

runMES User Manual

©Copyright StepTech Systems 2019. All rights reserved

StepTech

Contact window:

Joshua Chin :
joshua.chin@steptech.io

Revision History

Rev#	Date	Description	By	Notes
1906.b1	2019/6/3	1906 Beta 1 release	Joshua Chin	
1907.rc1	2019-07-10	1907 rc1 release	Joshua Chin	<ul style="list-style-type: none">1. Add work order import2. Add fab monitoring3. Enhance EQ record - to many4. Add manager user group5. Change installation procedures6. Add start up scripts
1907.rc2	2019-07-18	1907 rc1 release	Joshua Chin	<ul style="list-style-type: none">1. Add EQ StepIn2. Add lot priority change3. Add Redis server
1908rc1	2019-08-16	1908rc1 release	Joshua Chin	<ul style="list-style-type: none">1. Modeling import2. User import

Table of Contents

1.	License agreement	7
2.	Scope of runMES	8
3.	System Architecture	9
4.	System installation	10
4.1.	Operation system	10
4.2.	Database	10
4.3.	Python	10
4.4.	MQTT	10
4.5.	Redis	10
5.	System initial setup	10
5.1.	Operation system	10
5.2.	Database	10
5.3.	runMES source	11
5.4.	Django	11
5.5.	Web server	12
5.6.	Change files to executable	12
	change all .sh files under runMES to executable (start_CFM.sh, start_eap_if.sh, start_log_runMES.sh, start_runMES.sh, install_pip.sh)	12
6.	Data cleanup from old runMES	13
6.1.	clean up database	13
6.2.	remove old migration files	14
6.1.	Migration	14
6.1.	Create users	14
7.	System startup	15
7.1.	Startup PostgreSQL (please refer to PostgreSQL manual)	15
7.2.	Activate python virtual environment	15
7.3.	Startup MQTT (please refer to Mosquitto manual)	15
7.4.	Startup runMES (including web server, async logger, fab monitoring, EAP interface)	15
8.	Data modeling - Users and User Groups	16
8.1.	Data backup	16
8.2.	Data modeling approach	17
8.3.	User name and Group	17
8.1.	User group	18
8.1.1.	Create user groups:	18
8.1.2.	Assign Admin privileges: all privileges	18
8.1.1.	OP, Super, Manager, Admin privileges:	18
8.2.	User	19
8.3.	Data modeling sequence	20
8.3.1.	Step 1: create groups(OP, Super, Manage, Admin), users	20
8.3.2.	Step 2:	20
8.3.1.	Step 3:	20
8.3.1.	Step 4:	20
8.3.1.	Step 5:	20
	• Codes modeling (no sequence, you can do any time before production)	20
8.4.	Models relationship	21
8.5.	General rules for data modeling	22
8.6.	Code	24
8.7.	EQ modeling	25
8.8.	EQ states	25
8.9.	Data collections	26
8.9.1.	Data item category	26
8.9.2.	Data items	27
8.9.3.	Data item Spec	27
8.9.4.	Data collection plan	28
8.9.5.	Breaking	29

8.9.1. Bin Grade	30
8.9.2. Binning	30
8.10. Process Steps	31
8.10.1.StepIn, StepOut	31
8.10.2.Category	31
8.10.1.Recipe	31
8.10.2.EQ Grp	31
8.10.3.DC plan	32
8.10.4.Step Check	32
8.10.1.Instruction	32
8.11. Process	33
8.12. Process parameters	34
8.13. Product	35
8.14. Product parameters	35
8.15. Lot Record	36
8.16. EQ Record	36
8.17. Data modeling by import CSV files	37
8.18. Language translation	38
9. Operator GUI	39
9.1. Change Password	40
9.2. Fab management	41
9.2.1. Work Order	41
9.2.2. Work Order Query	42
9.2.3. Work Order Import	43
9.2.4. Lot start	44
9.2.5. Batch lot start	45
9.2.6. Real time Fab monitoring dashboard	46
9.3. Lot query	47
9.3.1. Lot Info	47
9.3.2. Lot List	49
9.3.3. Lot Query EQ	50
9.3.4. Lot History	51
9.3.5. Lot Data Collection History	52
9.3.6. Lot Run Card Query	53
9.4. Lot operations	54
9.4.1. StepIn	54
9.4.2. EQ Lot StepIn	56
9.4.3. StepOut	57
9.4.4. Data collections	58
9.4.5. Breaking	59
9.4.6. Binning	60
9.4.7. Lot Record	61
9.5. Lot managements	62
9.5.1. Lot Split	62
9.5.2. Lot Merge	63
9.5.3. Lot SplitMerge Hist	64
9.5.4. Lot Bonus	65
9.5.5. Lot Scrap	66
9.5.6. Lot BonusScrap Hist	67
9.5.7. Lot Hold	68
9.5.8. Lot Release	69
9.5.9. Lot HoldRelease Hist	70
9.5.10.Lot State	71
9.5.11.Lot Ship	72
9.5.12.Change Product	73
9.5.13.Lot Priority Change	74
9.6. EQ management	75

