR09	24999	5001				

Material Type

CastHouse DownStream

Allocated Furnace

FID	FURNACENAME	<	>

Pot Information

PotNo	Weight	PotName
2777	1500	RD3_POT6329
2779	1500	RD3_POT6331
2783	1500	RD3_POT6335
2785	1500	RD3_POT6337
2787	1500	RD3_POT6401

Results

PROPERTY
RESULT



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7.1.3. Weigh Crucible TAC

The gross weight of the crucible is taken before sending it to assigned furnace. This weight is received from the weighing system and assigned to crucible as gross weight by clicking on the gross weight button. When the crucible comes back the tare weight is taken from the weighing system by clicking on the tare button. The weights can also be entered manually. This will give the actual metal weight that is poured in furnace.

Gross weight – tare weight= net metal weight

A crucible can be assigned to more than one furnace. By taking the tare weight of the first allocation and assigning it as the gross weight for the second allocation. Eg:

- 1- First gross weight **ga1** – First tare weight **ta1** = net metal poured to first furnace **N1**
- 2- First Tare weight **ta1** – Second tare weight **ta2** = net metal poured to second furnace **N2**

The screen records how it is getting the weight, the weight can be entered manually and also received from the weighing system by clicking on the gross/tare button. This information is important.

The screen displays analysis of the metal provided by the metallurgy after sparking . The screen also shows the small crucible weights from tilt and source pots of this metal from where the tapping has been done.

ChargeNo	Crucible	DateCreated
1363287	A07	5/25/2015 10:58:55 AM
1363057	S04	5/24/2015 11:15:12 PM
1363091	S20	5/24/2015 11:15:33 PM

FID	FURNACE
Select	463023 CHC_CUST_MID
Add	Delete

PROPERTY	SI	FE	MN	NA
RESULT	0.0383	0.0708	0.0010	0.0022

PotNo	Weight	PotName
2255	1500	RD1_POT2301
2261	1500	RD1_POT2307
2263	1500	RD1_POT2309
2789	1500	RD3_POT6403
2791	1500	RD3_POT6405
2793	1500	RD3_POT6407

The charge needs to have both the net and gross weight to provide the net weight to customer. The analysis should be present and on specification for the charge to be closed and sent.

7.1.4. Liquid Metal Delivery to Down Stream Companies

To deliver liquid metal to a downstream company, operator chooses the downstream company from the drop down list as shown below. This will fetch the sales order based on the plan provided from the planning and the suitable alloy being requested and display on the screen. The operator can confirm the transaction by pressing the allocate button. This will record an entry creating a dummy furnace to assign weight as explained see 7.1.3.



TAC Station: Crucible Management

[Crucible Management](#) [Create Charge](#)

[Print Others](#) | [Open Sales Orders](#) | [ChargeAnalysis](#) | [ShowLogs](#) | [Allocations](#)

Charge Information

Charge No	<input type="text" value="1363297"/>	<input type="button" value="..."/>	Crucible No	<input type="text" value="A07"/> <input type="button" value="▼"/>	<input type="button" value="Clear"/>	<input type="button" value="Save"/>	<input type="button" value="Close Charge"/>	<input type="button" value="Print Ticket"/>
-----------	--------------------------------------	------------------------------------	-------------	---	--------------------------------------	-------------------------------------	---	---

ChargeNo	Crucible	DateCreated	WeightSource	Status	TotalWeight	DateWeighted	SI	FE
1363297	A07	5/25/2015 12:47:34 PM	Tilt Station 5	TILT_COMPLETE	10373	5/25/2015 12:48:52 PM		
1363065	S07	5/24/2015 11:15:17 PM	Tilt Station 5	COMPLETE	5200	5/25/2015 12:48:52 PM	0.0502	0.0871
1363075	S12	5/24/2015 11:15:21 PM	Tilt Station 5	COMPLETE	5173	5/25/2015 12:48:52 PM	0.0401	0.2059
Average:							0.0452	0.1465

Material Type

CastHouse DownStream

BAHRAIN ALLOYS MANUFACTG. CO,
BAHRAIN ATOMISERS INTERNATIONAL
BAHRAIN WELDING PRODUCTS
MIDAL CABLES LTD

Allocated Furnace

FID	FURNACE NAME	ALLOCATEDWEIGHT	ID
NO ALLOCATION FOUND!			
<input type="button" value="Add"/>	<input type="button" value="Delete"/>	<input type="button" value="Clear"/>	<input type="button" value="Weight"/>
<input type="button" value="Furnace"/>			

Pot Information

PotNo	Weight	PotName
2295	1500	RD2_POT3103
2307	1500	RD2_POT3115
2501	1500	RD2_POT4319
2513	1500	RD2_POT4331

Results

PROPERTY	<input type="button" value="Refresh Analysis"/>
RESULT	



Copyright © ALBA

7.1.5. Create Crucible Charge

This screen is the same as Tilt – Create Crucible Charge. It is used to manually create charges that were not on the tapping schedule.

The screenshot shows the 'Crucible Management' section of the TAC Station software. On the left, there is a 'Create Charge' form with fields for Charge Number (1363115), Pot Room (8), Pot Line (4), High Purity (checked), and Crucible (A18). Below these are buttons for 'Create', 'Save', and 'Clear'. On the right, there is a table titled 'Pots' showing three rows of data: Select 8115 3300 Edit, Select 8118 3300 Edit, and Select 8122 3300 Edit. A total weight of 9900 is displayed. At the bottom, there is a row for adding new entries with fields for PotNO (8101) and Weight, and a 'ADD' button. The MES logo and copyright information are at the bottom center.

7.1.6. Re Weigh Crucible

Reweighting i.e. getting the tare weight of the crucible is done using the same screen mentioned in section 7.1.3 by clicking on the tare weight, this is done after providing the metal to furnace or downstream to calculate the net weight provided.

7.1.7. Deliver Ticket

This is the final delivery ticket that is provided to the downstream customers, that has to be signed by the Tac senior operator. The system assigns a delivery number with all the sales order information and metal information with analysis. This ticket also shows if the weight of the metal was fetched from the weighing system or entered manually as shown below



Metal Delivery to: MIDAL CABLES LTD

Charge No:	1345666	Sales Order No.:	0004057450									
Crucible No.:	A08	Order Item:	000040									
Cell No.:	5406 5408 5412 6109 6111 6113	Alloy:	1070.02									
Gross (Kg):	23520	Date:	09/04/2015 20:05:28									
Tare (Kg):	12000	Time:	09/04/2015 21:23:30									
Net (Kg):	11520	Weigh Source:	Automatic									
		Shift No:	3									
		FC ID:	457632									
		Bundle No.:	6967962									
		Delivery No.:	MC485									
		On Spec:	YES									
Analysis Date:	09/04/2015 20:01	Analysis Type:	Charge	Senior Operator Signature								
<hr/>												
SI	FE	CU	MN	CR	NI	ZN	MG	B	TI	GA	V	AL
0.0536	0.1472	0.0002	0.0015	0.0016	0.0090	0.0052	0.0003	0.0005	0.0031	0.0120	0.0114	99.78

ALUMINIUM BAHRAIN B.S.C (c)
P.O. Box 570 - Manama, Kingdom of Bahrain

This ticket is printed automatically while closing the crucible and can also be printed manually from the print button available on the tac management screen.

7.1.8. Open sales orders

This option shows the list of open sales orders that require metal allocation.

TAC Station: Crucible Management

Crucible Management [Create Charge](#)

[Print](#) [Others](#) | [Open Sales Orders](#) | [ChargeAnalysis](#) | [ShowLogs](#) | [Allocations](#)

Charge Information

Charge No.	Crucible No.	Clear	Save	Close Charge	Print Ticket
Open Sales Orders					
Customer	Sales Order No.	Item No.	Alloy No.	Delivery Date	Required Weight
BAHRAIN ALLOYS MANUFACTG. CO,	000050	000050	1070.02	5/31/2015 12:00:00 AM	1516000
BAHRAIN ALLOYS MANUFACTG. CO,	000060	000060	1070.02	6/30/2015 12:00:00 AM	1600000
BAHRAIN ATOMISERS INTERNATIONAL	000050	000050	1070.02	5/31/2015 12:00:00 AM	700000
BAHRAIN ATOMISERS INTERNATIONAL	000070	000070	1070.02	7/31/2015 12:00:00 AM	720000
BAHRAIN WELDING PRODUCTS	000050	000050	1070.02	5/7/2015 12:00:00 AM	2000000
MIDAL CABLES LTD	000050	000050	1070.02	5/25/2015 12:00:00 AM	5950000
MIDAL CABLES LTD	000020	000020	1070.02	5/31/2015 12:00:00 AM	1000000

7.1.9. Charge Analysis

This option provides the complete analysis of the charge , required by operators for decision making.

The screenshot shows the 'Crucible Management - Create Charge' interface with the 'Charge Analysis' tab selected. The main area displays charge information, material type, allocated furnace, and results. A detailed analysis table is open, showing element results for SI, FE, CU, NA, MN, MG, CR, NI, ZN, B, GA, V, and Ti. The results table shows a 'RESULT' of 0.0464 for SI, which is highlighted in red. The right side of the screen shows a timeline of events, a sales order allocation table, and a pot information table.

Element	Result
SI	0.0464
FE	0.0940
CU	0.0002
NA	0.0026
MN	0.0013
MG	0.0004
CR	0.0009
NI	0.0071
ZN	0.0031
B	0.0005
GA	0.0111
V	0.0116
Ti	0.0026

7.1.10. Transaction Logs

The tac management screen logs all the changes done with the charge from assigning , allocation, deallocation, weight entries to closing of charge sample screen shown below

The screenshot shows the 'Action Logs' section of the transaction logs. It lists four actions: 'Getting Gross Weight', 'Print Ticket', 'Finish Tilting', and 'Start Tilting'. To the right, a 'Details' panel displays the FID (463358), Furnace (CHC_CUST_MID), Gross weight, Tare, and Net values.

DOCUMENT_ID	ACTION_TYPE	CREATED_BY	CREATED_DATE	CREATED_TIME	CODE
1364424	Getting Gross Weight	U10944	28/05/2015	08:15	5370047
1364424	Print Ticket	U10944	28/05/2015	08:15	5370048
1364424	Finish Tilting	U8782	28/05/2015	07:44	5370012
1364424	Start Tilting	U8782	28/05/2015	07:43	5370007

7.1.11. Allocations

The allocations option provides the list of crucible charges whose gross weight taken , sent for delivery physically and waiting to return for tare weight and closing.



TAC Station: Crucible Management

Crucible Management Create Charge

[Print Others](#) | [Open Sales Orders](#) | [ChargeAnalysis](#) | [ShowLogs](#) | [Allocations](#)

Charge Information:

Charge No. Crucible No.

Charge Allocations

CHARGENO	CRUCIBLE	FURNACE	RESULT	FE_THE	SI_THE	FE_ACTUAL	SI_ACTUAL	FE_DIFF	SI_DIFF	FEPEP	SIPER
1364154	A30	CH3_HOLDING_FUR06	Yes	0.0678	0.0285	0.0741	0.0231	0.0063	0.0054	8.50	23.38
1364155	A27	CHC_CUST_MID2	Yes	0.0613	0.0257	0.0623	0.0241	0.0010	0.0016	1.61	6.64
1364289	A32	CH3_HOLDING_FUR06	Yes	0.0909	0.0285	0.0907	0.0272	0.0002	0.0013	0.22	4.78
1364424	A08	CHC_CUST_MID	Yes	0.060050	0.0228	0.0940	0.0464	0.033950	0.0236	36.12	50.86

7.1.12. Tac Handshake Report

This report provides the summary of all the liquid metal transfer from reduction, TILT, TAC to Casthouse products and downstream customers.



Casthouse



TAC Handshake Report

Start Date/Time : 27/05/2015 22:45

End Date/Time : 28/05/2015 22:44

Month to date figure Period from 30/04/2015 22:45 to 28/05/2015 22:44

1-Reduction / TAC

Line	Crucible (No)	Daily / Month toDate (Kg)	
1,2&3 Direct	0	0	0
1,2&3 TAC	27	280900	21846780
4	28	291030	21708390
5	31	351180	25706980
Total :	86	923110	69262150

Approval on the Figures :-

Reduction

TAC

Marketing Planning

2- TAC / Casthouse

Casthouse	Crucible	Daily/Month to Date (Kg)	
Line1 2 3 to CH2	2	21330	1483860
Line 4 to CH2	11	116200	8273310
Line 5 to CH2	10	110790	7932540
CH2 Total	23	248320	17689710
Line1 2 3 to CH3	3	28730	2508460
Line 4 to CH3	14	145850	11315530
Line 5 to CH3	19	218070	14922520
CH3 Total	36	390650	28746510
Grand Total :	59	638970	46436220

Approval on the Figures :-

CH 2

CH 3

TAC

Marketing Planning

3- TAC / DownStream

Company	Crucible (No)	Daily/Month to Date (Kg)	
BAI	1	4380	592130
BAMCO	3	31540	1054140
BWC	3	31520	1793690
MIDAL	20	216700	19385970
Total :	27	284140	22825930

Approval on the Figures :-

TAC

Marketing Planning

4 CH Products / Marketing

Product	No of Bundles	Weight (Kg)	Tonnage (Kg)
Billet	263	490517	29848427
R.Slab	23	184490	8077405
Std.Ingot	0	0	0
Std.4xxx	0	0	9665584
Tee.Ingot	0	0	0
Prop 1xxx	0	0	0
Prop 4xxx	44	46731	671121
Total	330	721738	48262537

Approval on the Figures :-

Marketing Planning

*This Report will not match Confirmed Date Dependent Reports

7.1.13. Crucible Statistics Report

The crucible statistics report provides a detailed view of each crucible from where it has been tapped, how much it weighs, type of weight, analysis, where it has been sent , on daily/weekly/AP/yearly per crucible bases. There are different types of this report as shown in the options below



Crucible Statistics Report



Date :	28-05-2015	<input type="button" value=""/>	Line :	1	<input type="button" value=""/>
Shift :	Morning	<input type="button" value=""/>	Room :	1	<input type="button" value=""/>
			Casthouse :	ALL	<input type="button" value=""/>

View Report in Excel



Metallurgy - Casthouse



Crucible Statistics Report

Report Comments
 Start Date/Time : 26/05/2015 22:45 End Date/Time : 27/05/2015 22:44 Casthouse : CALL.
 Year : 2015 AP: 5 Week: 22 Day: 27 Line : 1 Room: 1

DATE	CHARGE	CRUCIBLE	% Si	% Fe	% AL	TILT CHARGE	TILT CRUCIBLE	POT NO	GROSS	NET	TARE WEIGHT	FURNACE
POTROOM 1												
27/05/2015 00:37	1363911	A06	0.0411	0.0772	99.86	1363686	S03	1333 1335 1337		5633		
						1363915	S01	1311 1329		23380	11460	11920
27/05/2015 01:05	1363914	A10	0.0356	0.0809	99.86	1363685	S03	1323 1325 1327		5806		
27/05/2015 01:38	1363918	A02	0.0468	0.0660	99.86	1363604	S01	1319 1321 1331		23710	11490	12220
27/05/2015 02:31	1363921	A06	0.0519	0.0693	99.86	1363681	S01	1307 1309 1315		5084		
27/05/2015 03:37	1363923	A40	0.0301	0.0590	99.89	1363683	S03	1313 1317		22690	11480	12610
27/05/2015 03:52	1363925	A02	0.0443	0.0744	99.87	1363680	S03	1301 1303 1305		5100		
27/05/2015 04:16	1363928	A08	0.0484	0.0621	99.87	1363811	S01	1117 1119 1121		18440	5100	13340
27/05/2015 08:19	1364035	A02	0.0412	0.0710	99.87	1363805	S02	1101 1103 1105		5167		
27/05/2015 09:02	1364037	A06	0.0378	0.0872	99.85	1363807	S01	1109 1111 1123		23730	10990	12100
27/05/2015 09:19	1364040	A03	0.0372	0.0766	99.86					5731		
										23300	11080	12220

* Manually Entered Crucible » Manually Weighed Crucible
 ALUMINIUM BAHRAIN B.S.C. (c)
 P.O. Box 570 - Manama • Kingdom of Bahrain

Format No : CAS-008 Rev.No : 3.1 Rev. Date: 25/05/2008
 Page 1 of 3
 28/05/2015 8:52

8. Casthouses

8.1 Process Orders Screens

8.1.1. Allocate Process Order

This, screen shows orders that have been, selected based on Sales Order Planning screen.

To see the details of the furnace assigned to the process order that process order row must be selected. Text color in furnace row will be blue for orders that are, scheduled for the next 2 days. Black text indicates that order is in progress or possibly falling behind the scheduled time. For example if current shift is from 6:45 - 14:45 then anything that is before 6:45 am will appear in black text. Linked sales orders will have a '*' appended at the end of the sales order number.

Furnace dropdown shows furnaces that are closed and available for allocation which means that they do not have any process order currently allocated to them. When order is, selected, Furnace dropdown will be, updated to show only furnaces valid for selected product type.

Start Date	Caster	Furnace	Sales Order	Order Item	Alloy	Movement	Cut Length	Width	Diameter	Planned Length	Select
26/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004048113*	000010	6060.07	126242	5800	0	178	7522	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126321	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126322	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126323	5800	0	178	7870	Select
29/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048035	000010	6060.07	126268	5800	0	178	6106	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048036*	000010	6060.07	126325	5800	0	178	7720	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048039*	000010	6060.07	126306	5800	0	178	7810	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048039*	000010	6060.07	126307	5800	0	178	7690	Select

To allocate a process order, the operator selects an order and clicks on "Accept" button(this button is not available to planners). The real furnace, selected from the dropdown will be, validated and selected order's diameter will be, checked against furnace size settings in Furnace DC configuration. Size currently assigned to Furnace is, displayed in the dropdown next to the furnace name. Process Order is also, validated for alloy, product and dimensions. If any validation fails, allocation will not proceed.

When orders are, allocated to the furnace, Caster Name in TPE50 and TPE01 will be, updated to the caster assigned to the selected Furnace. For example, if order has been originally, scheduled to be casted on CL02 but the furnace that it is being assigned to, is configured for CL01, the record in TPE50 and TPE01 will show CL01.

If later operator chooses to Swap PO from Manage Furnace screen and selects another order for example one scheduled on CL03, the caster on the order we are swapping to will be, updated to whatever caster is, assigned to the order we are swapping from. Note that once the caster info is, updated it cannot be reverted to previous configuration as per scheduler.

Continuous Casting Checkbox will only be visible in Casthouse 2 for Slngots of alloy type 1070.02. This is read-only indicator and will always be set to true.

To filter list of production orders use dropdowns to select furnace and Caster then click "List" button.

If this screen is launched from Manage Furnace (Swap PO button), only orders for the same product, alloy and size will appear. Furnace allocation dropdown will not be available.

8.1.2. Sales Order Planning

This screen shows sales orders that are currently in the system. From this screen, planners choose which orders should be produced. Clicking on “Import Schedule” button imports newly scheduled sales orders (from Production Scheduler’s output).

Production Tracking-Casthouse 3 - Sales Order Planning

Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Go to... ▾

Sales Order Planning

Tracking Application		26/3/2006 11:17:50	Team Shift: B-2											
SO PLANNING														
Planned Production Order Weight (kg)		Number of Batches:		17										
Assigned Production Weight (Kg)		Caster		All										
Remaining Production Weight (Kg)		Product		Billet										
				Submit										
Scheduled Sales Orders														
Move SO #	SO Item	Furn. Start Dt.	Customer	Linked SO Alloy	Deliv. Date	Length (mm)	Size (mm)	Weight (Kg)	Plan Drop Length					
<input type="checkbox"/> 256	0004019793	000010 23/02/2006 00:00:00	ALUSUISSE TRADING LTD.		6063.33 31/07/2005	530	152	47013	7870					
<input type="checkbox"/> 257	0004019793	000010 23/02/2006 00:00:00	ALUSUISSE TRADING LTD.		6063.33 31/07/2005	530	152	47013	7870					
<input checked="" type="checkbox"/> 224	0004019597	000010 24/02/2006 00:00:00	ALUSUISSE TRADING LTD.	0004019248	6063.33 31/07/2005	5800	203	42728	7910					
<input type="checkbox"/> 225	0004019597	000010 24/02/2006 00:00:00	ALUSUISSE TRADING LTD.	0004019248	6063.33 31/07/2005	5800	203	42728	7910					
<input type="checkbox"/> 241	0004019597	000010 22/02/2006 00:00:00	ALUSUISSE TRADING LTD.		6063.33 31/07/2005	5800	203	40000	6196					
SAP Sales Orders - (Short Logs)														
SO Number	SO Item	Customer	Product	Alloy	Delivery Date	Cut Length (mm)	Diameter (mm)	SO Weight (Kg)	Planned/Produced (Kg)	Balance (Kg)				
0004019247	000010	ALUSUISSE TRADING LTD.	01_BILLET	6063.33	31/05/2005	680	203	295000	0					
0004019248	000010	ALUSUISSE TRADING LTD.	01_BILLET	6063.33	31/05/2005	580	203	294000	0					
0004019251	000010	ALUSUISSE	01_BILLET	6063.33	31/05/2005	500	200	60000	0					
Status Message										Run MRP	Import Schedule	De-Link	Link	Plan

Scheduled Sales Orders are Inside Orders that come from Production Scheduler. These can be long and short cut length orders. Outside Scheduler Orders are, known as Short length (less than 2m) Sales Order that have not been, scheduled.

Sales orders are, uniquely identified by Sales Order number and Sales Order Item. Large sales orders are broken into smaller process orders (movements). Each row is associated with a unique movement. For example, Sales Order for 100 tons can be, divided into five process orders where each process order is, allocated to a different furnace.

