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X Betriebsmitteilung / Internal Message	Besprechungsbericht / Meeting Report	Besuchsbericht / Visit Report	Telefonat / Telcon	Ausstellungsdatum/Issue: 00157
Name: Bertie Harte			Abteilung/Dept.: [redacted]	**Index Log: 00001**
Firma, Ort/Company, Location: [redacted]				Datum/Date: 16/08/21

Betreff, Teilnehmer/Reference, Participants:
Bertie Harte [redacted]

Report – Automatic Re-order from ASM Equipment.

1.0 Scope:

This report details the current status of automatic material reorder from ASM equipment in KOI Mallow.

2.0 Status:

As of 15th January 2018 ASM X-series bays in KOI Mallow are outputting, in real time, material reorder information.
This information is automatically synchronised with the SAP "Control cycle number" using an SQL query.
An offline application pulls this information periodically from the Database and passes it to the SAP Kanban System.
Currently the system is in offline testing using the S11 system, minor bug fixes are being completed as they are discovered.

3.0 Details:

- [**DB**] – Database
- [**Table**] – An object within the DB that contains all the information required.
- [**SQL**] Structured Query Language – used to interact with the DB.
- [**Control Cycle Number**] - A unique SAP ID used to join components to floor locations.
- **[JOIN]** – Link information from separate tables in a DB using common information.

ASM Setup centre application functions by using a central DB [SiplaceSetupCenter] on the IEXXPLK00X server.
This DB contains many Tables that store information relating to every material transaction onto and from all ASM Cells.
Two of the tables that are of specific interest are "AutomaticReorder" and "Reorder".
These tables have historically been empty as the option to use them was never activated.

On 15th January 2018 the function to reorder was activated in set-up centre on all KOI Mallow X-Series Bays.
Immediately the "AutomaticReorder" and "Reorder" tables started to receive data from the ASM Cells.
This data contains date-time, Component part number, HU and ASM Location – "Line", "Station", and "Location".

However the format of the information in the DB Tables is incompatible with the format(s) required by stores.
The information in the "AutomaticReorder" table is also automatically deleted after 30[s].
The information in the table "Reorder" remains in the DB so is a more useable resource.

	PointOfTime	Component	Line	Station	Location
1	2018-03-06 09:17:25.320	66250110810	Kostal\Bay 2	Kostal\X4i-1	3
2	2018-03-06 09:15:25.257	10034717	Kostal\Bay 2	Kostal\SX2-1	2

Technical Solution:

- A new DB was created on the server – this is to maintain isolation from the core "SiplaceSetupCenter" DB.
- A new Table "SAP Location" was created that contains the "Line", "Station", "Location" information and the "SAP Location" (i.e "BAY1-SMTR" etc.)

	Line	Station	Location	SAP Location
1	Kostal\Bay 1	Kostal\X4iS-1	1	BAY1-SMTR
2	Kostal\Bay 1	Kostal\X4iS-1	2	BAY1-SMTR

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- A SQL query was written to look at the most recent entries in the “Reorder” table and ***JOIN*** the “Line”, “Station”, “Location” information to the “SAP Location” so the output is:

	Time	Component	SAP Location
1	2018-03-06 09:17:25.320	66250110810	BAY2-SMTL
2	2018-03-06 09:15:25.257	10034717	BAY2-SMTL

- The resulting “Component” is still incompatible with the SAP number – as SAP uses the “long” number while Siplace uses the “short” version. While possible to align both systems to use the same data it was found to be an unnecessary complication.

- SAP completes all transactions using a “Control cycle number”.

- A new Table containing the “Control cycle number” was created in the “Test” DB. The source data was provided by SAP export to an Excel file – the “long” part number was truncated to match the “Short” number and imported.

	Material Number	Supply Area	Control cycle number
1	10030669	BAY1-SMTL	3CC252307
2	10030671	BAY1-SMTL	3CC252306

- A SQL Query was written to combine all connected data from the separate tables into a single return that contains the correct data required by SAP.

	PointOfTime	Component	Supply Area	Control cycle number
1	2018-03-06 09:17:25.320	66250110810	BAY2-SMTL	3CC16749
2	2018-03-06 09:15:25.257	10034717	BAY2-SMTL	3CC15936
3	2018-03-06 09:14:25.240	10259944	BAY2-SMTR	3CC253257
4	2018-03-06 09:11:37.917	66210110470	BAY1-SMTL	3CC16671
5	2018-03-06 09:11:37.907	66250101070	BAY1-SMTR	3CC23243

- For testing and debug purposes the above outputs additional data for “Component” and “Supply Area” – all SAP actually requires from the system is “Control cycle number”.

	PointOfTime	Control cycle number
1	2018-03-06 09:17:25.320	3CC16749
2	2018-03-06 09:15:25.257	3CC15936

4.0 Further development and requirements:

- Currently the system is working is a testing environment.
- Final integration into the KANBAN system is required – scheduled for testing in KW 12-14.
- Minor routine maintenance of the newly created DB and Tables will be required.
- Any updates to either the Factory Layout – such as new equipment or equipment moves will require the “SAP Location” Table to be updated.
- The “Control cycle number” source in SAP also gets updated following installations or moves. This will also mean the “Control cycle number” table will need to be updated as well.
- Low QTY reels are a problem as the “Time” between reorders is not enough to clear an order. The solution to this is to issue reels as a batch – i.e. issue 4 reels for a transaction.
- These “Load Carriers” are excluded from the SQL query and are manually ordered.
- Agree a defined time for material supply after reorder, currently this is set to 35mins, during testing it was found that 40 -50[min] was a more robust interval, however the Line operators were complaining that the component level indicator alarms on the machines were masking other errors. This setting will be monitored and adjusted based on feedback.