StepTech

9.6.1. EQ List	75
9.6.2. EQ Query Lot	75
9.6.3. EQ Record	76
9.6.4. EQ Record Hist	77
9.6.5. EQ Hold	77
9.6.6. EQ Release	78
9.6.7. EQ State Change	79
Appendix A – Hardware reference	80
1. For testing and development	80
2. For production	80

1. License agreement

runMES is an open source and follow BSD licenses policy

Copyright(c)2019, copyright StepTech Systems

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:
This product includes software developed by the StepTech.
4. Neither the name of the StepTech nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY StepTech Systems "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL StepTech BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

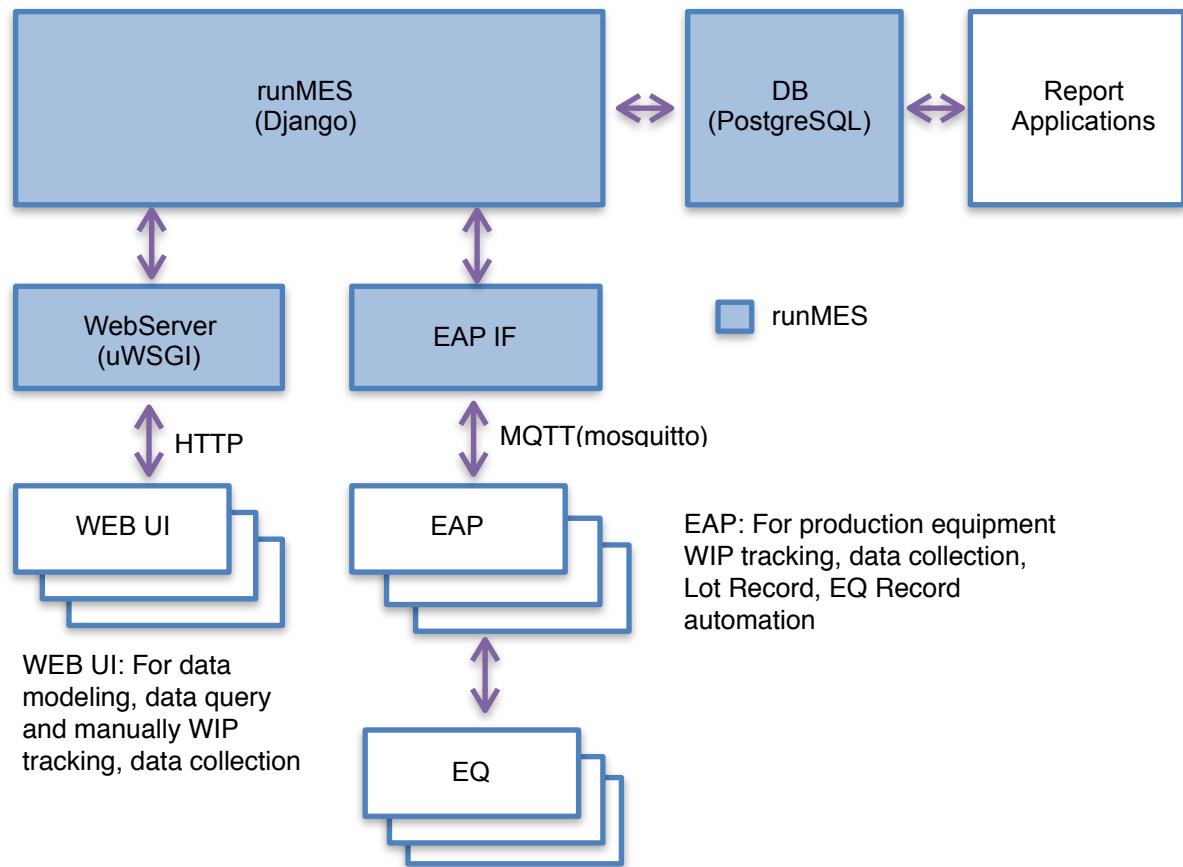
2. Scope of runMES

The roles of runMES is a Manufactory Execution System for factory management and automation.

Major functions are

- WIP tracking, data collection, lot management, equipment management
- Work order management, lot start
- Real time fab monitoring
- Lot Record for non-tracking data collection
- EQ Record for EQ daily check, SPC/FDC data collection(EAP automation)
- EAP(Equipment Application Program) automation interfaces (detail in other document)

3. System Architecture



4. System installation