To choose specific order for processing, operator would mark checkbox of the order row and click on “Plan” button. When row’s checkbox is marked, summary fields at the top are, updated with total weights of selected process orders. Only one Sales Order number can be, processed at a time. If operator tries to select a row with sales order number other than the one in the rows that are already, selected, warning message will be, displayed.

Clicking on “Remove” button changes the status of the order in SAP sales order table to Closed.

For orders that have been, selected for allocation “Remove” button will be grayed out. To enable the “Remove” button the user should first remove the check mark and click on Accept button.

In the Scheduled Sales Orders grid, on Large Sales Orders records there will be “Select” button, which allows operator to link long orders with short orders from the Outside Scheduler. When “Select” button is, clicked on a long sales order record a list of short orders available for linking will appear.

To link short order to a large order operator needs to click on “Select” button in the bottom grid.

Row with linked orders will be, displayed in red text and order number of a linked short order will show up in Linked SO field. “De-Link” button un-links linked orders.

“Run MRP” button is, used by the operators to set a flag for UBH to read and download the sales orders.

8.1.3. Sales Order Tracking

This screen will list all confirmed bundles on that sales order. At first page loads empty and once SO Number and SO Item are, entered, clicking query button will populate the screen with data.

Clicking on “SO Info” button will show Sales Orders details screen. Clicking on “More Details” button will show bundle details in view only mode. (Version that can be, edited is invoked from “Bundle Management” screen.)

Clicking on “Cancel” button will reload the page to the initial status

Production Tracking-Casthouse 3 - Sales Order Tracking

Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Go to... ▾

Sales Order Tracking

Tracking Application		Team Shift: B-2																																																																											
SALES ORDER TRACKING																																																																													
SO Number	0004022219	SO Item	000010																																																																										
Required Bundles	348	Required Weight (Kg)	1000000																																																																										
Current Bundles	120	Current Weight (Kg)	344211																																																																										
Outstanding Bundles	228	Outstanding Weight (Kg)	655789																																																																										
		Query	SO Info																																																																										
		Cancel																																																																											
<table border="1"> <thead> <tr> <th>SAP Process Order</th> <th>Bundle No(Batch)</th> <th>Bundle No(Unit)</th> <th>Cast Number</th> <th>Weight</th> <th>Location</th> </tr> </thead> <tbody> <tr><td>000006003909</td><td>3029563</td><td>1</td><td>999011/2</td><td>2874</td><td>A05001</td></tr> <tr><td>000006003909</td><td>3029564</td><td>2</td><td>999011/2</td><td>2872</td><td>A05001</td></tr> <tr><td>000006003909</td><td>3029565</td><td>3</td><td>999011/2</td><td>2873</td><td>A05001</td></tr> <tr><td>000006003909</td><td>3029566</td><td>4</td><td>999011/2</td><td>2871</td><td>A05001</td></tr> <tr><td>000006003909</td><td>3029567</td><td>5</td><td>999011/2</td><td>2872</td><td>A05001</td></tr> <tr><td>000005003075</td><td>3029899</td><td>6</td><td>999054/1</td><td>2867</td><td>a05003</td></tr> <tr><td>000005003075</td><td>3029900</td><td>7</td><td>999054/1</td><td>2870</td><td>a05003</td></tr> <tr><td>000005003075</td><td>3029901</td><td>8</td><td>999054/1</td><td>2871</td><td>a05003</td></tr> <tr><td>000005003075</td><td>3029902</td><td>9</td><td>999054/1</td><td>2866</td><td>a05003</td></tr> <tr><td>000005003075</td><td>3029903</td><td>10</td><td>999054/1</td><td>2869</td><td>a05003</td></tr> <tr><td>000005003075</td><td>3029904</td><td>11</td><td>999054/1</td><td>2867</td><td>a05003</td></tr> </tbody> </table>						SAP Process Order	Bundle No(Batch)	Bundle No(Unit)	Cast Number	Weight	Location	000006003909	3029563	1	999011/2	2874	A05001	000006003909	3029564	2	999011/2	2872	A05001	000006003909	3029565	3	999011/2	2873	A05001	000006003909	3029566	4	999011/2	2871	A05001	000006003909	3029567	5	999011/2	2872	A05001	000005003075	3029899	6	999054/1	2867	a05003	000005003075	3029900	7	999054/1	2870	a05003	000005003075	3029901	8	999054/1	2871	a05003	000005003075	3029902	9	999054/1	2866	a05003	000005003075	3029903	10	999054/1	2869	a05003	000005003075	3029904	11	999054/1	2867	a05003
SAP Process Order	Bundle No(Batch)	Bundle No(Unit)	Cast Number	Weight	Location																																																																								
000006003909	3029563	1	999011/2	2874	A05001																																																																								
000006003909	3029564	2	999011/2	2872	A05001																																																																								
000006003909	3029565	3	999011/2	2873	A05001																																																																								
000006003909	3029566	4	999011/2	2871	A05001																																																																								
000006003909	3029567	5	999011/2	2872	A05001																																																																								
000005003075	3029899	6	999054/1	2867	a05003																																																																								
000005003075	3029900	7	999054/1	2870	a05003																																																																								
000005003075	3029901	8	999054/1	2871	a05003																																																																								
000005003075	3029902	9	999054/1	2866	a05003																																																																								
000005003075	3029903	10	999054/1	2869	a05003																																																																								
000005003075	3029904	11	999054/1	2867	a05003																																																																								

8.1.4. Allocate Wash Cast

This screen is similar to Allocate Process Order screen. It is, used to allocate Process Orders for Wash Cast. These orders will also go through normal route of furnace management and casting. If the material of the wash cast should be, sold, it will go through inspections and bundle management otherwise, the cast material will be, identified as scrap.

Furnace dropdown shows furnaces that are closed and available for allocation which means that they do not have any process order currently allocated to them. When order is, selected, Furnace dropdown will be, updated to show only furnaces valid for selected product type.

Alloy type for wash cast orders is a fake alloy. It is, used as indicator for the screens and background tasks if processing instructions need to be different. Before order is "Allocated", operator needs to choose real alloy type and cut length. Alloy dropdown will display only alloys of the series assigned to selected order. For example, if selected order is 6999.00 then only 6000 series alloys will appear in the drop down.

Cut lengths dropdown lists cut lengths from CUS_BH_PI_SALES_ORDERS table. Only cut lengths for selected product type will appear.

When operator clicks on "Accept" button, confirmation message will be, displayed to verify that selected alloy and cut length are valid. If everything is correct then process order will, be, allocated and new record will appear in Furnace Manage Screen.

Production Tracking-Casthouse 3 - Allocate Wash Cast

Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Go to... ▾

Allocate Wash Cast |

Tracking Application 30/10/2005 14:03:06 Team Shift: C-2

ALLOCATE WASH CAST

Sale Order Number	<input type="text"/>	Furnace	<input type="text" value="CH3_HOLDING_FUR08"/>
Sale Order Item	<input type="text"/>	Caster	<input type="text" value="DC09"/>
Alloy	<input type="text" value="1050.00"/>	Product Type	<input type="text"/>
Wash Cast Weight (kg)	<input type="text"/>	Height (mm)	<input type="text"/>
Cut Length (mm)	<input type="text"/>	Width (mm)	<input type="text"/>
Diameter (mm)	<input type="text"/>		

Sales Order	Order Item	Alloy	Width (mm)	Diameter (mm)
0004099994	000010	6999.00	229	
0004099978	000010	5999.00	1030	0

Status Message

8.1.5. Planned Batch

This is monitoring screen, which shows all information on current casts and sales orders on the shop floor. Page will originally load blank and to see records operator needs to select search criteria and click on "List Batches" button.

By default, open process orders/ batches will load. To see closed orders select "Include Closed Batches" checkbox and enter sales Order number. **Closed orders will be, displayed in purple text.**

Production Tracking-Casthouse 3 - Planned Batch												
Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Go to... ▾												
Planned Batch												
Tracking Application 30/10/2005 10:55:51 Team Shift: C-2												
PLANNED BATCH												
Caster	All											
Furnace	All											
<input type="checkbox"/> Include Closed Batches												
SAP PO	SO No.	Cut Length (mm)	Caster	Cast (Kg)	1st Insp (Kg)	Cut (Kg)	CastID	Alloy	Size (mm)	Planned Length(mm)	Act. Length (mm)	
000005001304	0004020074	7315	DC09	56213	50583	30421	110767/1	6063.49	178	7711	7840	
000005001392	0004020113	5800	DC10	45169		0	110860/1	6063.38	178	6196	2600	
000005001564	0004020303	5500	DC09	42982		0	111083/1	6063.33	178	5896	2500	
000005001573	0004020247	6800	DC11	48590	48521	38974	111006/1	6063.33	216	7196		
000005001589	0004019900	5500	DC10	43435	42278	37611	111021/1	6061.01	203	5896		
000005001595	0004020243	5800	DC11	41222		22944	111040/1	6063.33	216	6196	6210	
000005001631	0004020310	5800	DC10	45645	38581	33496	*111082/1	6063.33	203	6196	6210	
000005001685	0004020342	7000	DC10	54485		0	111138/1	6063.33	203	7396	7260	
000005001814	0004020421	5800	DC11	38105		27969	111200/1	6063.33	152	6196	7000	
000005001839 (00006002095)	0004020410 (0004020435)	5800 (680)	DC10	55413		0	111260/1	6063.33	203	7522	4800	
000005001847 (00006002083)	0004020323 (0004020411)	5800 (500)	DC09	55915	53844	41621	*111245/1	6063.33	178	7670	7555	
000005001972	0004020205	500	DC11	50116	9788	24960	*111360/1	6063.33	152	7958	7840	
000005001976	0004020421	5800	DC11	48302	32863	22536	*111389/1	6063.33	152	7670	7600	
000005001978	0004020454	5800	DC11	48302	514	0	*111395/1	6063.33	152	7670	7670	
000005001990	0004020272	5800	DC10	47062		25777	111386/1	6063.34	229	6196	6200	
000005001992	0004020453	530	DC11	49562	33841	28474	111407/1	6063.33	152	7870	7850	
000005001997	0004020268	5800	DC10	47062		0	111408/1	6061.01	229	6196		
000005001999	0004020275	5800	DC10	47062		0	111431/1	6061.01	229	6196		

If logs have been re-allocated * will be displayed next to the Cast ID and tooltip will show re-allocation info.

If log has been allocated but later scrapped (Cast Id status = 2), reallocation will not be taken into account (* will not show next to the batch number). Valid reallocations are on those logs that were, inspected as ok and partial scrap. If complete log is, scrapped it is out of the inspection screens.

SAP PO	SO No.	Cut Length (mm)	Caster	Cast (Kg)	1st Insp (Kg)	Cut (Kg)	CastID	Alloy	Size (mm)	Planned Length(mm)	Act. Length (mm)	
000005002686	0004020836	5800	DC09	47062	44986	39325	112002/1	6063.50	229	6196	6250	
000005002687	0004020836	5800	DC09	46370	39449	29647	112004/1	6063.50	229	6196	6238	
000005002690	0004020836	5800	DC09	47062	47062	43263	112012/1	6063.50	229	6196	6200	
000005002691	0004020836	5800	DC09	45678	45678	32250	112015/1	6063.50	229	6196	6280	
000005002692	0004020836	5800	DC09	47062	45678	34843	*112017/1	6063.50	229	6196	6250	

 [SO:0004020897, SAP PO:00006003125 (Logs:1)]
Closed

Drops that are not casted will not show on this screen.

8.2 Furnace Screens

8.1.6. Manage Furnace

This screen is, used, to monitor and manage furnace contents. The top part shows all open furnaces. Furnace description can have (CONTINUOUS) or (WASH CAST) appended to it. CONTINUOUS indicates Continuous casting which is, used in Casthouse 2 for Slngot of alloy type 1070.02. WASH CAST indicates that furnace was, assigned to an order with fake alloy (e.g. 6999.00). Wash Cast will be show in "washed" blue color.

Clicking on the “Calculator” button will launch Furnace Calculator screen. Clicking “Select” on specific row will populate Planned Cast and Furnace Contents grids with information related to selected furnace/batch id.

From the Planned Cast grid, operator can click on “SO Details” button to see Sales Order details.

MANAGE FURNACE CONTENTS A-2							
Select	Furnace Batch No.	Furnace	Current Weight (Kg)	Required Weight (Kg)	Capacity (Kg)	Planned Length (mm)	Alloy
Select	365797	REMELTING FURNACE 3 IN CASTHOUSE 2	61680	50000	70000	0	1070.02 Calculator
Select	366771	REMELTING FURNACE 7 IN CASTHOUSE 2	62590	150000	73000	0	4543.08 Calculator
Select	366816	REMELTING FURNACE 9 IN CASTHOUSE 2 (CONTINUOUS)	19525	50000	40000	0	1070.02 Calculator

If it is necessary to re-assign entire batch to a different Sales Order operator can click on “Swap PO” button. The Allocate Process Order screen will be, launched from where operator can select another Sales Order from Inside Scheduler for the same product, alloy and size. Once order is, selected new PO is, created for selected order and old PO is closed.(Note that the functionality is of Allocate Process Order screen is, altered when called from Manage Furnace screen.)The Operator should opt for SWAP PO only when he wants to change the PO with another of the same alloy (but can be of a different DC size – after changing Furnace DC to required size). He should use Alternate Alloy Check if he needs to move to another alloy.

The bottom of the screen shows furnace contents. Elements that are off spec are highlighted in red. In case of Sodium (Na), it is also possible to see yellow highlight if the value exceeds Maximum Allowed value specified in Tracking Parameters (see appendix). This indicator will only be visible for Slags of alloy type 1070.02.



Casthouse Furnaces

MANAGE FURNACE CONTENTS A-2

Select	Furnace Batch No.	Furnace	Current Weight (Kg)	Required Weight (Kg)	Capacity (Kg)	Planned																		
Select	363270	HOLDING FURNACE 2 IN CASTHOUSE 3	89634	599272	73000	5425																		
Select	363283	REMELTING FURNACE 3 IN CASTHOUSE 3	68998	42283	73000	6106																		
Select	363283	REMELTING FURNACE 3 IN CASTHOUSE 3	68998	42283	73000	6106																		
Select	365316	HOLDING FURNACE 1 IN CASTHOUSE 3	67850	42311	73000	6106																		
Select	366752	REMELTING FURNACE 4 IN CASTHOUSE 3	48493	42281	73000	7810																		
Select	366794	HOLDING FURNACE 1 IN CASTHOUSE 3	68984	42283	73000	7870																		
Select	366799	REMELTING FURNACE 9 IN CASTHOUSE 3	62543	37788	73000	7988																		
Select	366803	HOLDING FURNACE 6 IN CASTHOUSE 3	15233	42281	73000	7870																		
Select	366804	HOLDING FURNACE 5 IN CASTHOUSE 3	10557	42281	73000	7870																		
Select	366805	HOLDING FURNACE 8 IN CASTHOUSE 3	39135	36545	73000	6106																		
Select	366806	HOLDING FURNACE 7 IN CASTHOUSE 3	30290	36526	73000	6106																		
Planned Cast																								
SO Number	SO Item	Alloy	Weight (Kg)	Width (mm)	Diameter (mm)	CutLen																		
0004048035	000010	6060.07	42281	0	178	5800																		
Furnace Content - Elements																								
Type	Id	Weight (Kg)	Si	Fe	Mn	Mg	Cu	Ti	Sr	B	Be	Cr	Ni	Ga	Ca	Li	Na	V	Bi	Zn	Zr	Cd	Hg	Pb
HEEL	366766	8929	0.4159	0.1835	0.0149	0.4604	0.0087	0.0080	0.0000	0.0001	0.0000	0.0012	0.0043	0.0091	0.0002	0.0000	0.0013	0.0128	0.0007	0.0023	0.0006	0.0000	0.0000	0.001
Scrap	5005.05	1628	0.0850	0.3500	0.0750	0.8500	0.0140	0.0170	0.0000	0.0150	0.0000	0.0400	0.0150	0.0150	0.0000	0.0000	0.0000	0.0150	0.0000	0.0150	0.0000	0.0000	0.0000	0.0000

Rows colored blue indicate charges that were manually weighed.

8.1.7. Swap PO (accessed from Manage Furnace screen)

This screen appears when operators click on “Swap PO” button on Manage Furnace screen. For example one scheduled on CL03, the caster on the order we are swapping to, will be, updated to whatever caster is, assigned to the order we are swapping, from. Note that once the caster info is, updated it cannot be reverted to previous configuration as per scheduler.



Casthouse Common

Team Shift: A-2

ALLOCATE PROCESS ORDER											
Sales Order Number	0004047944										
Sales Order Item	000010										
Product	Billet_6063.10_0178_0000										
Alloy	6063.10										
Planned Production Order Weight (kg)	42283										
Assigned Production Weight (Kg)	42283										
Remaining Production Weight (Kg)	-126849										
Movement ID	126323										
<input type="button" value="Long Text"/> <input type="button" value="Swap PO"/> <input type="button" value="Cancel"/> <small>* indicates linked order.</small>											
Filter By:	Furnace	All Furnaces	Caster	▼	List						
Start Date	Caster	Furnace	Sales Order	Order Item	Alloy	Movement	Cut Length	Width	Diameter	Planned Length	Select
26/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004048113*	000010	6060.07	126242	5800	0	178	7522	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126321	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126322	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126323	5800	0	178	7870	Select
29/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048035	000010	6060.07	126268	5800	0	178	6106	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048036*	000010	6060.07	126325	5800	0	178	7720	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048039*	000010	6060.07	126306	5800	0	178	7810	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048038*	000010	6060.07	126307	5800	0	178	7600	Select

8.2.1. Furnace Calculator (accessed from Manage Furnace screen)

This screen appears if the user clicks on “Calculator” button on Manage Furnace Contents screen. Top grid shows calculated values and allow operators to update target values.

Bottom part matches bottom section from Manage Furnace screen. Rows colored blue indicate charges that were manually weighed.

Elements that are off spec are showed in bold red. In case of Sodium (Na), it is also possible to see yellow highlight if the value exceeds Maximum Allowed value specified in Tracking Parameters (see appendix).

Table rows with enabled check box can be, reversed (for example if scrap accidentally, added to the furnace, that entry can be reversed).

The operator can close the batch from here provided, that Rush Sample exists and results from LIMS have been received. Batches that are closed will appear on “Casting” screen.

Casthouse Furnaces																			
FURNACE CALCULATOR																			
Furnace		REMELTING FURNACE 3 IN CASTHOUSE 3						Batch Started		28/12/2012 20:52									
Furnace Batch No.		363283			Alloy		6063.10												
Furnace Temperature		0 °C			Dross Pans Used		Select Dross Pans Used												
Furnace Calculator - Elements																			
Type	Weight	Si	Fe	Mn	Mg	Cu	Ti	Sr	B	Be	Cr	Ni	Ga	Ca	Li	Na	V	Bi	Zn
MINIMUM		0.4300	0.1500	0.0400	0.4600	0.0000	0.0070	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MAXIMUM	72000	0.4700	0.1800	0.0500	0.5000	0.0100	0.0140	0.0000	0.0000	0.0000	0.0100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	
TARGET	42283	0.4500	0.1650	0.0450	0.4800	0.0000	0.0105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
USER DEFINED		0.4400	0.1650	0.0400	0.4800	0.0000	0.0110	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
CURRENT	68998	0.9287	0.3129	0.0811	0.9485	0.0151	0.0261	0.0000	0.0001	0.0000	0.0024	0.0042	0.0204	0.0003	0.0000	0.0014	0.0230	0.0006	0.002
Furnace Content - Elements																			
Type	ID	Weight	Si	Fe	Mn	Mg	Cu	Ti	Sr	B	Be	Cr	Ni	Ga	Ca	Li	Na	V	Bi
HEEL	363214	24266	0.4208	0.2047	0.0208	0.4790	0.0104	0.0145	0.0000	0.0005	0.0000	0.0047	0.0037	0.0104	0.0003	0.0000	0.0013	0.0128	0.0006
Transfer	CH3_FUR02-363270	21000	0.4480	0.1699	0.0433	0.4728	0.0022	0.0094	0.0000	0.0000	0.0000	0.0016	0.0051	0.0106	0.0002	0.0000	0.0013	0.0135	0.0006
Charge	1026598 (A31)	10920	0.0440	0.0803	0.0013	0.0009	0.0002	0.0059	0.0000	0.0000	0.0000	0.0005	0.0029	0.0098	0.0002	0.0000	0.0087	0.0111	0.0000
Charge	1026574 (A20)	10590	0.0431	0.1268	0.0015	0.0009	0.0003	0.0053	0.0000	0.0000	0.0000	0.0005	0.0085	0.0096	0.0000	0.0000	0.0011	0.0109	0.0000
Alloy	SILICON 99% LUMP	95	99.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Alloy	MANGANESE 80%	16	0.0000	0.0000	80.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Buttons

Close Batch : Clicking this button will close selected batch and this furnace is once again available for allocation.

Furnace will re-appear in Process Orders for allocation and this process order will, not be showing In Manage Furnace screen. Closed batch will appear in Casting.

Before the batch can be closed rush sample must be taken.

Require Sample : Clicking this will create 3 Analysis rows for Casthouse 3If all numbers are at 0 this means that There results from metallurgy department are not yet available. In order to get results click on Refresh button. It sends call to LIMS and refreshes the screen. If results are available and are Off spec, then these some numbers will be red.

Type	Weight	Si	Fe	Mn	Mg	Cu	Ti	Sr	B	Be	Cr	Ni	Ga	Ca	Li	Na	V	Bi	Zn
MINIMUM		0.4300	0.1500	0.0400	0.4600	0.0000	0.0070	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MAXIMUM	72000	0.4700	0.1800	0.0500	0.5000	0.0100	0.0140	0.0000	0.0000	0.0100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	
TARGET	42283	0.4500	0.1650	0.0450	0.4800	0.0000	0.0105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
USER DEFINED		0.4400	0.1650	0.0400	0.4800	0.0000	0.0110	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
CURRENT	68998	0.9287	0.3129	0.0811	0.9485	0.0151	0.0261	0.0000	0.0000	0.0024	0.0042	0.0204	0.0003	0.0000	0.0014	0.0230	0.0006	0.0002	

Furnace Content - Elements																			
Type	ID	Weight	Si	Fe	Mn	Mg	Cu	Ti	Sr	B	Be	Cr	Ni	Ga	Ca	Li	Na	V	Bi
HEEL	363214	24266	0.4208	0.2047	0.0208	0.4790	0.0104	0.0145	0.0000	0.0005	0.0000	0.0047	0.0037	0.0104	0.0003	0.0000	0.0013	0.0128	0.0006
Transfer	CH3_FUR02-363270	21000	0.4480	0.1699	0.0433	0.4728	0.0022	0.0094	0.0000	0.0000	0.0000	0.0016	0.0051	0.0106	0.0002	0.0000	0.0013	0.0135	0.0006
Charge	1026598 (A31)	10920	0.0440	0.0803	0.0013	0.0009	0.0002	0.0059	0.0000	0.0000	0.0000	0.0005	0.0029	0.0098	0.0002	0.0000	0.0087	0.0111	0.0000
Charge	1026574 (A20)	10590	0.0431	0.1268	0.0015	0.0009	0.0003	0.0053	0.0000	0.0000	0.0000	0.0005	0.0085	0.0096	0.0000	0.0000	0.0011	0.0109	0.0000
Alloy	SILICON 99% LUMP	95	99.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Alloy	MANGANESE 80% TABLET	16	0.0000	0.0000	80.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Alloy	MAGNESIUM 99.8% INGOT	111	0.0000	0.0000	0.0000	96.8060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Scrap	6063.10	2000	0.4500	0.1650	0.0450	0.4800	0.0050	0.0105	0.0000	0.0000	0.0000	0.0050	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ANALYSIS	363283-1	68998	0.4440	0.1492	0.0406	0.4601	0.0050	0.0115	0.0000	0.0001	0.0000	0.0024	0.0040	0.0102	0.0002	0.0000	0.0013	0.0134	0.0007
ANALYSIS	363283-2	68998	0.4610	0.1514	0.0412	0.4717	0.0051	0.0108	0.0000	0.0001	0.0000	0.0024	0.0042	0.0105	0.0003	0.0000	0.0014	0.0128	0.0006
ANALYSIS	363283-3	68998	0.4711	0.1581	0.0414	0.4738	0.0052	0.0109	0.0000	0.0001	0.0000	0.0024	0.0043	0.0106	0.0003	0.0000	0.0014	0.0128	0.0006
FINAL AVG	363283/1	68998	0.4700	0.1600	0.0400	0.4800	0.0100	0.0150	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.0000	0.0000	0.0000	0.0100	0.0000
EAR	363283/1	68998																	
ANALYSIS	363283-4	68998																	
ANALYSIS	363283-5	68998																	
ANALYSIS	363283-6	68998																	

- Add Alloy : Loads simulator for adding alloy.
- Add Scrap : Loads simulator for adding scrap (list of scrap that is available on the stockpile)
- Heel Weight : Clicking on this button opens up “**Heel Weight**” Popup through which operators can update The actual heel weight.
- Transfer Out : Clicking on this button opens up “**Transfer**” Popup through which operators can transfer Some metal from one furnace to another. “Transfer Out” button is initially disabled. To enable sample must be, requested by clicking on “Require Sample” button.
- Reverse Entry : For the checkboxes that are, enabled, clicking on this button will remove selected lines.
- Refresh : Updates furnace content with actual weight, temperature and LIMS Analysis results.
- Long Text : Note entries
- Back : Return to the previous screen

8.2.2. Add Scrap (accessed from Furnace Calculator screen)

This screen appears when the user clicks on “Add Scrap” button on Manage Furnace Calculator screen. Enter scrap weight and click “Simulate”, button to see how addition of this scrap will affect current furnace content.

Aim here is to add scrap metal to the furnace content (by entering selected quantity). Once simulation is working fine then just click on “Add to Furnace” button. This will take you back to the Furnace Calculator screen and the line of scrap that was just, added will appear on the list.

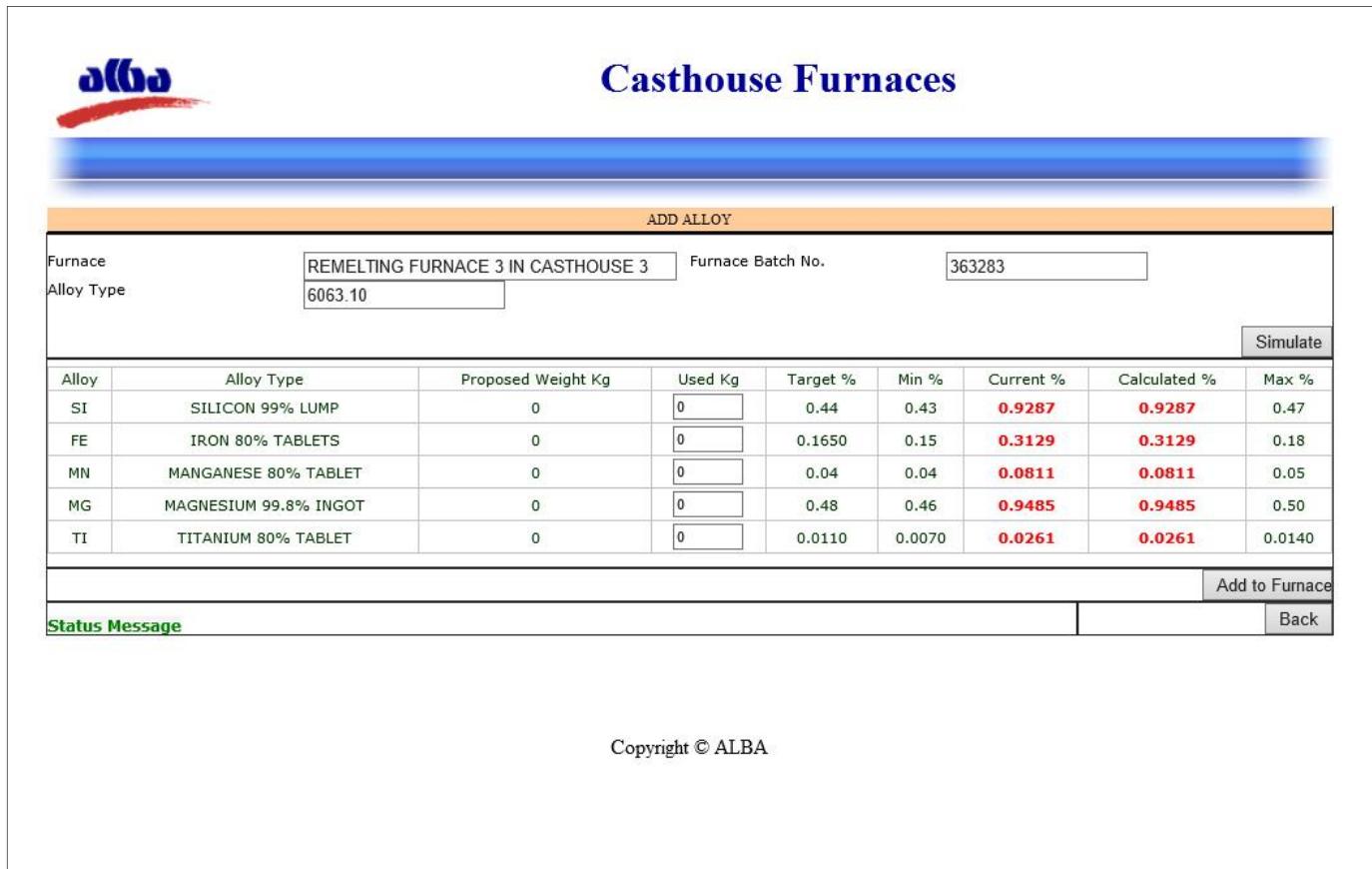
The screenshot shows the ALBA Casthouse Furnaces software interface. At the top, there is a logo and the title "Casthouse Furnaces". Below this, a banner says "Team Shift: A-2" and "ADD SCRAP". The main area has fields for "Furnace" (REMELTING FURNACE 3 IN CASTHOUSE 3) and "Furnace Batch No." (363283), with a "Target Alloy" dropdown set to 6063.10. A search bar at the top right includes filters for "Location" (Casthouse 3), "Family" (All Families), and "Type" (All Types). A table lists scrap items with columns for Scrap Family, Location, Type, and Weight (Kg). The table shows several entries for 6060.07 SCRAP, all categorized as Billet, with weights ranging from 4921 to 2133322. Below the table, specific details are shown: Scrap Family: 6060.07 SCRAP, Location: Casthouse 3, Type: Billet, and Weight: 2133322 Kg. There is a "Select" column with checkboxes next to each row. A "Cast Number/LIMS No." input field is empty. To the right, there are buttons for "Select Quantity" (0 Kg), "Simulate", and "Add to Furnace". At the bottom, a table provides detailed chemical composition data for various elements (SI, FE, CU, MN, MG, CR, B) with columns for Scrap %, Target %, MIN %, CURRENT %, CALCULATED %, and MAX %. The "CURRENT %" and "CALCULATED %" columns are highlighted in red.

Element	Scrap %	Target %	MIN %	CURRENT %	CALCULATED %	MAX %
SI	0.04	0.44	0.43	0.31	0.3022	0.47
FE	0.09	0.1650	0.15	0.1532	0.1514	0.18
CU	0	0	0	0.0045	0.0044	0.01
MN	0	0.04	0.04	0.0217	0.0211	0.05
MG	0	0.48	0.46	0.3289	0.3194	0.50
CR	0	0	0	0.0022	0.0021	0.01
B	0.0010	0	0	0.0002	0.0002	0

8.2.3. Add Alloy (accessed from Furnace Calculator screen)

This screen loads upon clicking “Add Alloy” button from Furnace Calculator screen. Here the operator can simulate different scenarios for adding required elements to the alloy.

Only elements that are, needed for specific alloy will appear here. Proposed weight is pre-calculated and “Used Kg” defaults to these values. As values are, entered into the Used Kg column and Simulate button is, clicked, calculations will be, performed and “Calculated %” will display the forecasted percentage. If calculated value violates Min/Max boundaries, it will be, displayed in red-bolded text.



The screenshot shows the ALBA Casthouse Furnaces software interface for adding alloys. At the top, there's a logo and the text "Casthouse Furnaces". Below that is a header bar with "ADD ALLOY" and a sub-header "Furnace: REMELTING FURNACE 3 IN CASTHOUSE 3, Furnace Batch No: 363283". The main area contains a table for adding five different alloys:

Alloy	Alloy Type	Proposed Weight Kg	Used Kg	Target %	Min %	Current %	Calculated %	Max %
SI	SILICON 99% LUMP	0	0	0.44	0.43	0.9287	0.9287	0.47
FE	IRON 80% TABLETS	0	0	0.1650	0.15	0.3129	0.3129	0.18
MN	MANGANESE 80% TABLET	0	0	0.04	0.04	0.0811	0.0811	0.05
MG	MAGNESIUM 99.8% INGOT	0	0	0.48	0.46	0.9485	0.9485	0.50
TI	TITANIUM 80% TABLET	0	0	0.0110	0.0070	0.0261	0.0261	0.0140

Below the table, there are "Simulate" and "Add to Furnace" buttons. A "Status Message" field is at the bottom left, and a "Back" button is at the bottom right. The footer says "Copyright © ALBA".

Once simulation is satisfactory, the operator can click on “Add to Furnace” button. This will take you back to the Furnace Calculator screen and the alloys that were just, added will appear in the furnace content.

8.2.4. Furnace DC

This screen is, used to assign DC Configuration, Caster, Station and Size of the caster to the furnace. Station/Size configuration can only be, changed for furnaces, which are no longer in casting.

Data configured here is, used by the following screens “Casting”, “Process Order Allocation”, and “Process Order Re-Allocate” (Alternate Alloy Check).

Caster configuration is only, enabled for Casthouse 2.

Configuration for Furnace cannot be, changed unless all batches assigned to those furnaces have been, inspected in First Inspections, which would indicate that they have been successfully casted and furnace is available for allocation.

ALBA

Casthouse Furnaces

Team Shift: A-2

FURNACE DC

Furnace	Caster	Station / Size
CH2_REMELT_FUR09	▼	DC6 - 1350 X 460 ▼

Status Message

Back Update

Copyright © ALBA

8.3 Cast Screens

8.3.1. Casting

This screen shows all closed batches from Furnace Calculator. Lower part of this screen shows Furnace content Elements exactly as shown in the lower part of Managed Furnace screen. Elements that are off spec appear in bold red. Rows colored blue indicate charges that were manually weighed.

The bottom of the screen shows furnace contents. Elements that are off spec are highlighted in red. In case of Sodium (Na), it is also possible to see yellow highlight if the value exceeds Maximum Allowed value specified in Tracking Parameters (see appendix).

This indicator will only be visible for Slugs of alloy type 1070.02. Once cast is, created and closed batch id will no longer be visible on the casting screen. Clicking "Casting" button redirects to the screen, which allows to, create cast.

Clicking on "Refresh" button updates LIMS Analysis results.

CASTING A-2						
Select	Furnace Batch No.	Furnace	Current Furnace Weight (Kg)	Planned Furnace Weight (Kg)	Capacity (Kg)	Planned Length (mm)
Select	366808/1	REMELTING FURNACE 4 IN CASTHOUSE 2	26641	48888	70000	5115

8.3.2. Casting – Orders (accessed from “Casting” screen)

This screen shows batch that has not yet been casted (drop has not been created) and bottom grid shows Sales Order that has not been assigned to the cast. In this case, clicking on “Re-Open Batch” will take cast back to the Mange Furnace stage and batch has to be, closed again in order to proceed with casting.

The reason for re-opening could for example be that the furnace has been standing for too long and they need to “re-analyze” the content before they can proceed with casting.

If there is no need to re-open batch, the next step would be to click on “Select” button on Sales Order grid to allocate sales order for casting and “Add Cast” button should be, clicked to create a drop and drop items.

Add Cast will proceed only if station configuration and cast size for the furnace match specifications for selected sales order.

At this time FINALAVG sample request will be, recorded in the LIMS. In addition if alloy is 4543.07, 4543.09, 4543.10, 4543.12, 4543.13, 4543.14, 4543.15, 4543.16, 4543.19, 4544.00 or 4544.01 Rush sample will be registered.

The screenshot shows the ALBA Casthouse Furnaces software interface. At the top, there is a logo and the title "Casthouse Furnaces". Below the title, it says "Team Shift: A-2". The main area is titled "CASTING". It contains fields for "Furnace Batch No." (366808), "Furnace Number" (CH2_REMELT_FUR04), "Product Type" (RIngot), "Caster Name" (DC06), "Station [Size]" (DC6 - 1350 X 460), and "Location" (empty). There is a red "Request Sample" button. To the right, there are buttons for "Sow Used" (radio buttons for Small and Large, Small is selected), "Sow Content" (dropdown menu set to "Please Select"), and "SO Info" (button). Below these are buttons for "Long Text", "Re-Open Batch", "Close Cast", and "Add Cast". A note says "* indicates linked order." At the bottom, there is a table for "Sales Orders" with columns: Cast No., Caster Name, Planned Drop Weight (Kg), Planned Drop Length (mm), Status, On/Off Spec, SO Number, Order Item, Storage Location, SO Info, and Add Sow. One row is shown: 366808/1, DC06, 60256.21, 5115, CREATED, N, 0004048099, 000120, empty, SO Info, Add Sow. At the very bottom, it says "Copyright © ALBA".

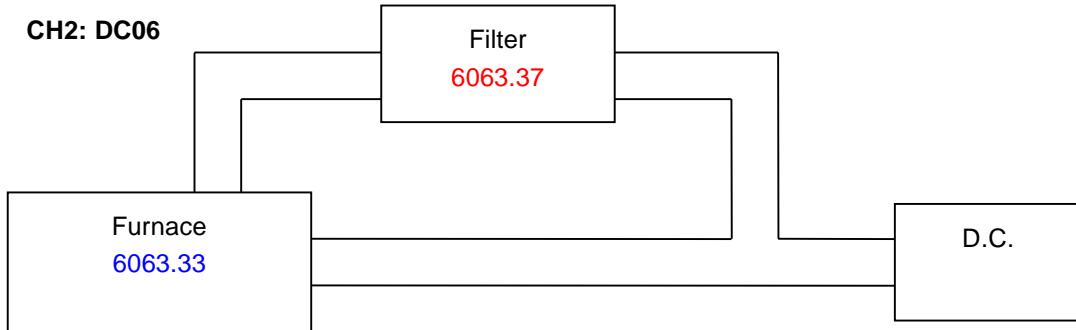
In Casthouse 2, for **RIngot**s casted on DC06 when filtration is required (indicated by check on the Sales Order Detail from) clicking on Add Cast button will first verify whether previous order casted with filtration was for a different alloy.

If alloy was, in fact different Rush Sample 75 and Final Sample 1A will be, generated. The intent of this sample is to verify that traces of previous alloy have been, washed out from the filter. In addition, planned length, and head and butts for these orders will be, increased by additional 300 cm.

(See Alloy Change for RIngot in Troubleshooting section for more detailed info).

Filter is never fully drained, if alloy is different than the one required for the sales order, the drop needs to be longer than usual (e.g. 6675 instead of 6196). Samples need to be taken to, verify the purity of an alloy before the drop can be, used to fulfill process order for a different alloy.

Example where 6063.37 needs to be washed out before cast for 6063.33 can start



The next screenshot shows Sales Order that has been assigned so there are no records under Sales Order section.

Cast No.	Caster Name	Planned Drop Weight (Kg)	Planned Drop Length (mm)	Status	On/Off Spec	SO Number	Order Item	StorageLocation	SO Info	Add Sow
366808/1	DC06	60256.21	5115	CREATED	N	0004048099	000120			

In the grid, Cast number is, created from furnace batch id and drop number, Note: Linked orders are, indicated by a *. When there is no record in the bottom grid, the "Add Cast" button will be, disabled. When another Sales Order is, allocated another record will appear in bottom grid, then the "Add Cast" button will be, enabled again.

To create drop manually find out DC for that PO and the size then find out station mould.

“Manual Drop” button will be, displayed for Continuous casting of **SIngots** of alloy type 1070.02 for which one drop already exists.

Under normal circumstances, drops will be, created automatically based on info received from PLC. However, in some cases it is necessary to create these drops manually.

Records will be, created in TPE19, TPE61, TPE03, and TPE63.

Close Cast button should be, used for continuous casting of SIngots and Properzi. For Billets, RIngots and TIngots cast will be, closed automatically when cast is first, inspected.

8.3.3. Cast Recovery

This screen is, used to calculate the efficiency of the cast. Here calculated values cannot be, modified. Information displayed on the screen varies depending on the product type.

All recovery and efficiency is, recalculated every hour by the background process AUTO_CALC_EFF, which runs Pe_K09_Pit_Efficiency.PE_P54_AutoCalcEfficiency procedure.



Casthouse Furnaces

CAST RECOVERY/EFFICIENCY

Furnace Batch No:	340223	Drop Number:	1
Caster:	CL01	Total Cast Weight (Kg):	40269
Planned Number of Logs:	1804	Approved Cast Weight (Kg):	40269
Actual Number of Logs: (Planned - Not Casted)	1804		
Cast Recovery:	100		
QC Scrap:	100		
		Clear	Calculate
Calculated Successfully!		Back	

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8.3.4. Cast Tracking

This screen is used to view information on a particular Cast. It will show last two casts only. Casts that are in first inspection will not show up on this screen. The bottom grid shows furnace contents: alloy elements and pseudo elements. Elements that are off spec are, highlighted in red. In case of Sodium (Na), it is also possible to see, yellow highlight if the value exceeds Maximum Allowed value specified in Tracking Parameters (see appendix).

Caster name depends on a Casthouse:

CH2 → CL01, CL02, CL03, CL04, DC06
CH3 → DC09, DC10, DC11

Clicking on Refresh button will update Furnace Contents grids.