if you are not familiar with Linux, PostgreSQL, Django and Web server, It is recommend to install runMES from an image file (with operation system, database, python and MQTT)

4.1. Operation system

Linux: Ubuntu 1804

4.2. Database

PostgreSQL 11.3(please refer to PostgreSQL installation manual)
pgadmin3 (PostgreSQL management tool)

4.3. Python

It is recommend to install runMES in a python virtual environment for easy version upgrade, after installed python and virtual environment, run install_pip.sh in shell to install required python files

- Version 3.6 (python3-pip python3-dev build-essential libssl-dev libffi-dev python3-setuptools)
- Django 2.2.1
- django-crispy-forms 1.7.2
- django-extensions 2.1.6
- django-modeladmin-reorder 0.3.1
- paho-mqtt 1.4.0
- psycopg2-binary 2.8.2
- shortuuid 0.5.0
- whitenoise 4.1.2
- uwsgi 2.0.18
- validators 0.12.5
- redis 3.2.1

4.4. MQTT

mosquitto 1.4.15 (please refer mosquitto installation manual)

4.5. Redis

install redis-server v4.0.9 (please refer to redis manual)

5. System initial setup

5.1. Operation system

- Computer name
- Ip address
- User account

5.2. Database

- Startup PostgreSQL
- Change the postgres user password
- Create user name and password for runMES (the user name and password will needed in Django setting.py)
- Create database for runMES
- Create initial database tables from Django(see below about manage.py makemigrations and manage.py migrate)