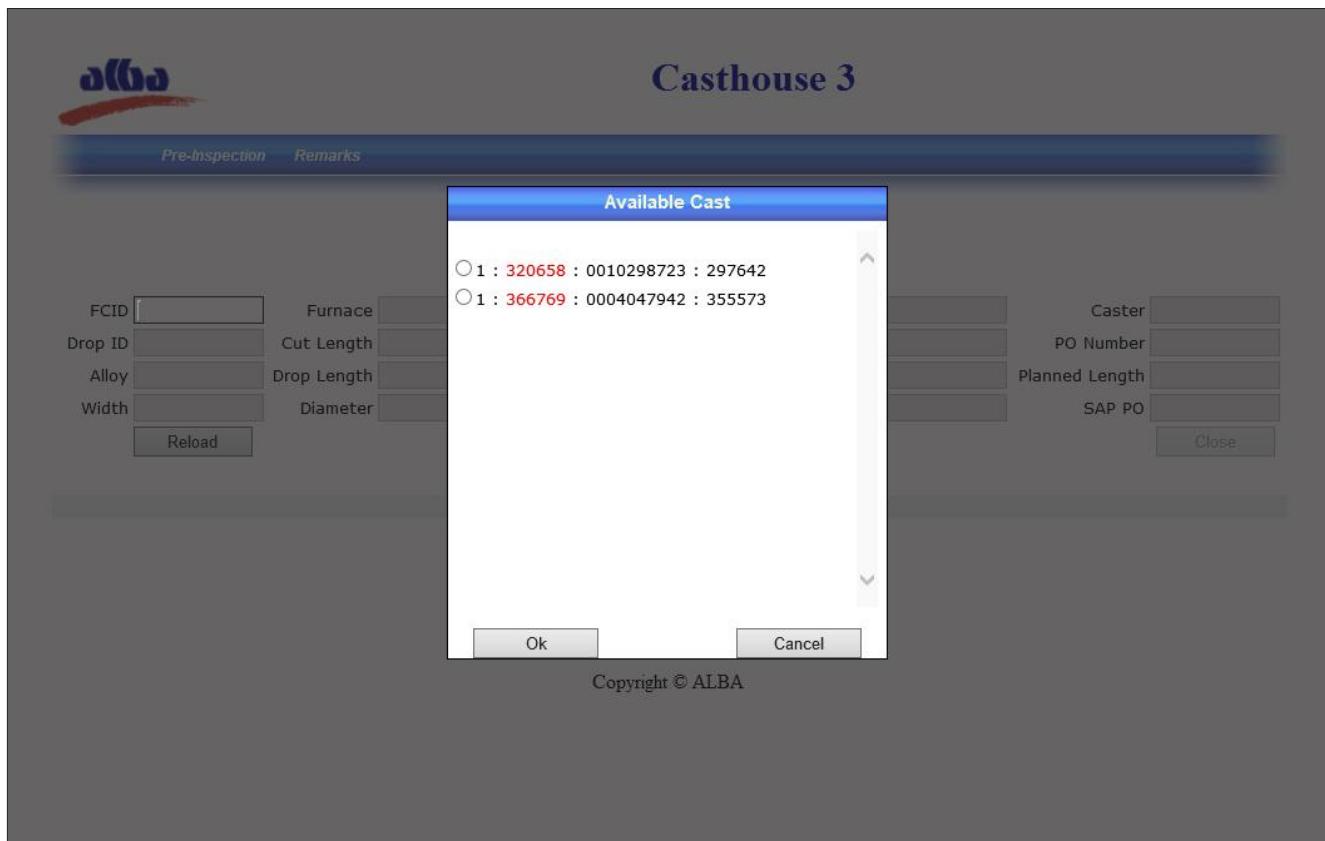
Type	Id	Weight (Kg)	Si	Fe	Mn	Mg	Cu	Ti	Sr	B	Be	Cr	Ni	Ga	Ca	Li	Na	V	Bi	Zn	Zr	Cd	Hg	Pb	Sn	P	Sb	Bl	Other Al
HEEL	111640	4000	0.44000	1.9000	0.00000	0.51000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
ANALYSIS	111641-14000	0.44000	1.9000	0.00000	0.51000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
ANALYSIS	111641-24000	0.44000	1.9000	0.00000	0.51000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
ANALYSIS	111641-34000	0.44000	1.9000	0.00000	0.51000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
FINAL	111641/14000	0.44000	1.9000	0.00000	0.51000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
AVG	111641/14000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
ANALYSIS	111641/1A	4000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
ANALYSIS	111641-75	4000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

8.3.5. Pre Inspection

Pre-Inspection screen is, used by casting operator to identify logs that are not casted.

In this stage cast can be, aborted. Clicking on “Abort” button will popup “Abort Cast” screen. This option is, used in case there is something wrong in the caster and cast cannot proceed.

The following screen shot, illustrates, a popup screen to choose which cast to be pre-inspected.



Based on the diameter of the selected cast, number of DC holes will show up on the screen. In addition, details, of that cast will be, populated as well. As illustrated on the following screen shot.

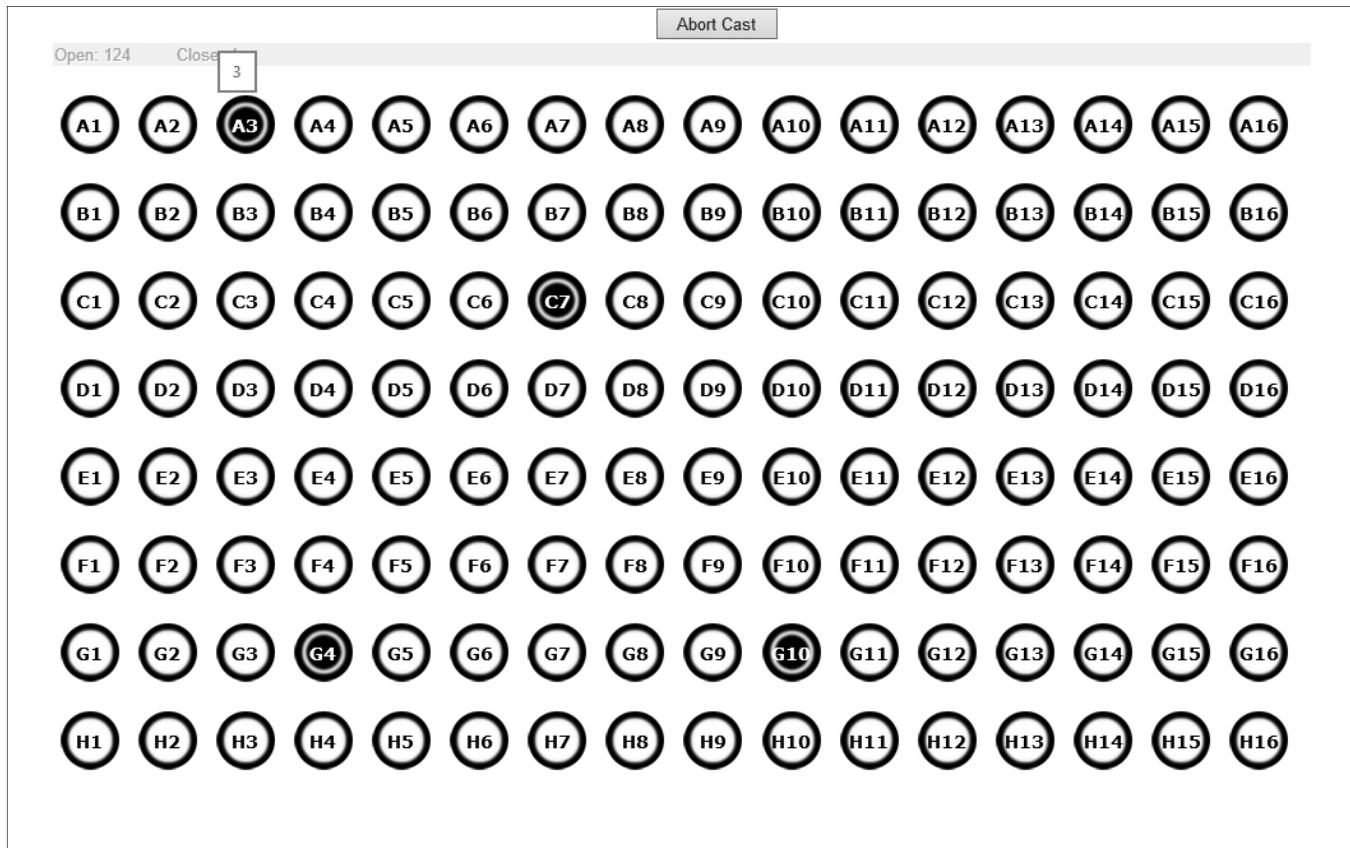
The screenshot shows the 'Casthouse 3' application interface for pre-inspection. At the top, there's a logo and tabs for 'Pre-Inspection' and 'Remarks'. The main area is titled 'Pre-Inspection' and contains various input fields and buttons:

- FCID:** 366769
- Furnace:** HOLDING FURNACE 8 IN CASTHOUSE 3 (BCHB5573)
- Caster:** DC11
- Drop ID:** 1
- Cut Length:** 5800
- Wash Cast:** N
- On Spec:** Y
- PO Number:** 355573
- Alloy:** 6063.36
- Drop Length:** [empty]
- Product:** Billet
- Location:** [empty]
- Planned Length:** 6106
- Width:** [empty]
- Diameter:** 152
- Height:** 0
- Sliced:** N
- SAP PO:** 000005120750
- Buttons:** Reload, Abort Cast, Close

Below the input fields, status messages say 'Open: 124' and 'Close: 4'. The bottom half of the screen displays a grid of 16 circular inspection points, each labeled with a code:

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16

Finally yet importantly, operator can simply click on those moulds to toggle them, as closed or open. In addition, number of closed or open moulds would be displayed on a gray ribbon beneath the "Abort", button. As illustrated on the following screenshot.



8.4 Scrap Screens

8.4.1. Add Scrap Inventory

This screen is, used to add to the scrap stockpile. Each Casthouse has different alloys and products.

Here, operator can create new records by selecting from the dropdowns and clicking “Add” button or edit weight on existing item by first selecting a record and clicking on “Edit” button. At that, time dropdowns and “Add” button will be, disabled and new weight can be, entered or “Get Weight” button can be, clicked to get weight from the scale’s tag. Clicking on “Update” button will update the weight entered.

Production Tracking-Casthouse 3 - Add Scrap Inventory

Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Casthouse Reports ▾ Go to... ▾

Add Scrap Inventory

Tracking Application 25/9/2005 13:32:44 Team Shift: A-2

ADD SCRAP INVENTORY

Scrap Family	6005.01 SCRAP	Weight (Kg)	
Scrap Location	Casthouse 3	Scrap Source	CH3_DC09
Type	Dross		

Cancel Get Weight Add Update

Family	Type	Location	Weight (Kg)	
6063.33 SCRAP	Dross	Casthouse 3	99132	Edit
6005.01 SCRAP	Dross	Casthouse 3	48770	Edit
6063.50 SCRAP	Dross	Casthouse 3	9870	Edit
6063.49 SCRAP	Dross	Casthouse 3	6772	Edit
6061.01 SCRAP	Dross	Casthouse 3	4360	Edit
6063.34 SCRAP	Dross	Casthouse 3	1190	Edit
6063.42 SCRAP	Dross	Casthouse 3	2593	Edit
6063.33 SCRAP	Compacted Swarf	Casthouse 3	2638	Edit

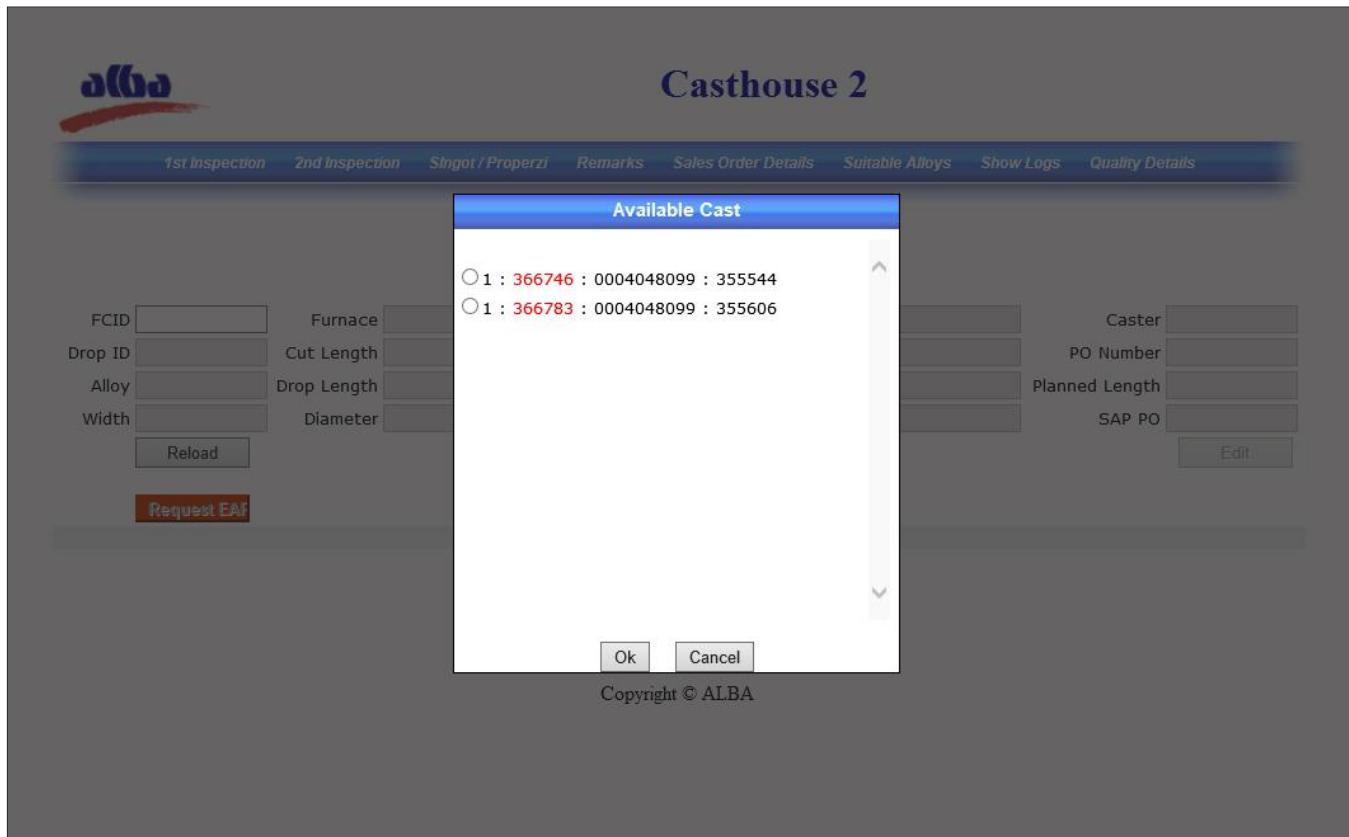
Status Message

8.5 Finished Products Screens

8.5.1. First Inspection

This screen is very similar to Pre-Inspection screen. It shows what has been “Closed” in pre-inspection.

Here operator can selects which cast to be, inspected.



8.5.2. First Inspection Details

After operator selects the cast to be, inspected, details will be, populated, and only logs in CREATED state (Not inspected yet) will be, showed.

In this stage, inspector can specify, whether, log is, normal, defective, scrap, or partially scrapped.

When log inspected and inspection criteria has been, accepted by the system, the log automatically, disappeared from this stage and moved to second inspection phase.

The screenshot shows the ALBA MES interface for the First Inspection of a cast. The top navigation bar includes links for 1st Inspection, 2nd Inspection, Singot / Properzi, Remarks, Sales Order Details, Suitable Alloys, Show Logs, and Quality Details. The main title 'Casthouse 2' is displayed prominently. The 'First Inspection' section contains various input fields: FCID (366783), Furnace (REMELTING FURNACE 5 IN CASTHOUSE 2 (BGHB5606)), Caster (DC06), Drop ID (1), Cut Length (4860), Wash Cast (N), On Spec (N), PO Number (355606), Alloy (5052.00), Drop Length (7000), Product (Ringot), Location (), Planned Length (5115), Width (), Diameter (0), Height (460), Sliced (N), SAP PO (000005120700), and an 'Edit' button. Below these fields is a red 'Request EAF' button. A message 'CREATED: 7' is displayed above a table. The table lists seven pieces, each with a status of 'CREATED' and no defects, along with their weight (8608.03) and status. The columns are labeled: Piece, Cast Status, Defect, Defect Length, Reason, Weight, and Status.

Piece	Cast Status	Defect	Defect Length	Reason	Weight	Status
1	CREATED	No Defects	0		8608.03	
2	CREATED	No Defects	0		8608.03	
3	CREATED	No Defects	0		8608.03	
4	CREATED	No Defects	0		8608.03	
5	CREATED	No Defects	0		8608.03	
6	CREATED	No Defects	0		8608.03	
7	CREATED	No Defects	0		8608.03	



Casthouse 2

1st Inspection 2nd Inspection Singot / Properzi Remarks Sales Order Details Suitable Alloys Show Logs Quality Details

First Inspection

FCID	366783	Furnace	REMELTING FURNACE 5 IN CASTHOUSE 2 (BGHB5606)	Caster	DC06	
Drop ID	1	Cut Length	4860	Wash Cast	N	
Alloy	5052.00	Drop Length	7000	Product	Ringot	
Width		Diameter	0	Height	460	
			Sliced	N		
			Location		Planned Length	5115
					SAP PO	000005120700
					Save	

Request EAR From: To: As: CREATED From: To: As:

Piece	Cast Status	Defect	Defect Length	Reason	Weight	Bundle No	Status
1	CREATED	No Defects	0		8608.03		
2	CREATED	No Defects	0		8608.03		
3	CREATED	No Defects	0		8608.03		
4	CREATED	No Defects	0		8608.03		
5	CREATED	No Defects	0		8608.03		
6	CREATED	No Defects	0		8608.03		

To inspect logs, you need to click on “Edit” button, and you will end up with the above setup. You can intuitively interact with the menu.

The disabled drop down lists, and text boxes, will be, enabled according to your cast status selection, as they are, needed by the predefined and agreed rules.

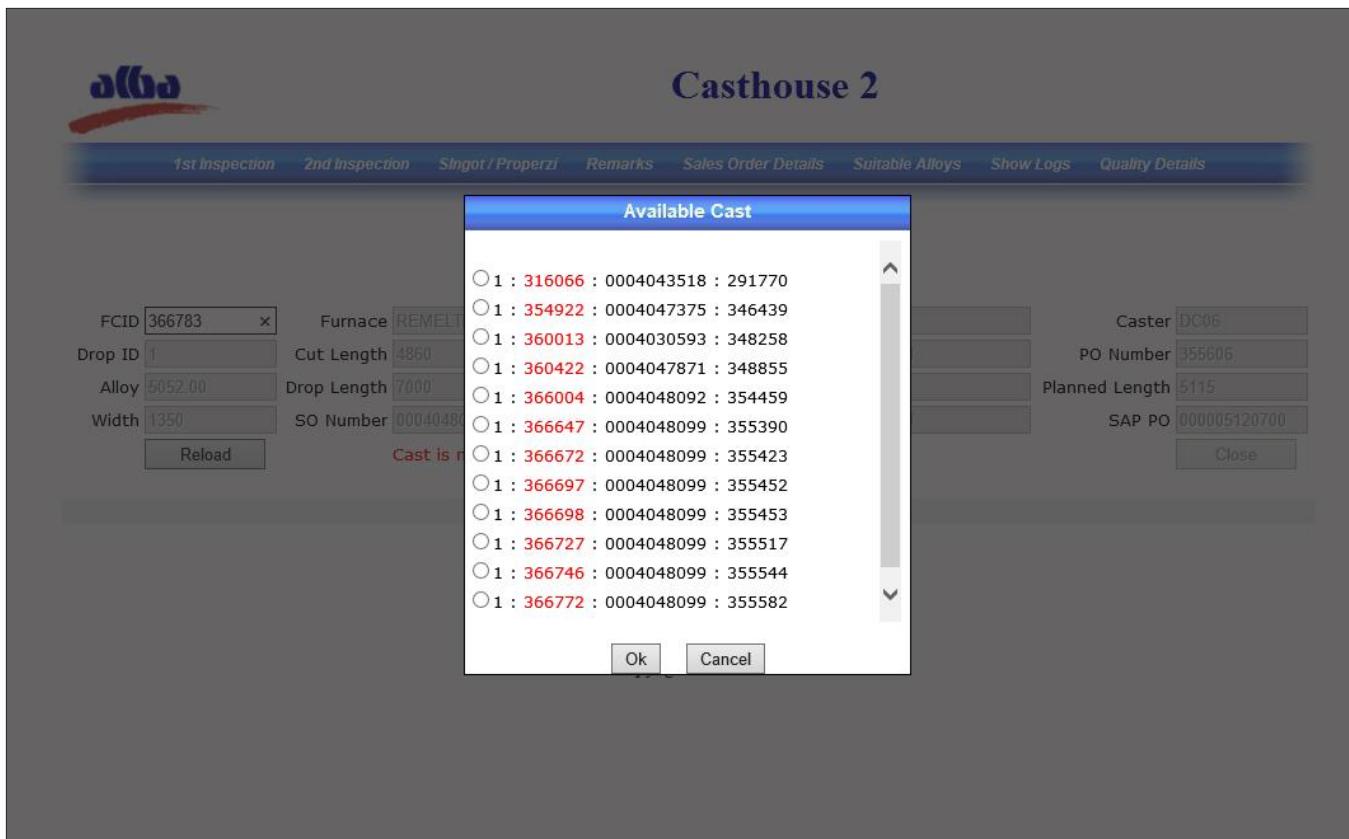
Once editing done, inspector can simply reflect changes to system, by clicking “Save” button. Upon successful inspection, inspected logs, disappeared and transferred to “Second Inspection” screen.

If ear sample, was not register in the system, “Request EAR” button will be, enabled for manual registrations of EAR Sample.

8.5.3. Second Inspection

This screen is the same as first inspection. Inspector, need to select which cast to be, inspected.

Only casts that passed first inspection screen will be, showed here. Except, Scraped logs.



8.5.4. Second Inspection Details

In this stage, inspector performs the last and final detailed inspection, before confirming the final good logs to be bundled.

Here the inspection can be, closed, if and only if, the cast is on specification, and the weight of produced go logs are meeting the tolerance of production weight rule.

Disposition field, is necessarily filled, when inspector changing a log status from “NORMAL” to “HOLD” or vice versa.



Casthouse 2

[1st Inspection](#) [2nd Inspection](#) [Singot / Properzi](#) [Remarks](#) [Sales Order Details](#) [Suitable Alloys](#) [Show Logs](#) [Quality Details](#)

Second Inspection

FCID	360013	Furnace	REMELTING FURNACE 6 IN CASTHOUSE 2 (BGHB8258) (WASH CAST)	Caster	DC06
Drop ID	1	Cut Length	4860	Wash Cast	<input checked="" type="checkbox"/>
Alloy	3999.00	Drop Length	5500	On Spect	<input type="checkbox"/> N
Width	1650	SO Number	0004030593	Product	Ringot
Reload		Cast is not ON SPEC!!!			