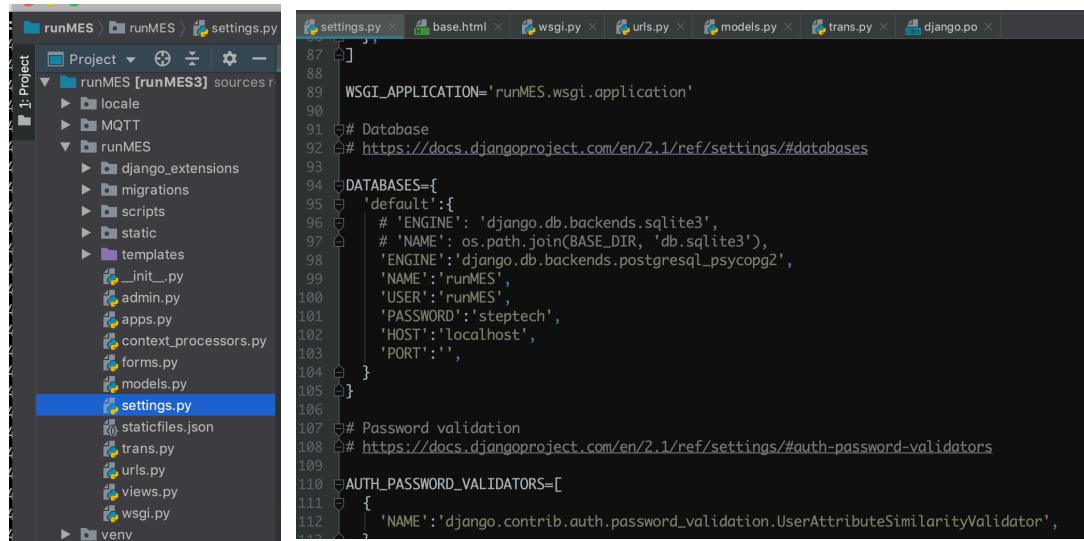
5.3. runMES source

Copy runMES source to your designated directory under a python virtual environment (e.g. /runMES_1908rc1/)

5.4. Django

Goto the directory with manage.py (runMES/runMES/manage.py)

Update the file settings.py database related contents,(e.g USER and PASSWORD)



The screenshot shows a code editor with multiple tabs open at the top: settings.py, base.html, wsgi.py, urls.py, models.py, trans.py, and django.po. The left sidebar shows a project structure with a 'Project' dropdown, a 'runMES [runMES3] sources' folder containing 'locale', 'MQTT', and 'runMES' (which further contains 'django_extensions', 'migrations', 'scripts', 'static', 'templates', and several Python files like __init__.py, admin.py, apps.py, context_processors.py, forms.py, and models.py). The 'settings.py' file is selected and highlighted in blue. The code in 'settings.py' is as follows:

```
87 ]
88 WSGI_APPLICATION='runMES.wsgi.application'
89
90 # Database
91 # https://docs.djangoproject.com/en/2.1/ref/settings/#databases
92
93 DATABASES={
94     'default':{
95         'ENGINE': 'django.db.backends.sqlite3',
96         # 'NAME': os.path.join(BASE_DIR, 'db.sqlite3'),
97         'ENGINE': 'django.db.backends.postgresql_psycopg2',
98         'NAME': 'runMES',
99         'USER': 'runMES',
100        'PASSWORD': 'steptech',
101        'HOST': 'localhost',
102        'PORT': '',
103    }
104 }
105
106
107 # Password validation
108 # https://docs.djangoproject.com/en/2.1/ref/settings/#auth-password-validators
109
110 AUTH_PASSWORD_VALIDATORS=[
111     {
112         'NAME': 'django.contrib.auth.password_validation.UserAttributeSimilarityValidator',
113     },
114     {
115         'NAME': 'django.contrib.auth.password_validation.MinimumLengthValidator',
116     },
117     {
118         'NAME': 'django.contrib.auth.password_validation.CommonPasswordValidator',
119     },
120     {
121         'NAME': 'django.contrib.auth.password_validation.NumericPasswordValidator',
122     },
123 }
```

5.5. Web server

Goto the directory runMES(upper level of manage.py), update uWSGI initial file - uwsgi.ini (http and basedir)

```
[uwsgi]
http=localhost:8000
#http=192.168.8.101:8000
basedir=/Users/joshuachin1/Dropbox/workspace/runMES/runMES_1908rc1
chdir=%(basedir)/runMES/
module = runMES.wsgi:application
check-static=%(basedir)/runMES/static
virtualenv=%(basedir)/
env=DJANGO_SETTINGS_MODULE=runMES.settings
processes = 10
master = True
pidfile=%(basedir)/uwsgi-master.pid
max-requests=500
vacuum=True
http-timeout=120
buffer-size=32768

log-5xx=true
disable-logging = true

log_dir=%(basedir)/runMES
log_prefix=uwsgi-
log_num=7

logto = %(log_dir)%(log_prefix)@(%exec://date +%%Y-%%m-%%d).log
log-reopen = true
unique-cron = 23 3 -1 -1 { sleep 66 && kill -HUP $(cat %(pidfile)) && ls -tp %(log_dir)%(log_prefix)* | grep -v '$' | tail -n +%(log_num) | xargs -d '\n' -r rm --; }
```