348258

5115

000006426576

ChangeToDisposition

Reason

From:

To:

Cast Status	Defect	Defect Length	Reason	Weight	Piece	Bundle No	Status	Disposition
NORMAL					Edit	1		Test
NORMAL					Edit	2		Test
NORMAL					Edit	3		Test
NORMAL					Edit	5		Test
NORMAL					Edit	6		Test
NORMAL					Edit	7		Test

8.5.5. Inspection History

Provides the history of cast bundle inspection , provides bundle status and sales order distribution.

U11769@PRD,137,81,TR_INSP_HIST_7T,,INSPECTION HISTORY,FNL_V4G																																																																																																												
Cast Information <table border="1"> <tr> <td>Cast ID</td> <td>472796</td> <td>ON SPEC</td> <td>Y</td> <td>Status</td> <td>COMPLETE</td> <td colspan="4"></td> </tr> <tr> <td>Drp ID</td> <td>1</td> <td>Cast Aborted</td> <td>N</td> <td>Abort Date</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>Caster</td> <td>DC11</td> <td>Plan Head Butt</td> <td>290</td> <td>Plan Head Butt Weight</td> <td>2202</td> <td colspan="4"></td> </tr> <tr> <td>Product</td> <td>Billet</td> <td>Act Head Butt</td> <td>290</td> <td>Act Head Butt Weight</td> <td>2202</td> <td colspan="4"></td> </tr> <tr> <td>Actual Length</td> <td>7660</td> <td>Good Logs Weight</td> <td>1711</td> <td>Date Casted</td> <td>15-AUG-2015</td> <td colspan="4"></td> </tr> <tr> <td>Actual Weight</td> <td>58161.46</td> <td>Abort Classification</td> <td></td> <td></td> <td></td> <td colspan="4"></td> </tr> <tr> <td>Cut Weight</td> <td>48849</td> <td>Abort Reason</td> <td></td> <td></td> <td></td> <td colspan="4"></td> </tr> <tr> <td>Remaining to be cut</td> <td>8821</td> <td>Furnace</td> <td>REMELTING FURNACE 9 IN CASTHOUSE 3</td> <td></td> <td></td> <td colspan="4"></td> </tr> <tr> <td colspan="10">Remarks</td> </tr> </table>										Cast ID	472796	ON SPEC	Y	Status	COMPLETE					Drp ID	1	Cast Aborted	N	Abort Date						Caster	DC11	Plan Head Butt	290	Plan Head Butt Weight	2202					Product	Billet	Act Head Butt	290	Act Head Butt Weight	2202					Actual Length	7660	Good Logs Weight	1711	Date Casted	15-AUG-2015					Actual Weight	58161.46	Abort Classification								Cut Weight	48849	Abort Reason								Remaining to be cut	8821	Furnace	REMELTING FURNACE 9 IN CASTHOUSE 3							Remarks																		
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8.5.6. Hold Items

This screen provides the lists of casts that have items on hold. Also provides the list of items on hold for the selected cast.

Hold Drops								
Caster	Cast Id	Drop	SO Number	Furnace	Product	Alloy	SO Pieces	
DC06	465976	1	0004058458	REMELTING FURNACE 4 IN CASTHOUSE 2	RIngot	3005.00	36	
DC06	466382	1	0004058724	REMELTING FURNACE 5 IN CASTHOUSE 2	RIngot	8079.03	18	
DC06	466638	1	0004058733	REMELTING FURNACE 4 IN CASTHOUSE 2	RIngot	5052.00	60	
DC06	466669	1	0004058733	REMELTING FURNACE 4 IN CASTHOUSE 2	RIngot	5052.00	60	
DC06	466892	1	0004058811	REMELTING FURNACE 6 IN CASTHOUSE 2	RIngot	5052.00	90	
DC06	467099	1	0004058811	REMELTING FURNACE 5 IN CASTHOUSE 2	RIngot	5052.00	90	
DC06	467194	1	0004058464	REMELTING FURNACE 4 IN CASTHOUSE 2	RIngot	5052.00	60	
DC06	467219	1	0004058464	REMELTING FURNACE 5 IN CASTHOUSE 2	RIngot	5052.00	60	
CL03	468871	1	0004058831	REMELTING FURNACE 7 IN CASTHOUSE 2	SIngot	4543.12	54	
DC06	470425	1	0004059002	REMELTING FURNACE 6 IN CASTHOUSE 2	RIngot	3005.00	60	
DC06	470588	1	0004059002	REMELTING FURNACE 5 IN CASTHOUSE 2	RIngot	3005.00	60	
DC06	470978	1	0004059215	REMELTING FURNACE 5 IN CASTHOUSE 2	RIngot	8021.00	5	

Items				
Item	Batch No	Weight	Status	Reason
1	7071410	972	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
2	7071413	1004	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
3	7071415	993	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
4	7071417	968	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
5	7071419	975	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
6	7071421	959	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
7	7071423	946	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
8	7071425	936	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
9	7071426	923	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
10	7071428	943	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
11	7071430	979	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES
12	7071444	968	HOLD	WRONG ASSIGN NEED TO CHANGE TO 54 PIECES

Total Weight Count

8.5.7. Logs Re-Allocation

This screen provides a facility to re allocate casted items or logs to another sales order with the same alloy. It also allows user to check for alternate alloy.

The screenshot shows the 'LOG REALLOCATION SCREEN - CH3,FNL_V4G' window. The 'Cast Details' section contains fields for Fc Id (410274), Furnace (HOLDING FURNACE), Abort Other, Cast Aborted (N), Casthouse (CH3), Drp (1), Product Description (Billet), Height (0), Classification, PO Number (417036), Product (3), Diameter (178), Furnace Number (362), Caster (DC09), Alloy (6060.03), Width (0), Linked Po Number, So Number (0004053035), Reason, Cut Length (5800), Cast Status (Y), So Item (000030), So Quantity (350000), Currentbundleweight (347909), Outstandingweight (2091). The 'New Sales Order Details' section has radio buttons for 'SO Reallocate' (selected) and 'Alternative Alloy Check'. The 'Log Details' section contains a table with columns: Item Number, Status, Weight, DefectWeight, Total Weight, Cut Length, Defect length. The table lists items 9 through 18, all marked as NORMAL with a weight of 410.99, total weight of 410.99, cut length of 5800, and defect length of 0.

8.5.8. Bundle Management

Bundle Management screen is, used for managing bundles. Initially this screen loads empty and operator needs to enter search criteria and click "Get Details" button. If selected Status is other than 'CREATED', at least one of Bundle Number, Cast Id or Sales Order must be, entered. Otherwise, date range of when bundles have been, weighted must be specified.

Bundles are, created during second inspection. First inspection sends request then Hertwich makes the bundles and records are, created in Hertwich tables. MES procedure fetches bundle records from this table and populates bundles and bundle items tables.

In this screen, you can confirm, scrap, or delete any bundle, except, Standard Ingot or Properzi bundles, as they are need to be confirmed from their special inspection screen

However, you can still query Standard Ingot or Properzi bundles, from this screen, for statistics purposes, or status verifications.

Bundle Management

Bundle management

Cast	<input type="text" value="366810"/>	SO Number	<input type="text"/>	Alloy	<input type="text"/>	Shift	<input type="button" value="Select"/>	Team	<input type="button" value="Select"/>
Drop	<input type="text"/>	Order Item	<input type="text"/>	Confirm Date	<input type="text"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>
Batch	<input type="text"/>	Saw No	<input type="text"/>	Create Date	<input type="text"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>	<input type="button" value="Select"/>
Casthouse	<input type="button" value="Select Location"/>	Product	<input type="button" value="Select Product"/>	Status	<input type="button" value="Select Status"/>	<input type="button" value="Get Details"/>			
				<input type="button" value="Reload"/>					

<input checked="" type="radio"/> None <input type="radio"/> Created <input type="radio"/> Confirmed From: <input type="text"/> <input type="button" value="Calendar"/> To: <input type="text"/> <input type="button" value="Calendar"/>	<input checked="" type="radio"/> None <input type="radio"/> All <input type="radio"/> Range From Batch: <input type="text"/> To Batch: <input type="text"/>	Status: <input type="button" value="Select Status"/> Location: <input type="text"/> Scrap Type: <input type="button" value="Select"/> <input type="button" value="Apply"/>	Printer: <input type="button" value="Select"/> <input type="button" value="Print"/> <input type="button" value="Export to Excel"/>
---	---	---	--

Details

Batch	Unit	So Number	Location	Gross	Tare	Net	Status	Defect		SO Details	Logs
6064562	1	0010297375	A05001	1000	10	15840	Scrap		Casts	Edit	Show SO
6064563	2	0010297375	A05001	1030	2	1028	Scrap	Ingot Surface Quality	Casts	Edit	Show SO
6064564	3	0010297375	A05001	1100	200	900	Confirmed		Casts	Edit	Show SO
6064565	4	0010297375	A05001	1200	200	1000	Created		Casts	Edit	Show SO
6064566	5	0010297375	A05001	1200	200	1000	Scrap		Casts	Edit	Show SO
6064567	6	0010297375	A05001	1200	200	1000	Created		Casts	Edit	Show SO
6064568	7	0010297375	A05001	2000	990	1010	Scrap		Casts	Edit	Show SO
6064569	8	0010297375	A05001	2000	990	1010	Created		Casts	Edit	Show SO
6064570	9	0010297375	A05001	2000	990	1010	Confirmed		Casts	Edit	Show SO
6064571	10	0010297375	A05001	2000	990	1010	Created		Casts	Edit	Show SO
6064572	11	0010297375	A05001	2000	990	1010	Created		Casts	Edit	Show SO

By hovering over “Details” hyperlink, operator can summon details of each bundle like Alloy, Date of Weight, Pieces, etc. as illustrated below.

To:	<input type="text"/>	<input type="button" value=""/>	To Batch:	<input type="text"/>	<input type="button" value=""/>	<input type="button" value="Apply"/>	<input type="button" value=""/>	<input type="button" value="Export to Excel"/>
Details								
Batches								
	Type	Alloy	Date of Weigh	Pieces	Item	Saw	SAP PO	
606456	(Manual) SIngot	1070.02	2/20/2013 11:17:48 AM	44	000010	0	000006432012	s
606456	(Manual) SIngot	1070.02	9/4/2013 8:18:50 AM	44	000010	0	000006432012	ogs
606456	(Manual) SIngot	1070.02	11/6/2013 10:45:08 AM	44	000010	0	000006432012	ogs
606456	(Manual) SIngot	1070.02	2/20/2013 10:55:19 AM	44	000010	0	000006432012	ogs
606456	(Manual) SIngot	1070.02	2/20/2013 12:18:18 PM	44	000010	0	000006432012	ogs
606456	(Manual) SIngot	1070.02	2/20/2013 10:55:23 AM	44	000010	0	000006432012	ogs
606456	(Manual) SIngot	1070.02	2/20/2013 12:28:06 PM	44	000010	0	000006432012	ogs
606457	(Manual) SIngot	1070.02	2/20/2013 10:56:11 AM	44	000010	0	000006432012	ogs
606457	(Manual) SIngot	1070.02	11/6/2013 10:45:12 AM	44	000010	0	000006432012	ogs
606457	(Manual) SIngot	1070.02	2/20/2013 10:56:14 AM	44	000010	0	000006432012	ogs
606457	(Manual) SIngot	1070.02	2/20/2013 10:56:15 AM	44	000010	0	000006432012	ogs
606457	(Manual) SIngot	1070.02	2/20/2013 10:56:16 AM	44	000010	0	000006432012	ogs
606457	(Manual) SIngot	1070.02	2/20/2013 12:26:20 PM	44	000010	0	000006432012	ogs
606457	(Manual) SIngot	1070.02	2/20/2013 10:56:19 AM	44	000010	0	000006432012	handles: 15
606457	(Manual) SIngot	1070.02	2/20/2013 12:28:09 PM	44	000010	0	000006432012	

Last but not, least, if operator wishes to obtain information about a cast, specific bundle belongs to, he/she can easily have that, by simply hover the mouse pointer over "Cast" option, on the bundles grid, as illustrated below.

Batch	Unit	SO Number	Location	Gross	Tare	Net	Status	Defect	SO Details		Logs
3000003	1	0004020087	A05001	1011	7	1004	Created		Casts	Edit	Show SO Show Logs
3000004	2	0004020087	A05001	1011	7	1004	Created		Casts	Edit	Show SO Show Logs
3000051	3	0004020087	A05001	8	3	5	Created		Casts	Edit	Show SO Show Logs
3000052	4	0004020087	A05001	1008	8	1000	Created		Casts	Edit	Show SO Show Logs
3000060	5	0004020087	A03001	1012	8	1004	Created		Casts	Edit	Show SO Show Logs
3000141	6	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3000231	7	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3000238	8	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3000239	9	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3000240	10	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3000241	11	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3008227	12	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3008228	13	0004020087	A05001	10					Casts	Edit	Show SO Show Logs
3289368	1	0004023966		98					Casts	Edit	Show SO Show Logs
4083507	1	0004031462		915	2	913	Created		Casts	Edit	Show SO Show Logs
4083509	2	0004031462		974	2	972	Created		Casts	Edit	Show SO Show Logs
4083511	3	0004031462		973	2	971	Created		Casts	Edit	Show SO Show Logs
4083513	4	0004031462		969	2	967	Created		Casts	Edit	Show SO Show Logs
4083515	5	0004031462		970	2	968	Created		Casts	Edit	Show SO Show Logs
4083520	6	0004031462		969	2	967	Created		Casts	Edit	Show SO Show Logs
4083529	7	0004031462		946	2	944	Created		Casts	Edit	Show SO Show Logs
4083531	8	0004031462		959	2	957	Created		Casts	Edit	Show SO Show Logs
4083536	9	0004031462		958	2	956	Created		Casts	Edit	Show SO Show Logs
4083538	10	0004031462		957	2	955	Created		Casts	Edit	Show SO Show Logs
4083544	11	0004031462		936	2	934	Created		Casts	Edit	Show SO Show Logs
4083550	12	0004031462		939	2	937	Created		Casts	Edit	Show SO Show Logs
4083553	13	0004031462		934	2	932	Created		Casts	Edit	Show SO Show Logs
4083556	14	0004031462		860	2	858	Created		Casts	Edit	Show SO Show Logs
4083559	15	0004031462		996	2	994	Created		Casts	Edit	Show SO Show Logs
4083564	16	0004031462		996	2	994	Created		Casts	Edit	Show SO Show Logs
4083565	17	0004031462		993	2	991	Created		Casts	Edit	Show SO Show Logs

8.5.9. Odd Logs Reduction

This screen has been newly, developed, based upon Operation Excellence request. The main purpose of the following screen is to accept bundle, with unconventional, number on logs, however, within an agreed tolerance.

Beside the number of logs, its overall functionality, exactly similar to "Manual Bundle" screen, which will be describe in the next section.

Why odd logs are, considered, in this, case? Because, in certain circumstances, customer would accept more logs in a bundle (more than the predefined ones). Which will make the transportsations of required order more efficient, as the whole trailer of the transporter would be, used.

The screenshot shows the 'Sales Order System' interface for 'Odd Bundles'. At the top, there's a logo and a blue header bar with the text 'Odd Bundles'. Below the header, the title 'Sales Order System' is displayed in large blue letters. The main form is titled 'ODD BUNDLES' and contains the following fields:

Sales Order Number	Item Number
<input type="text"/>	<input type="text"/>

Product Type: Billet

Cast 1, Cast 2, Cast 3, Cast 4, Cast 5: Each has two input fields separated by a slash (/).

Cast 1 No of Pieces, Cast 2 No of Pieces, Cast 3 No of Pieces, Cast 4 No of Pieces, Cast 5 No of Pieces: Each has a single input field.

Storage Location:

Gross Weight: Kg

Tare Weight: Kg

Source: BILLET SAW3 IN CASTHOUSE3

Net Weight: Kg

Add button

MAKE SURE THAT YOU ENTER WHAT YOU REALLY WANT!!!

8.5.10. Manual Bundle

When Hertwich is down and bundles are not automatically entered into the system, the following screen can be used to enter bundles manually. Need to know Sales Order, Item Number, and Product Type. That cast must be, linked to the Sales Order that is already in the system.

For billets up to 5 casts can be used to create a bundle. For other products, only one cast can be, used.

Manual Bundles can be, created for all products with exception of RIngot. However, if RIngot order is a wash cast then manual bundle entry will be, allowed. For normal RIngot orders, bundles are, created automatically during second inspection.

The screenshot shows the 'Casthouse Furnaces' software interface. At the top, there is a logo and the title 'Casthouse Furnaces'. Below the title, there are two tabs: 'Manual Bundles' (selected) and 'Confirm Bundles'. The main area is titled 'ADDING BUNDLES'. It contains several input fields and dropdown menus:

- Sales Order Number: [Input Field]
- Item Number: [Input Field]
- Product Type: [Dropdown Menu]
- Cast 1: [Input Field] / [Input Field]
- Cast 2: [Input Field] / [Input Field]
- Cast 3: [Input Field] / [Input Field]
- Cast 4: [Input Field] / [Input Field]
- Cast 5: [Input Field] / [Input Field]
- Storage Location: [Input Field]
- Gross Weight: [Input Field] Kg
- Tare Weight: [Input Field] Kg
- Source: [Dropdown Menu] BILLET SAW3 IN CASTHOUSE3
- Net Weight: [Input Field] Kg
- Add: [Button]

On the right side, there are additional input fields for cast counts:

- Cast 1 No of Pieces: [Input Field]
- Cast 2 No of Pieces: [Input Field]
- Cast 3 No of Pieces: [Input Field]
- Cast 4 No of Pieces: [Input Field]
- Cast 5 No of Pieces: [Input Field]

At the bottom left, there is a 'Status Message' field, and at the bottom right, there is a 'Print' button.

8.5.11. Bundle Transfer

This screen is, used to transfer **confirmed bundles** between Sales Orders with matching specifications. Operator has to enter Sales Order and Item numbers for both orders. Clicking on "Search/Refresh" button will update specs for both Sales Orders and populate the grid with all confirmed bundles for Sales Order operator intends to transfer from (Left side).

To select bundles for transfer operator marks the checkbox in the grid row. The weight of bundles selected for transfer cannot exceed required weight of Sales Order to which bundles are to be transferred. As bundles are transferred weight is, updated on both orders.

Transfer of bundles for Wash Cast orders will not be, allowed from this screen. This operation is, handled entirely in SAP based on stockpile.

Production Tracking-Casthouse 3 - Bundle Transfer

Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Go to... ▾

Bundle Transfer

Tracking Application		31/10/2005 13:19:52		Team Shift: C-2	
SO Number	0004018599	Product	BILLET	SO Number	
SO Item	000010	Alloy	6063.36	SO Item	
Required Weight	140000	Diameter/Width	178	Required Weight	
Actual Weight	1038	Height	0	Actual Weight	
Actual Bundles	1	Cut Length	700	Actual Bundles	0
Location					
<input type="button" value="Search/Refresh"/> <input type="button" value="Clear"/>					
Bundle No(Unit)	Bundle No(Batch)	Gross Weight (Kg)	Tare Weight (Kg)	Net Weight (Kg)	
<input type="checkbox"/> 4020423	3015126	1046	8	1038	
<input type="button" value="Select/Un-Select All"/> <input type="button" value="Transfer"/>					

8.5.12. Created Bundle Transfer

This screen is used to transfer created bundles to another sales order.

8.5.13. Bundle Off Spec Override

Bundles that are off spec, are not automatically transferred to SAP (GR messages). This screen is, used to bypass the process and manually transfer bundles that are off spec to SAP.

Clicking on “Search/Refresh” button will populate the grid with bundles available for entered Furnace/Drop Id.

To transfer, a bundle operator must first select it and click on “Override-Confirm” button.

Production Tracking-Casthouse 3 - Bundle Off Spec Override

Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Go to... ▾

Bundle Off Spec Override

Tracking Application		31/10/2005 13:40:22	Team Shift: C-2				
OFFSPEC OVERRIDE							
Furnace Batch No	111485	Drop ID	[1]	Clear		Search/Refresh	
Bundle No(Unit)	Bundle No(Batch)	SO Number	SO Item	Gross Weight (Kg)	Tare Weight (Kg)	Net Weight (Kg)	
<input type="checkbox"/>	3017487			0	0	0	
<input type="checkbox"/>	3017488			0	0	0	
<input type="checkbox"/>	3017489			0	0	0	
<input type="checkbox"/>	3017490			0	0	0	
<input type="checkbox"/>	3017491			0	0	0	

8.5.14. Bundle Batch Confirm

This screen is, used to confirm bundles. Bundles can be confirmed individually (as in “Bundle Management” screen) or in bulk.

Operator selects bundles to be, confirmed by marking checkbox and clicking on “Confirm” button.

Only bundles for casts that are on spec can be, confirmed here. Off spec bundles will show up in red and will be read-only. If bundles are on spec but do not have a SAP PO they will be, displayed in magenta.



Casthouse Furnaces

Manual Bundles Confirm Bundles

Team Shift: B-2

BUNDLE BATCH CONFIRM

BUNDLE BATCH CONFIRM							
Furnace Batch No		Drop ID		Tare Weight (Kg)			
		365427		1			
2 bundles found.							
Bundle No(Unit)		Bundle No(Batch)		SO Number	SO Item	Gross Weight (Kg)	Tare Weight (Kg)
<input type="checkbox"/> Select	1	6064635	0004047688	000110	2000	80	1920
<input checked="" type="checkbox"/> Select	2	6064636	0004047688	000110	2000	80	1920

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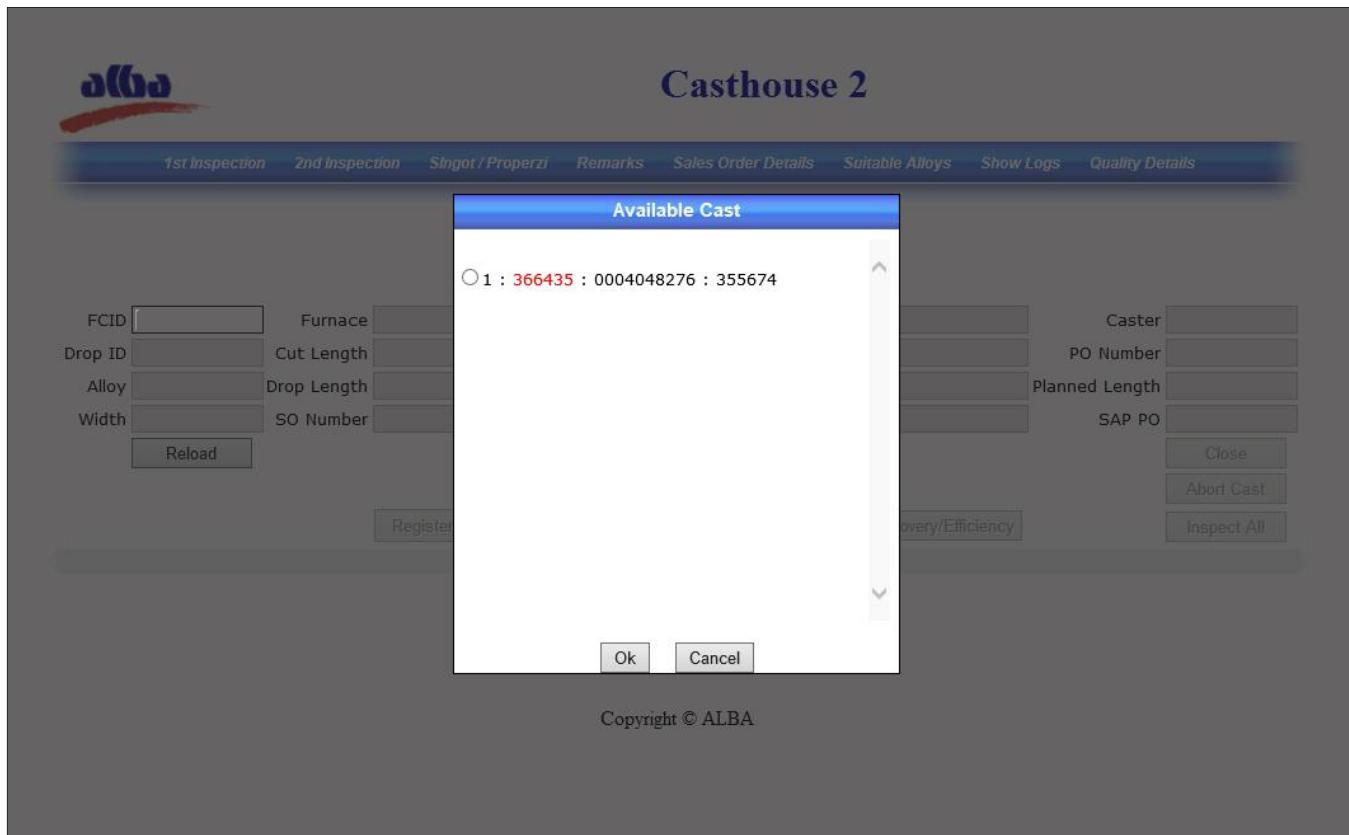
8.5.15. Approve Manual Bundles

This screen is used to approve bundles created manual.

8.5.16. Slngot/Properzi Inspection– (Casthouse 2)

Standard ingots and Properzi are, inspected as bundles.

The selection popup is the same as the ones on Pre, First, and Second Inspections screens.



8.5.17. Slngot/Properzi Inspection Details

Standard ingots and Properzi are, inspected as bundles. If cast is on spec clicking on Inspect will also confirm bundles.

Based upon specialists, however, request, inspector cannot confirm any bundle on this screen, before choosing a Marking Ink.

If sales order is, fulfilled, operator will not be able to inspect bundles. At that, time message will appear to inform operator that order is, fulfilled. Bundles, then, must be either, Re-Allocated, or status of bundles should be, changed to WIP.

Cast Status	Defect	Defect Length	Reason	Bundle No	Weight	Disposition	Mark Option	Piece
NORMAL				6064588	1030	we	Inspect	Auto Ink Marker 9
CREATED	High Gas		qwe fwerqw	6064590	1030	www qwe	Edit	Auto Ink Marker 11
CREATED	High Gas		sssssss	6064591	1030	Saleh	Edit	Auto Ink Marker 12
CREATED	High Gas		sssss	6064592	1030	Saleh	Edit	Auto Ink Marker 13

Weight: 4120 Bundles: 4

Register Ear sample allows for manual creation or Ear Sample.

Re-Allocate is, used to move bundles to another sales order with similar characteristics.

Alt-Alloy Check is, used when cast is off spec to move bundles to another sales order matching current cast specs.

Recovery Screen displays cast recovery popup.

Quality Details opens up a screen to allow operator to enter additional inspection details.

Close Inspect completes inspection and closed PO. Cast will disappear from the screen.

Note:

On certain occasions when trying to confirm a bundle for Slngot/Properzi there message,might popup that bundles cannot be, confirmed if not inspected. This is the normal procedure, however, we have a small problem where they close the PO, and afterwards they create manual bundles. These bundles, are not, inspected yet, but are not visible in Slngot inspections screen because of the PO that is closed. What you need to do is find the PO number, open manually, status 1, but only temporally. Once you have made the status 1, go to, inspections screen and inspect these bundles as Confirmed. Then go to TPE01 table again and make the status 14. The bundles will be, confirmed as well after it has been, inspected.

8.6 CH Admin Group Menu

8.6.1. Inspection Reversal

This screen is, used to reverse items that are in second inspection or passed second inspection stage. Items can be, reversed to second or first inspection stage but not to pre-inspection stage. Once items are in First-Inspection stage they can no longer be reversed and “Reverse” button will be, grayed out.

Production Tracking-Casthouse 3 - Inspection Reversal

Process Orders ▾ Furnace ▾ Cast ▾ Scrap ▾ Finished Products ▾ WIP ▾ Utilities ▾ Go to... ▾

Inspection Reversal

Tracking Application 17/10/2005 14:53:22 Team Shift: C-3

CAST INSPECTION REVERSAL

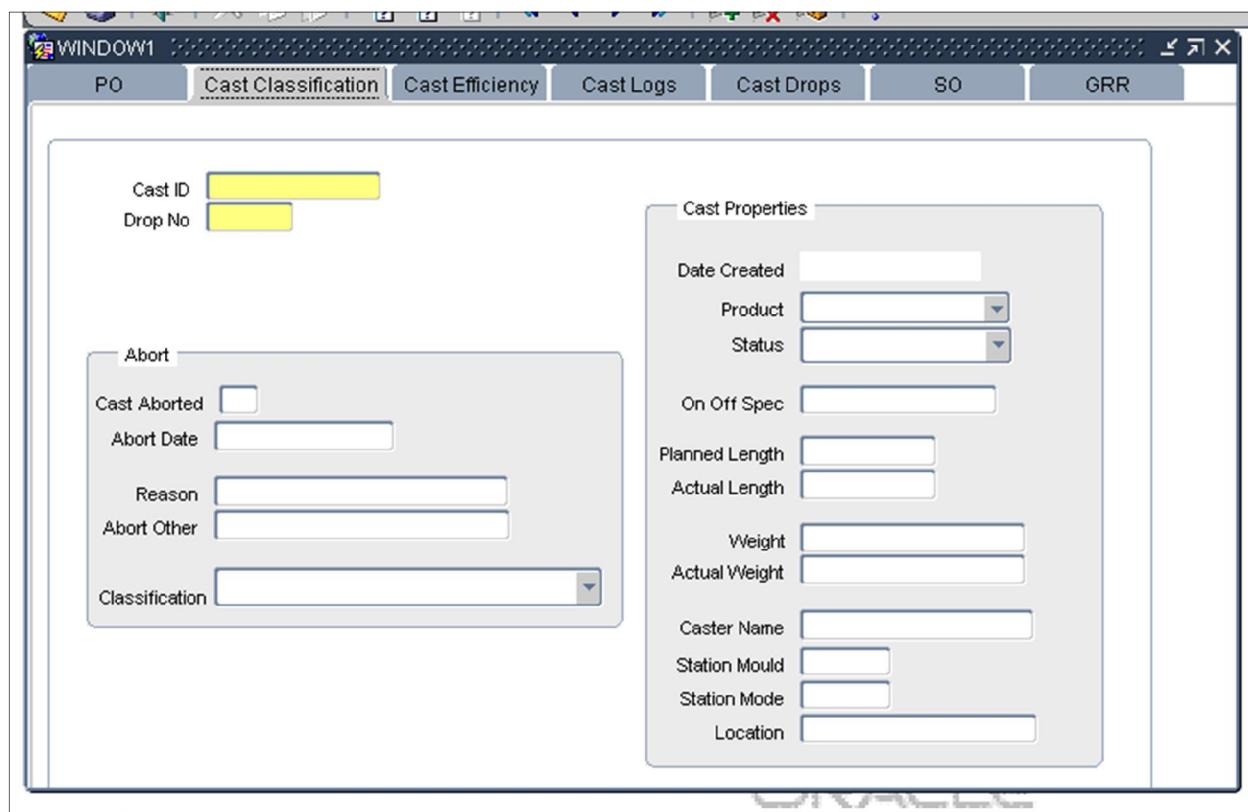
Furnace Batch	Drop ID	List PO's					
1111286	1						
SO Number	Total Pieces	SO Weight	Cast Weight	Defect Weight	Internal PO	Stage	Reverse
0004020414	74	3208714	48816.32		2461	FIRST INSPECTION	Reverse
0004020455 (0004020435)	6	11874.24	3958.08		2519	COMPLETE	Reverse

Please select the PO to reverse the cast.

8.6.2. CH Admin Tool

It contains, however, seven functionalities, as follow:

1. **PO**:to ask for SAP PO.
2. **Cast Classification**:to get some crucial info about the cast.
3. **Cast Efficiency**:to recalculate bit efficiency.
4. **Cast Logs**:to find out desired info about produced cast logs.
5. **Cast Drops**:to delete or ad cast drop.
6. **SO**:to find out critical info about certain sales order.
7. **GRR**:to send GRR message about specific bundle to SAP.

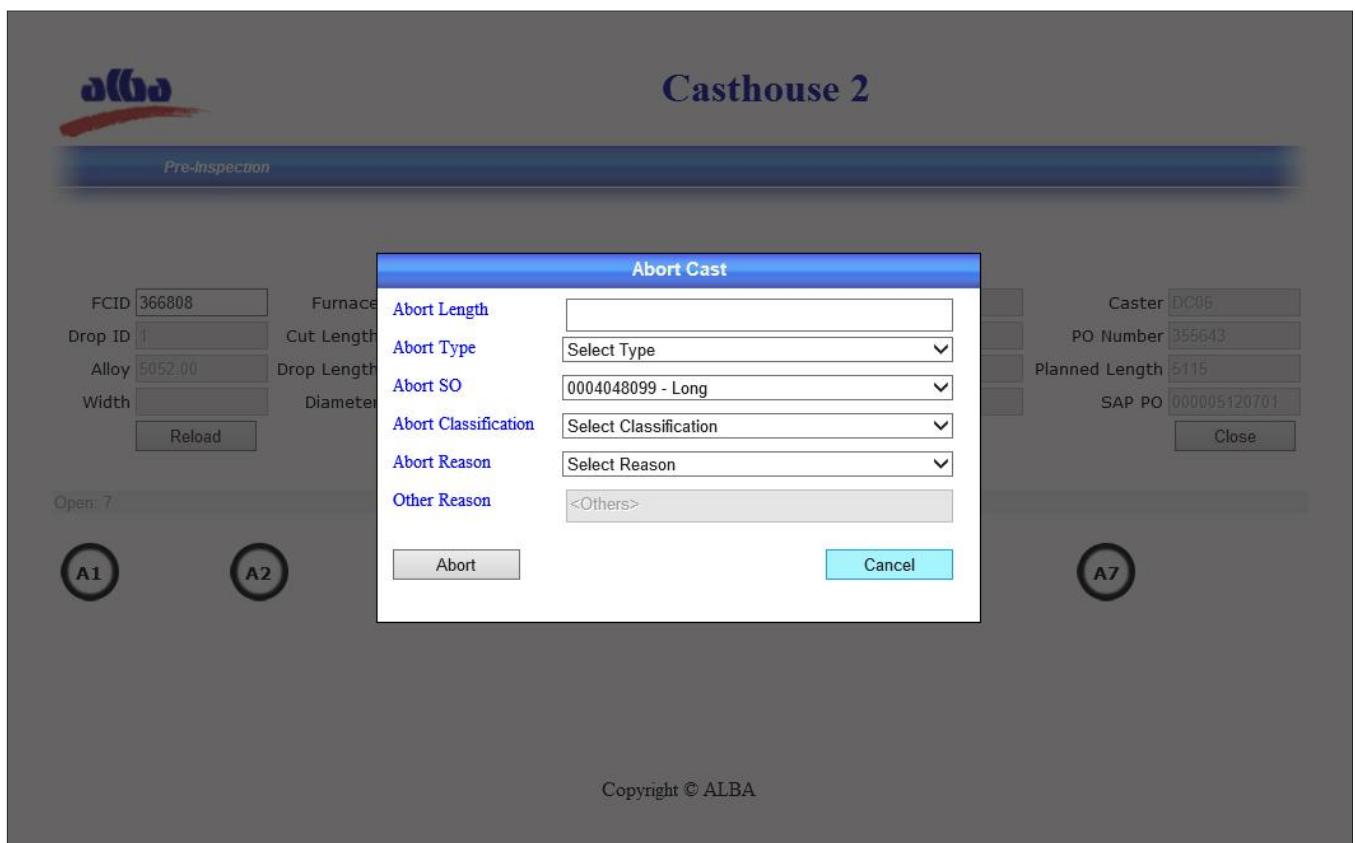


9. Common Screens

The following screens are common and invoked from within many places across the system. Consequently, they are having a generic logic design, to serve and provide functionality based on where they have been, called.

9.1 Abort Cast

Abort cast.



9.2 Cast Recovery

Cast Recovery.

alba

Casthouse Furnaces

CAST RECOVERY/EFFICIENCY

Furnace Batch No:	340223	Drop Number:	1
Caster:	CL01	Total Cast Weight (Kg):	40269
Planned Number of Logs:	1804	Approved Cast Weight (Kg):	40269
Actual Number of Logs: (Planned - Not Casted)	1804		
Cast Recovery:	100		
QC Scrap:	100		

Calculated Successfully!

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9.3 Furnace DC

Furnace DC. Configure furnace based on station type , size etc.

The screenshot shows a web-based application for configuring a furnace. At the top left is the ALBA logo, which consists of a stylized red and blue swoosh above the letters "alba". To the right of the logo, the text "Casthouse Furnaces" is displayed in a bold, dark blue font. Below the header is a horizontal bar with the text "Team Shift: A-2" on the left and "FURNACE DC" in the center. The main content area contains a table with three columns: "Furnace" (containing "CH2_REMELT_FUR09"), "Caster" (with a dropdown arrow), and "Station / Size" (containing "DC6 - 1350 X 460"). Below the table is a green "Status Message" field. At the bottom right of the form are two buttons: "Back" and "Update".

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9.4 Logs

Logs.



Casthouse 2

[1st Inspection](#) [2nd Inspection](#) [Slagot / Properzi](#) [Remarks](#) [Sales Order Details](#) [Suitable Alloys](#) [Show Logs](#) [Quality Details](#)

ID	Action	Created By	Date	Time	Type	
366435	Normal Item	[Redacted]	9/15/2013 7:39:30 AM	07:39	CAST	Details
366435	Normal Item	[Redacted]	9/13/2013 6:32:31 PM	18:32	CAST	Details
366435	Normal Item	[Redacted]	9/13/2013 6:22:53 PM	18:22	CAST	Details
366435	Normal Item	[Redacted]	9/13/2013 6:00:23 PM	18:00	CAST	Details
366435	Normal Item	[Redacted]	9/13/2013 6:00:22 PM	18:00	CAST	Details
366435	Normal Item	[Redacted]	9/13/2013 5:57:48 PM	17:57	CAST	Details
366435	Normal Item	[Redacted]	9/13/2013 5:56:23 PM	17:56	CAST	Details

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9.5 Long Text

Long Text.

0.1813	0.2680	0.0008	0.0061	0.0000	0.0000	0.0006	0.0039	0.0104	0.0002	0.0000	0.0026	0.0119	0.0003	0.0027	0.0005	0.0001	0.0000	0.0013	0.0005	0.00	
0.1812	0.2680	0.0008	0.0061	0.0000	0.0000	0.0006	0.0038	0.0104	0.0001	0.0000	0.0026	0.0118	0.0003	0.0027	0.0005	0.0001	0.0000	0.0013	0.0005	0.00	
0.0000	0.0600	0.0000	0.1000	0.0230	0.0000	0.0000	0.0000	0.0100	0.0008	0.0000	0.0000	0.0100	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.00	
0.0016	0.0010	0.0002	0.0050	0.0000	0.0000	0.024	0.0005	0.0002	0.0000	0.0009	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0016	0.0010	0.0002	0.0052	0.0000	0.0000	0.025	0.0005	0.0001	0.0000	0.0009	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0011	0.0010	0.0002	0.0053	0.0000	0.0000	0.024	0.0005	0.0001	0.0000	0.0010	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.1082	0.1311	0.0001	0.0096	0.0015	0.0004	0.025	0.0009	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.1077	0.1328	0.0001	0.0095	0.0014	0.0003	0.020	0.0009	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.1081	0.1350	0.0001	0.0095	0.0015	0.0003	0.024	0.0009	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.1080	0.1330	0.0001	0.0095	0.0015	0.0003	0.023	0.0009	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0018	0.0022	0.0002	0.0055	0.0002	0.0001	0.029	0.0004	0.0000	0.0001	0.0004	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0000	96.8060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0000	0.0000	0.0000	80.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0200	0.4750	0.0075	0.0105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0961	0.5337	0.0007	0.0240	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0967	0.5329	0.0006	0.0239	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0959	0.5423	0.0006	0.0238	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
0.0900	0.5400	0.0000	0.0280	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	
Add Scrap		Heel Weight		Transfer Out																	

9.6 Pre-Inspection

Pre-Inspection.

Casthouse 3

Pre-Inspection

FCID 366769	Furnace HOLDING FURNACE 8 IN CASTHOUSE 3 (BGHB5573)	Caster DC11		
Drop ID 1	Cut Length 5800	Wash Cast N	On Spect Y	PO Number 355573
Alloy 6063.36	Drop Length	Product Billet	Location	Planned Length 6106
Width	Diameter 152	Height 0	Sliced N	SAP PO 000005120750
<input type="button" value="Reload"/>		<input type="button" value="Close"/>		
<input type="button" value="Abort Cast"/>				
Open: 124 Close: 4				

Pre-Inspection Points:

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16

9.7 Process Order

Process Order.



Casthouse Common

Team Shift: A-2

ALLOCATE PROCESS ORDER
[Caster] [Size]
Furnace Name
All Furnaces
▼

Sales Order Number	0004048035	[Caster] [Size]	Furnace Name	All Furnaces	▼
Sales Order Item	000010				
Product	Billet_6060.07_0178_0000	Product Type	Billet		
Alloy	6060.07	Width (mm)	0		
Planned Production Order Weight (kg)	42281	Height (mm)	0		
Assigned Production Weight (Kg)	42281	Diameter (mm)	178		
Remaining Production Weight (Kg)	-295967	Cut Length (mm)	5800		
Movement ID	126268				

Long Text
Accept
Cancel

* indicates linked order.

Filter By: Furnace All Furnaces ▼ Caster ▼ List

Start Date	Caster	Furnace	Sales Order	Order Item	Alloy	Movement	Cut Length	Width	Diameter	Planned Length	Select
26/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004048113*	000010	6060.07	126242	5800	0	178	7522	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126321	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126322	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126323	5800	0	178	7870	Select
29/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048035	000010	6060.07	126268	5800	0	178	6106	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048036*	000010	6060.07	126325	5800	0	178	7720	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048039*	000010	6060.07	126306	5800	0	178	7810	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048039*	000010	6060.07	126307	5800	0	178	7690	Select

9.8 Quality Details

Quality Details.



Casthouse 2

1st Inspection 2nd Inspection Singot / Properzi Remarks Sales Order Details Suitable Alloys Show Logs Quality Details

Quality Details of 366435

Hydrogen Before ACD/Alpure(ALSCAN)	
Hydrogen After ACD/Alpure (ALSCAN)	
Temprature Befer ACD/Alpure	
Temprature After ACD/Alpure	
ALSCAN Unit No	
Launder Temparture(deg. cel)	
Filtration	
Filtrater Size (PPI)	
First Inspector	
Second Inspector	
TRR No	
Estimated Settling Time Calculated	
% Hydrogen Reduction	

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9.9 Remarks

Remarks.



Casthouse 2

Remark	User	Date
Properzi-Inspection		9/15/2013 7:39:31 AM
Properzi-Inspection		9/13/2013 6:00:23 PM
Properzi-Inspection		9/13/2013 6:10:03 PM
Properzi-Inspection		9/13/2013 6:32:31 PM
Properzi-Inspection		9/13/2013 6:22:53 PM
Properzi-Inspection		9/13/2013 6:29:52 PM
Properzi-Inspection		9/13/2013 6:21:42 PM

9.10 Sales Order Details

Sales Order Details.



Casthouse 2

1st Inspection 2nd Inspection Singot / Properzi Remarks Sales Order Details Suitable Alloys Show Logs Quality Details

SO Number	0004048276	SO Item	000020
Process Order	355674	Furnace Content ID / Drop	366435/1
Alloy	4543.08	Customer	MITSUBISHI CORPORATION UNIMETA
Cut Length (mm)	0	Pieces	
Diameter (mm)	0	Caster	CH2_CL04_B
Required Weight	245000	Required Bundle	
Current Weight	0	Current Bundle	0
Outstanding Weight	245000	Outstanding Bundle	

Print 1 Print 2

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9.11 Suitable Alloys

Suitable Alloys.



Casthouse 3

<i>1st Inspection</i>	<i>2nd Inspection</i>	<i>Remarks</i>	<i>Sales Order Details</i>	<i>Suitable Alloys</i>					
Alloy	SO Number	Order Item	Cut Length	Diameter	Outstanding	Required	Current	Height	Width
6005.03									
6060.03	0004048290	000020	5800	178	82	82	0	0	
6060.03	0004048291	000020	5800	178	93	93	0	0	
6060.03									
6060.17									
6063.10	0004047944	000010	5800	178	128	128	0	0	
6063.10	0004047946	000010	5800	178	102	102	0	0	
6063.10	0004048157	000020	5800	178	99	99	0	0	
6063.10	0004048174	000120	5800	178	41	41	0	0	
6063.10	0004048175	000120	5800	178	41	41	0	0	
6063.10	0004048182	000010	3000	178	80	80	0	0	
6063.10	0004048183	000010	3000	178	80	80	0	0	
6063.10	0004048233	000020	5800	178	30	30	0	0	
6063.10	0004048270	000010	5800	178	28	28	0	0	
6063.10	0004048277	000010	5800	178	124	124	0	0	
6063.10	0004048354	000030	5800	178	41	41	0	0	
6063.10	0004048372	000020	5800	178	41	41	0	0	
6063.10	0004048373	000020	5800	178	41	41	0	0	
6063.10	0004048374	000020	5800	178	41	41	0	0	
6063.10	0004048375	000020	5800	178	41	41	0	0	
6063.10	0004048376	000020	5800	178	41	41	0	0	
6063.10	0004048377	000020	5800	178	41	41	0	0	
6063.10	0004048378	000020	5800	178	41	41	0	0	
6063.10	0004048498	000030	5800	178	30	30	0	0	
6063.10	0004048501	000020	5800	178	62	62	0	0	

9.12 Swap PO

Swap PO.



Casthouse Common

Team Shift: A-2

ALLOCATE PROCESS ORDER
Long Text
Swap PO
Cancel

'*' indicates linked order.

Sales Order Number	0004047944		Product Type	Billet	
Sales Order Item	000010		Width (mm)	0	
Product	Billet_6063.10_0178_0000		Height (mm)	0	
Alloy	6063.10		Diameter (mm)	178	
Planned Production Order Weight (kg)	42283		Cut Length (mm)	5800	
Assigned Production Weight (Kg)	42283				
Remaining Production Weight (Kg)	-126849				
Movement ID	126323				

Filter By:	Furnace	All Furnaces	Caster	List	
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Start Date	Caster	Furnace	Sales Order	Order Item	Alloy	Movement	Cut Length	Width	Diameter	Planned Length	Select
26/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004048113*	000010	6060.07	126242	5800	0	178	7522	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126321	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126322	5800	0	178	7870	Select
30/01/2013 00:00:00	CH3_DC09_B	CH3_DUMMY	0004047944*	000010	6063.10	126323	5800	0	178	7870	Select
29/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048035	000010	6060.07	126268	5800	0	178	6106	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048036*	000010	6060.07	126325	5800	0	178	7720	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048039*	000010	6060.07	126306	5800	0	178	7810	Select
30/01/2013 00:00:00	CH3_DC10_B	CH3_DUMMY	0004048037*	000010	6060.07	126307	5800	0	178	7600	Select

10. Manual Entry Screens

The Manual entry screens are configured by MES specialist based on user requirements. Any information that are required to be stored in the database for system analysis or reporting of the facility activities whether maintenance or day to day plant requirements can be done using these screens. Some of the examples of these screens are shown below:

10.1 Carbon Anode Inventories

Production Material

PLANT: Carbon Anode Inventories (Line 1-5) Date: 26/09/2016 Show

Material	UNIT	Auto	Actual	DESCRIPTION	PLANT	CONFIRM
LINE 1,2&3						
BAKED ANODE	Nos			Baked Anode in Line 1,2&3	LINE 1,2&3	
GREEN ANODE	Nos			Green Anode in Line 1,2&3	LINE 1,2&3	
SEALED ANODE	Nos			Sealed Anode in Line 1,2&3	LINE 1,2&3	
LINE 4						
BAKED ANODE	Nos			Baked Anode in Line 4	LINE 4	
GREEN ANODE	Nos			Green Anode in Line 4	LINE 4	
SEALED ANODE	Nos			Sealed Anode in Line 4	LINE 4	
LINE 5						
BAKED ANODE	Nos			Baked Anode in Line 5	LINE 5	
GREEN ANODE	Nos			Green Anode in Line 5	LINE 5	
SEALED ANODE	Nos			Sealed Anode in Line 5	LINE 5	

Buttons: Save Change | Confirm Change | Cancel

10.2 Data for daily carbon report

Manual entry for carbon data

Material	UNIT	Auto	Actual	DESCRIPTION
KILNS 1 & 2				
BAKED ANODE QUALITY INDEX	%			Baked Anode Quality Index
EXHAUST GAS MAIN TEMPERATURE	%			Exhaust Gas Main Temperature
EXHAUST_GAS_MAIN_TEMPERATURE	C			Exhaust gas-main temperature Kiln
FINAL BAKED ANODE TEMPERATURE	%			Final Baked Anode Temperature
FINAL_BAKED_ANODE_TEMPERATURE	C			Final baked anode temperature Kilns
FIRE CYCLE	MT			Fire Cycle in Kilns 1&2
OVERALL KILN SOP COMPLIANCE	%			OVERALL KILN SOP COMPLIA
RING_MAIN_DRAFT	PA			Ring Main Draft Kilns 1-2
KILNS 3				
BAKED ANODE QUALITY INDEX	%			Baked Anode Quality Index
EXHAUST GAS MAIN TEMPERATURE	%			Exhaust Gas Main Temperature
EXHAUST_GAS_MAIN_TEMPERATURE	C			Exhaust gas-main temperature Kiln
FINAL BAKED ANODE TEMPERATURE	%			Final Baked Anode Temperature
FINAL_BAKED_ANODE_TEMPERATURE	C			Final baked anode temperature Kiln
FIRE CYCLE	MT			Fire Cycle in Kilns 3
OVERALL KILN SOP COMPLIANCE	%			OVERALL KILN SOP COMPLIA
RING_MAIN_DRAFT	PA			Ring Main Draft Kilns 3
RODDING 1				
ANODE_PITTED_ROD_REPAIR_RATE	Nos/day			Anode pitted rod repair rate Roddin
ANODE_TOP_AIR_BURN	MM			Anode top air burn Rodding 1
BUTT THICKNESS UNER THE STUBS	MT			Butt Thickness Uner The Stubs in R
CAST IRON COMPOSITION	%			Cast Iron Composition
SEALED ANODE QUALITY	%			Sealed Anode Quality
STUB_DIAMETER	MM			Stub diameter Rodding 1
STUB_REPAIR_RATE	Nos/day			Stub repair rate Rodding 1

10.3 Rodding

Manual Entry for Rodding Data.

Material	UNIT	Auto	Actual	DESCRIPTION	PLANT	CONFIRM
RODDING 3						
RODDED_ANODE_3	MT			Rodded Anode Produced in Rodding 3	RODDING 3	
BAKED_ANODE_2	MT			Baked Anode from KILNS 3 Consumed in Rodding 3	RODDING 3	
BAKED_ANODE_3	MT			Baked Anode from KILNS 4 Consumed in Rodding 3	RODDING 3	
BUTTS_BAKED_SCRAP	MT			SCRAP anode generated in Rodding 3	RODDING 3	
LINE 4						
RODDED_ANODE_3	MT			new anode from Rodding 3 used in line 4	LINE 4	
BUTTS_BAKED_SCRAP	MT			SCRAP anode generated in Line 4	LINE 4	
LINE 5						
RODDED_ANODE_3	MT			new anode from Rodding 3 used in line 5	LINE 5	
BUTTS_BAKED_SCRAP	MT			SCRAP anode generated in Line 5	LINE 5	

11. Process Historian Database (PHD)

Plant History Database (PHD) provides real-time data collection, historisation, and intelligent data retrieval required for plant information system support. With the capability of interfacing with multiple real-time systems, PHD forms a comprehensive platform that supports MES entire family of integrated plant information system modules. The PHD is primarily used as a real time data collection and historian system in the MES solution.

PHD is provided the application integration layer between MES applications and the multiple information source systems including PLC, SCADA and DCS. PHD collects and store data from multiple data sources and will make this data available to applications and users.

11.1 PHD Overview

This document describes the design of Plant History Database Installation and Configuration for the Alba. The PHD module is comprise of standard PHD Server Installation & Configuration, PHD data acquisition, PHD OPC Server Installation, PHD RDI Configuration and PHD Tag Configuration for following units:

1. Reduction Line
2. Casthouse
3. Carbon
4. Power
5. Calciner

The PHD module covers all above mentioned units with redundant PHD Servers. All these units are connected through "1Gbps Plant Wide Network Backbone". This PHD module involves the installation of ten PHD Servers, two Oracle Servers and two PHD Shadow Servers.

The PHD module provides the application integration layer between MES applications and the multiple information source systems like PLC, SCADA and DCS. The base buffer PHD Servers are treated as collector nodes and are responsible for collecting real-time data from different data sources. And this data in turn moves from buffer PHD Servers to centralized PHD Shadow Servers.

Since all real-time data is available in PHD Shadow Servers, they act as data source for all applications and users. The same PHD Shadow Servers are used as historians for application related data (Eg. LIMS, PMS, CMS etc.).

11.2 PHD Architecture

Network Architecture for the PHD module is as shown in following Figure-5. All five unit (Power, Calciner, Reduction, Carbon and Casthouse) Plant Control Network are connected to Plant Wide Network through firewall. And BMS unit is residing on Plant Wide Network. Each PHD module have two PHD Servers, out of these two PHD Servers, one will act as an ACTIVE PHD Server and the other as STANDBY PHD Server.

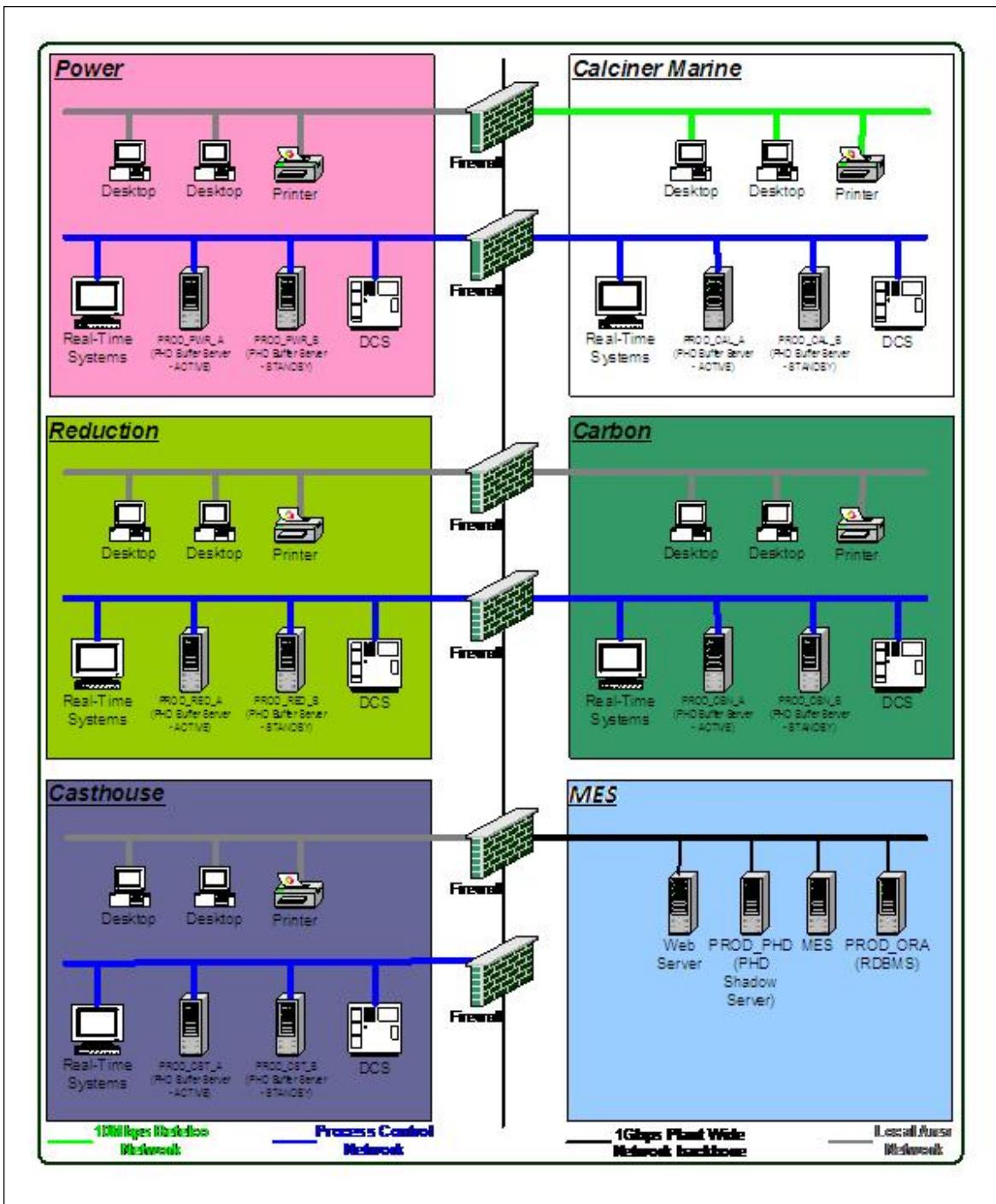


Figure 1: Physical Architecture

All buffer level base PHD Servers (ACTIVE & STANDBY) and PHD Shadow Server are referring to same set of RDIs (Real-Time Data Interfaces) and Tags. In case of RDIs, base PHD Servers should refer individually same source system RDIs and PHD Shadow Server should refer source system type as "Shadow". The PHD component layer is as shown in following Figure –

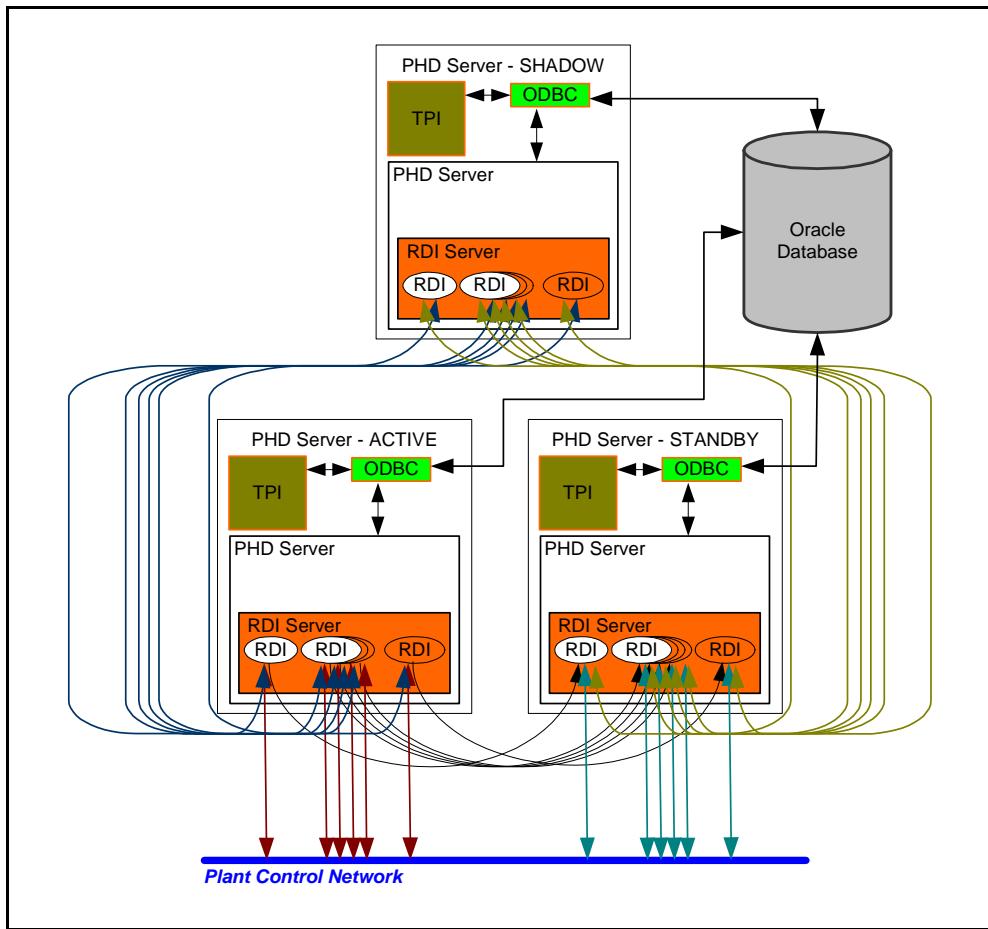


Figure 2: PHD Component Layer

All buffer level PHD Servers are intended to collect real-time data from corresponding source systems and this data in turn is published for PHD Shadow Servers (to collect the same). Once the real-time data reaches PHD Shadow Servers, it becomes available for all the other applications through following PHD Client tools –

1. PHD Desktop Tools
2. PHD OPC Clients
3. PhdSql
4. Phd2Rel
5. Rel2Phd
6. PHD OLE Db

11.1 PHD Configuration

SERVER1 (CASTHOUSE 03 VLAN 113)		
	SERVER NAME	VM113SRV043
	IP ADDRESS	172.16.113.043
	NO OF TAGS	4245
	NO OF PLC'S	20
	COMMUNICATION TYPE	DIRECT COMMUINCATION TO PLC THROUGH ETHERNET
	TYPE OF THE PLC'S	CONTROLLOGIX
SERVER2 (CASTHOUSE 03 AND TAC STATION)		
	SERVER NAME	VM113SRV34
	IP ADDRESS	172.16.113.34
	NO OF TAGS	100
	NO OF PLC'S	8
	COMMUNICATION TYPE	DIRECT COMMUINCATION TO PLC THROUGH ETHERNET AND PLC ETHERNET TO DH+ CONVERTER
	TYPE OF THE PLC'S	CONTROLLOGIX - PLC05
SERVER3 (CASTHOUSE 02)		
	SERVER NAME	VM114SRV42
	IP ADDRESS	172.16.114.42
	NO OF TAGS	200
	NO OF PLC'S	12
	COMMUNICATION TYPE	DIRECT COMMUINCATION TO PLC THROUGH ETHERNET
	TYPE OF THE PLC'S	CONTROLLOGIX
SERVER4 (CARBONE 3)		
	SERVER NAME	VM116SRV125
	IP ADDRESS	172.16.116.125
	NO OF TAGS	500
	NO OF PLC'S	25
	COMMUNICATION TYPE	DIRECT COMMUINCATION TO PLC THROUGH ETHERNET
	TYPE OF THE PLC'S	CONTROLLOGIX
SERVER5 (FTP-GTC PLANT)		
	SERVER NAME	VM112SRV148
	IP ADDRESS	172.16.112.148
	NO OF TAGS	581

	NO OF PLC'S	15
	COMMUNICATION TYPE	DIRECT COMMUNICATON TO PLC THROUGH ETHERNET AND PLC ETHERNET TO DH+ CONVERTER
	TYPE OF THE PLC'S	CONTROLLOGIX - PLC05
SERVER1 READING FROM FTP_GTC PLANT		
	SERVER NAME	VM11SRV05
	IP ADDRESS	
	NO OF TAGS	500
	NO OF PLC'S	15
	COMMUNICATION TYPE	TEXT FILE FROM SCADA SERVER
	TYPE OF THE PLC'S	PLC05
SERVER2 READING FROM CASTHOUSE		
	SERVER NAME	VM11SRV02
	IP ADDRESS	
	NO OF TAGS	100
	NO OF PLC'S	8
	COMMUNICATION TYPE	TEXT FILE AND PDF FROM SCADA SERVER
	TYPE OF THE PLC'S	CONTROLLOGIX - PLC05

12. Integration

The integration design is to integrate the Smelting business processes across the SAP, MES and Control System technology platforms.

The aspects of integration are dealt with are:

- Business Process Integration
- Business Unit Business Process Integration
- MES Modules Integration
- Automation and legacy system to MES
- MES to SAP modules

The MES applications transform raw plant data into useful information that is required at both the operational level, and the business level via SAP. SAP will be handed consolidated and validated information like production figures from MES integrating using SAP-XI.

There are various control systems working together, automation of the entire enterprise is made possible using various technologies to attained peak industrial operation.

12.1 MES-TO-SAP

Interface information between MES and SAP.

SAP Module	Description	Data to MES	Data to SAP	Interfacing technology	Frequency
QM	Inspections Data		- Results recording	SAP-XI	Half-Hourly
PP	Download SAP plan				
PP	Create production/ Process Orders	Create Orders for each process in the value chain		SAP-XI	Half-Hourly
PP	Download production orders	Download released production orders		SAP-XI	On event
PP	Upload actuals to SAP		-GR Quantities -Confirmations -Update Batch Characteristics	SAP-XI	Half-Hourly
PP	Bundling and unbundling		-Material movements	SAP-XI	On Event
PM	POT age	POT age			Daily
PM	Cut-out pots	List of cut-out pots			Daily

Table 1 : MES and SAP Integration

12.2 MES-Alpsys-MES

Area	System	Development Tools	Source	Destination	Frequency
MES L1-L3	BATH Analysis	ODBC	MES Oracle DB	Alpsys Oracle DB	Every 15 mins
MES L1-L3	POT Analysis	ODBC	MES Oracle DB	Alpsys Oracle DB	Every 15 mins
MES L4	POT & BATH Analysis	ODBC	MES Oracle DB	Alpsys Oracle DB	Every 10 mins

Area	System	Development Tools	Source	Destination	Frequency
MES L5	POT & BATH Analysis	ODBC	MES Oracle DB	Alpsys Oracle DB	Every 10 mins
MES L1-L3	Day, Shift Data	ODBC	Alpsys Oracle DB	MES Oracle DB	Every 10 mins

12.3 Other Interfaces

No	Area	System	Development Tools	Source	Destination
1	Casthouse-3	Hertwich	ODBC / Microsoft SQL Server	Hertwich	MES (on request)
2	Casthouse-3	Hertwich	ODBC / Microsoft SQL Server	MES	Hertwich (Cast ID)
3	Casthouse-2	DC / Casting Lines	OPC	Casthouse-2	MES
4	Casthouse-3	DC	OPC	Casthouse-3	MES
5	Metal Lab	Quantometers (Metal Analysis)	LIMS LINK	Quantometer	MES
6	Main Lab	XRD Analysis	LIMS LINK	XRD	MES
7	Garmco	Production & Analysis Data	FTP File Transfer	MES	Garmco
8	TAC Station	TAC Station	Shared Drive & ODBC	TAC Station	MES
9	Casthouse-2	Furnaces	OPC	Furnaces	MES
10	Casthouse-3	Furnaces	OPC	Furnaces	MES
11	Carbon	Paste Plant	ODBC	Paste Plant	MES
12	Carbon	Kilns	OPC	Kilns	MES
13	Carbon	Bath Treatment	OPC	Bath Treatment	MES
14	Calciner	Calciner	File Transfer	Calciner	MES
15	Reduction	GTC	OPC / File Transfer	GTC	MES
16	Security	South Gate weigh Scale	ODBC Link	Weigh scale system	MES

13. Reporting System

Reports play a key role across the organization for maintaining data records and for analyzing various parameters such as quality of the produced material, evaluating productivity of produced goods by comparing planned vs. actual data, finding out the deviations if any, and analyzing KPIs. The audiences of these reports vary from the Shift Supervisor up to the Executives. Many reports are in place developed using Oracle Report Developer tool & Crystal report developer tool.

The reports are generated from the MES Central Repository & Reduction Reporting System.

Ad hoc reports generally be used to assist in problem finding, if the report becomes widely used it must be formalized and become subject into configuration control, the general rule is that an ad hoc report used on more than one occasion for management reporting is subject to configuration control.

13.1 Sample Reports

Casting Daily Production Report – Parameter screen & report generated, facilities are available to generate it in PDF & excel format also.

The screenshot shows a web-based form titled "Casting Daily Production Report". At the top right are two buttons: "Submit Query" and "Reset". Below the title, a note says "double click on the date to get the calendar". The form contains the following fields:

Product	Billet
Casthouse	ALL
DC	ALL
Alloy	(empty input field)
From Date	27/09/2016
To Date	27/09/2016
Shift	ALL
Shift Team	ALL
Format	Acrobat (PDF) file



Casting Daily Production Report - Billet



Casthosue: ALL DC: ALL From Date: 26/09/2016 22:45 To Date: 27/09/2016 22:45 Shift: ALL Team: ALL

DC09

Cast NO	Furnace	Date	Shift	Plan Log	Good	Defect	Scrap	Hold	Not Casted	Plan Length	Cast Length	Diff. in Length	Alloy	Size	Plan WT(MT)	Cast WT(MT)	Plan Head Butt	Actual Head Butt	approved WT(MT)	Cut Length	Cast RCV	PIT EFF	Net RCV	CH NET RCV
520114/1	FUR03	27/09 03:42	A1	68	66	0	1	0	1	7606	7730	124	6063.10	216	51.379	51.449	1.959	2.756	0.000	7300	98.51	97.58	00.00	93.21
520147/1	FUR02	27/09 06:01	A1	68	68	0	0	0	0	7606			6063.10	216	51.379	0.000	1.959		0.000	7300			00.00	0.00
DC09 Total				136	134	0	1	0	1	15212	7730	124			102.759	51.449	3.918	2.756	0.000		98.51	97.58	00.00	93.21

DC10

Cast NO	Furnace	Date	Shift	Plan Log	Good	Defect	Scrap	Hold	Not Casted	Plan Length	Cast Length	Diff. in Length	Alloy	Size	Plan WT(MT)	Cast WT(MT)	Plan Head Butt	Actual Head Butt	approved WT(MT)	Cut Length	Cast RCV	PIT EFF	Net RCV	CH NET RCV
520141/1	FUR06	27/09 01:37	A1	68	54	0	9	0	5	6106	6096	-16	6063.48	229	46.362	42.841	2.202	1.927	0.000	5800	85.71	92.65	00.00	81.90
520161/1	FUR05	27/09 03:42	A1	68	59	0	2	0	7	6106	6270	164	6063.48	229	46.362	42.707	2.202	3.092	0.000	5800	96.72	88.05	00.00	89.63
520172/1	FUR06	27/09 06:06	A1	68	65	0	0	0	3	6106			6063.48	229	46.362	0.000	2.202		0.000	5800			00.00	0.00
DC10 Total				264	178	0	11	0	15	18318	12360	148			135.686	85.548	10.524	5.819	0.000		91.21	90.35	60.00	85.76
Grand Total				340	312	0	12	0	16	31510	20098	272			241.845	136.997	14.442	7.775	0.000		91.95	93.07	60.00	88.56

27/09/2016 08:40

Aborted Cast



Format No: CAS-021 Rev:3 25/09/2012

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Casting Daily Production Report - Billet



Casthosue: ALL DC: ALL From Date: 26/09/2016 22:45 To Date: 27/09/2016 22:45 Shift: ALL Team: ALL

Summary

Caster	Size	Total No. of casts	Total cast weight
DC09	216	2	51.449
DC09 Total		2	51.449
DC10	229	3	85.548
DC10 Total		3	85.548
Grand Total		5	136.997

Abort Cast List

Date	Shift	Cast No	Alloy	Cast WT	Caster	Length	Abort Reason	Classification

Scrap Cast List

Date	Shift	Cast No	Alloy	Cast WT	Caster	Size	Type of defect	No. of Bundles / Logs

Hold Cast List

Date	Shift	Cast No	Alloy	Cast WT	Caster	Size	Reason for hold	Date of Disposition	No. of Bundles / Logs

27/09/2016 08:40

Aborted Cast



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13.1 List of Reports

Following is the list of some standard reports configured as a part of current MES system –

No.	List of reports
1	Abort Register
2	Alumina Airmail Trend Report
3	Alumina Cargo Analysis Report
4	Aluminium Fluoride Analysis
5	Bath Tapped Summary
6	Billet Defect Register Report
7	Butt Weight Summary
8	CH Gas Monthly Totaliser Readings
9	Cast Iron Sample Registry Report
10	Casthouse 2 Dross Sheet Report
11	Casting Daily Report Open
12	Kiln 4 Breakdown Report
13	Laboratory Raw Material Sample Register
14	Lines 4&5 Parameters Trend Report
15	Metallurgy Shift Audit Report
16	Pot Week Summary Report
17	Production Per Furnace Report
18	Rodding 3 Breakdown Report
19	Scrap Management Report
20	AP Casting Quality Report New
21	Abnormal Pots Last Shift
22	Advanced Diagnostic
23	Alloy Consumption Report
24	Alloy Specification Report
25	Alscan Hydrogen Determination
26	Alumina Airmail Results Report
27	Alumina Airmail Trend Report
28	Alumina Silo Level
29	Anode Core Report
30	Anode Production Report
31	Anodes core sampling
32	Baking Furnace Stoppages Periodic
33	Baking Furnace Stoppages Shift
34	Baking Parameters
35	Batch Casting Calculation Sheet
36	Bath Analysis Report
37	Bundle Transfer History
38	Butt Analysis Report
39	Carbon Plant Daily Report

No.	List of reports
40	Cast Iron Analysis Daily Average Report
41	Cast Iron Analysis Report
42	Casthouse 2 Dross Sheet Graph
43	Casthouse 2 Performance Report
44	Casthouse AP Report
45	Casting Daily Production Report
46	Casting Daily Report
47	Casting Quality Report
48	Cathode Sealing Samples Report
49	Charge Sample Status Tracking Report
50	Charge sample status tracking
51	Control Sample Accuracy Check
52	Control System Report (Lines 4-5)
53	Control System Report (Lines1-3)
54	Core Sample Registry Report
55	Create Crucible Charge
56	Crucible Handshake Report
57	Crucible Received in TAC Details
58	Crucible Statistics By Set
59	Crucible Statistics Report
60	Crucibles Cleaning Report
61	Crucibles Received in TAC
62	Crucibles Relining Report
63	Crushed Bath Normal Analysis
64	Cutting Sheet Report
65	Daily Average Charge Analysis
66	Daily Metal In Process
67	Daily Plan Monitoring
68	Daily Production Details Report New
69	Daily Production Report New
70	Deviation From Planned Length (Pitwise) Weekly
71	Deviation From Planned Length (Shiftwise) Weekly
72	Dross Delivery Report
73	Dross Inventory Report
74	Dross Inventory Summary Report
75	FTP and GTC Secondary Alumina Report
76	Final Analysis Report
77	Final Elements For The Cast
78	Fine Analysis
79	Finish Product Graph Per Shift
80	Finish Product Report
81	Finished Product Per Saw

No.	List of reports
82	Foundry Furnace History Report
83	Foundry Purity Update
84	Foundry Purity Update Table
85	Furnace Additives Report
86	Furnace History Report
87	Furnace Inventory Report
88	Furnace Inventory Report New
89	Furnace Preparation Exception Report
90	GTC 1&2 ABART and EHEX system daily
91	Goods Receipt Summary Report
92	HP Crucibles Plan Report
93	HP Metal Delivered to Casthouse
94	High Purity Report
95	Hold Register Report
96	Homogenizing Temperature Report
97	Homogenizing Time Report
98	Hot Clean Graph
99	Hot Clean Per Casthouse
100	Hot Metal Received
101	Inspection Report New
102	Inspectors / finished product shift report
103	Iron Pot Trend
104	Khuff Gas Sulfa Check Result
105	Kilns Daily Report
106	Kilns Equipment Breakdown Report
107	Kilns Sample Status Tracking Report
108	Kilns Weekly Trends Report
109	Line 4 Abnormal Last Shift
110	List Samples with Results New
111	List Samples with Results Report
112	Loading/UnLoading Shift Report
113	Log Inspection Graph
114	MN Element In Metal
115	MPG Line1 to 5 Data For Management
116	Map of Bundles Per Cast Report
117	Metal Prod Management Report
118	Metal in Process Report
119	Metal in Process Summary
120	Missing Charges Report
121	Monthly Dross Generated Graph
122	Multiple Inquiry
123	Net Finished Production Report
124	Number Of Pot Samples Per Day
125	Operating Parameter Rejection Shift wise Report

No.	List of reports
126	Operating Parameters Rejection Daily Report
127	Operators Cutting Sheet
128	Out of Range Parameters
129	Paste Plant Daily Report
130	Paste Plant Production Report
131	Paste Plant Sample Status Tracking
132	Paste Plant Stoppages Periodic Report
133	Paste Plant Stoppages Shift wise Report
134	Paste Plant Weekly Report
135	Periodic Paste Plant Material Flow
136	Planning Overview Report
137	PoDFA Form Report
138	Pot Analysis Report
139	Pot History Report
140	Pot Room Purity Summary
141	Pot Statistics
142	Pot and Charge Exception Report
143	Premium Report
144	Proportioning Summary Report
145	Quantometer Shift Report
146	Re-Open Report
147	Reduction Performance Report
148	Reduction Services Scrap Metal Report
149	Reduction Weekly Performance Report
150	Rodding 3 AP Breakdown Trends
151	Rodding 3 Daily Report
152	Rodding 3 Weekly Breakdown Report
153	Rodding 3 Weekly Quality Report
154	Rodding 3 Weekly Summary Report
155	Rodding Breakdown Trend
156	Rodding Breakdown Trend - Equipment
157	Rodding Production Trend
158	Rodding Sample Status Tracking Report
159	Rodding Shop Machine Cycle Analysis
160	Rolling Slab Casting Observation Report
161	Sales Order Information
162	Sales Order Position Report
163	Sales Order Position With PO
164	Sample Status Tracking Kilns
165	Sample Status Tracking Report
166	Sample Status Tracking Rodding
167	Saw Performance Report

No.	List of reports
168	Schedule List Report
169	Scrap Consumption Report
170	Scrap Generated Report
171	Scrap Register
172	Scrap and Alloy Remelted Report
173	Scrap by (Size,Alloy)
174	Shiftwise Paste Plant Material Flow
175	Sieve Analysis
176	Slabs Weekly Sequence Report
177	Slice Information Report
178	Sodium Content Report
179	Sodium Content Report New
180	Standard Ingot Purity
181	Summary of Coke Trend Report
182	Summary of Pitch Trend Report
183	TAC Handshake Report
184	Tapping Confirmation / Performance Report
185	Tapping Schedule
186	Tapping Schedule New
187	Target Resistance Report (3 Weeks-3 APs)
188	Tilting Station Report
189	Total Sparked Samples
190	Trace Element Report
191	VDC Work Recipe
192	Water Based Graphite Report for Suspended Solids
193	Weekly Performance Report
194	paste plant weekly summary report
195	paste plant weekly trends
196	process control audit report
197	Target Resistance Report (3 Days-3 Weeks)
198	Tilt Station Shift Report
199	Tilting Station Report
200	CH2 - Shift Production Report - Hot Side
201	CH3 - Shift Production Report - Cold Side
202	CH3 - Shift Production Report - Hot Side
203	Casthouse 2 Breakdown Report
204	Casthouse 2 Performance Report
205	Casthouse 3 Breakdown Report
206	FTP / GTC Daily
207	Line Technical Report
208	Abnormal Pots Last Shift
209	Advanced Diagnostic
210	Alumina Silo Level
211	Control System Report (Lines 4-5)

No.	List of reports
212	Control System Report (Lines1-3)
213	Crucible Statistics By Set
214	Crucible Statistics Report
215	Detailed Parameter Trend
216	Detailed Parameters
217	Dump Weight Control Report
218	Exception Analysis
219	Exception Analysis Room-Wise
220	FTP / GTC AP
221	FTP / GTC Daily Report(Excel)
222	FTP / GTC Day Data
223	FTP / GTC Manual Entry
224	FTP / GTC Plant Master
225	FTP / GTC Shift
226	FTP / GTC Shift Data
227	FTP / GTC Stack Emission Day Data
228	FTP / GTC Weekly
229	FTP and GTC Secondary Alumina Report
230	Foundry Purity Update Table
231	High Purity Report
232	Iron Pot Trend
233	L4 Weekly Performance report
234	L4-5 Age Lining Drop
235	Line 4 Abnormal Last Shift
236	Line/Room Technical Report (Set-Wise)
237	MPG Line1 to 5 Data For Management
238	Metal Prod Management Report
239	Metal Production Group Exception Trend
240	Operating Parameter Pots
241	Out of Range Parameters
242	Planned Pot Cutoff Approval Sheet
243	Pot Analysis Report
244	Pot Daily Trend
245	Pot Elements Report
246	Pot Fluoride Addition
247	Pot History Report
248	Pot Room Purity Summary
249	Pot Statistics
250	Pot and Charge Exception Report
251	Reduction Line Production Trend
252	Reduction Lines Daily Production
253	Reduction Performance Report

No.	List of reports
254	Reduction Services Scrap Metal Report
255	Sodium Content Report
256	Sodium Content Report New
257	Tapping Confirmation / Performance Report
258	Tapping Schedule
259	Tapping Schedule New
260	Target Resistance Report (3 Weeks-3 APs)
261	Weekly Performance Report

14. Appendices

14.1 Background Processes

Tracker runs a number of background process procedures

PROCESS_NAME	DSCR
ALPPTOPHD	Send Alpsys records to PHD
AUTO_CALC_EFF	Recalculates Efficiency Recovery Data for Casts in TPE52 from past 2 days
CONTROL_RECIPEDOWNLOAD	Download of Control Recipe from SAP to MES
CUS_SYS_MONITOR	Checks the Status for the Background Processes
DELETEFROMUNF	DELETEFROMUNF
HJPS	
INSERTFROMUNF	INSERTFROMUNF
INTF TABLE CLEANUP	CLEANUP INTERFACE TABLES
INTF_HERTW3TOMES_USONIC	Ultrasonic Data from Hertwich 3 to MES
INTF_HERTW3TOMES_WSCALE	Weigh Scale Data from Hertwich 3 to MES
INTF_HIGH_IRON_CRUCIBLE	High Iron Crucible File Creation, this will be transferred using File Transfer Service
INTF_L1_L5_TECH_ANALYSIS	Line 1 to 5 Technical analysis
INTF_L4_TECH_ANALYSIS	To transfer the Technical Analysis Data (FE / SI values) to Alpha01 Server for last 24 Hrs
INTF_LIMS_TO_GARMCO	Creates FINISHCAST and the related Backup File which is then transferred using File Service
INTF_MESTOHERTW3_AREACODE	Area Code Data from MES to Hertwich 3
INTF_MESTOHERTW3_CASTID	Cast ID Data from MES to Hertwich 3
INTF_MESTOHERTW3_ORDER	Order No Data from MES to Hertwich 3
INTF_MES_TO_GARMCO	Creates GRMCAST and the related Backup File which is then transferred using File Service
LIMS AUTOPUB	Auto publish on spec results for certain labs

PROCESS_NAME	DSCR
LIMS DECODE INSTR	This runs Plm04_Alba_Business_Rules.DecodeInstrumentData from Quantos and XRDs
MESTOSAP_CERT_ANALYSIS_UBH	LIMS Analysis data for COA to SAP
MSGLOGSERVER	Message/Error log server. Executes continuously and is mandatory.
PA AUTO PROCESS	Creates default auto processing steps for each balance case
PA AUTO REPROCESS	Creates auto processing steps for each balance case on demand
PA SETUP	Creates a Production Balance auto processing entry for each new case
PBINTERFACE	Gathers data from PB History table and stores it in PB Snapshot table
PBPROCESSPENDING	Reprocess from Production Balance Interface. Reconcile current balances.
PBUUPDATE	Tie balance groups into balance family.
PHDSQL	PHD data via SQL pipe server
PROCESS_MESS_UPLOAD_CONS	Upload of CONS messages from MES to SAP
PROCESS_MESS_UPLOAD_CRST	Upload of CRST messages from MES to SAP
PROCESS_MESS_UPLOAD_MGRR_R	Upload of MGRR messages from MES to SAP
PROCESS_MESS_UPLOAD_PHCON	Upload of PHCON messages from MES to SAP
PROCESS_MESS_UPLOAD_PROD_BTCL	Upload of PROD AND BTCL messages from MES to SAP
PROCESS_MESS_UPLOAD_SOSO	Upload of SOSO messages from MES to SAP
PURGE ALPSYS DATA	Purge expired Alsys data
PURGE BACKGROUND STATUS	Purge the status messages generated by background processes
PURGE MESSAGE LOG DATA	Purge Message Log Records
ROBUST PHD DISTRIBUTION	Robust PHD data distribution
SAMPLE SCHEDULING	Sample Scheduling

PROCESS_NAME	DSCR
SEND_SAP_TAGS	Tracking Send SAP Tags
SET SAP DATE	Set SAP date and time from MES
SET_RPMS_TRIGGER_MRP	Set RPMS Material
SHIFT ACTIVITY	Populate shift configuration data daily.
TEMP_CB3_PP_ANODE	Copy Anode serial number to PHD tag
TRACKING ALLOY CONSUMPTIONS	Checks and Reports to SAP alloy consumptions
TRACKING CLEAN CHARGES	Clean old charges
TRACKING DELIVER LIQUID METAL	Opens a furnace for customers that require liquid metal, making it available for allocation
TRACKING GET HERTWICH3 INFO	Gets all the Bundles and Bundle Items from the Hertwich file and create the Bundles etc...
TRACKING INGOT LINE MONITOR	This program monitors the ingot line PLC and creates bundles and drops when signalled
TRACKING_FINAL_PO_1	Tracking Finalise Process Orders at the beginning of each shift
TRACKING_FINAL_PO_2	Tracking Finilise Process Orders at the begining of each shift
TRACKING_FINAL_PO_3	Tracking Finilise Process Orders at the begining of each shift
TRACKING_TILT_CRUC_AUTO	Tracking Crucible Tilt auto process
UBH POTAGE L1	Send Line 1 Pot Age data
UBH POTAGE L2	Send Line 2 Pot age data
UBH POTAGE L3	Send Line 3 Pot age data
UPDATEFROMUNF	UPDATEFROMUNF
USER LOG	Create a list of privileged user logons to the system
WPKS TO PHD	Move Oracle data to PHD for WPKS use

14.2 MES Reports

Some of the actual reports generated from the MES are enclosed in attached file –

[*MES_Reports.pdf*](#)