5.6. Change files to executable

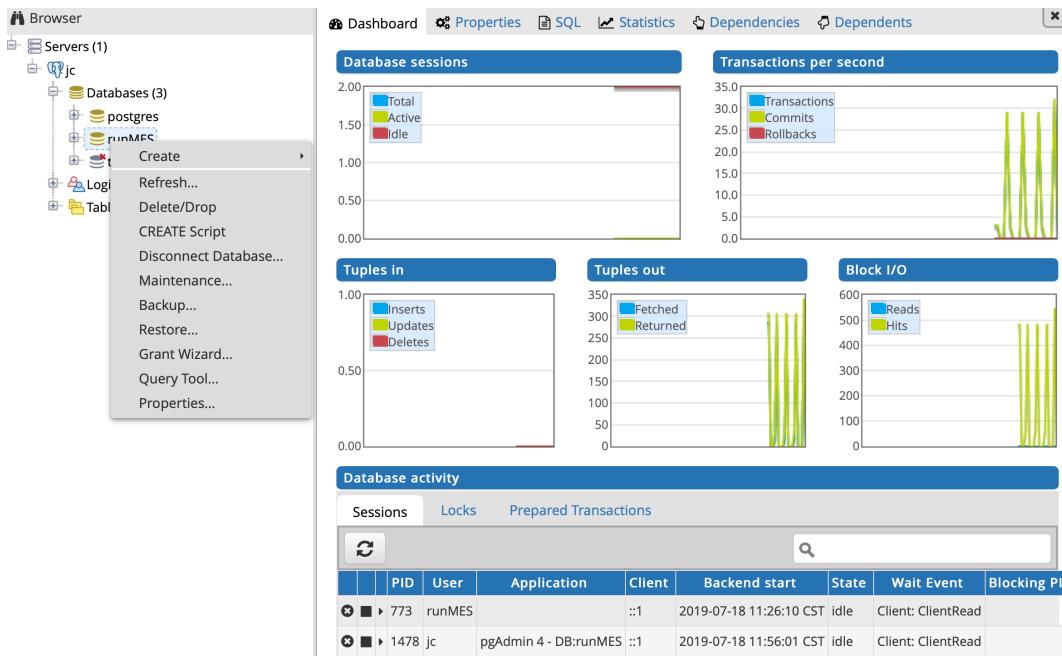
change all .sh files under runMES to executable (start_CFM.sh, start_eap_if.sh, start_log_runMES.sh, start_runMES.sh, install_pip.sh)

6. Data cleanup from old runMES

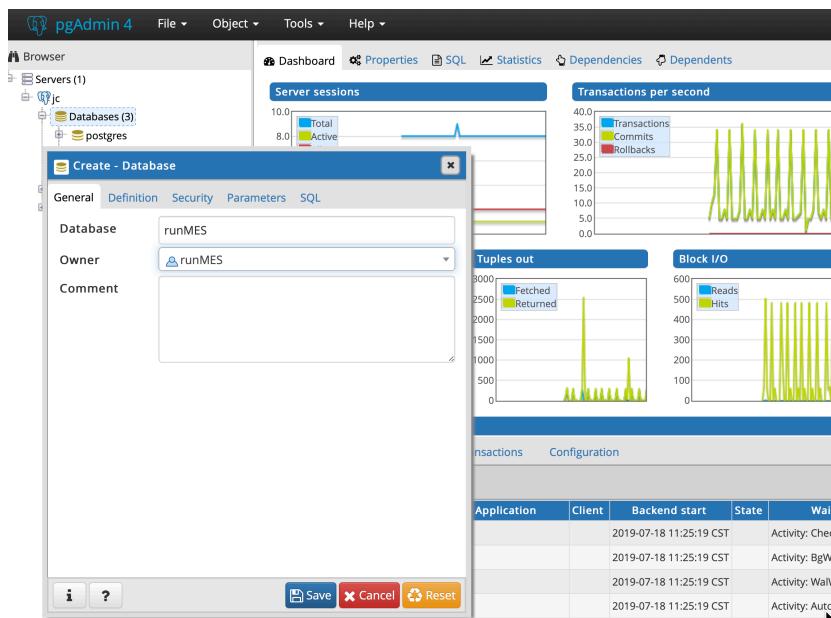
If you prefer to start a refresh new database with any default testing data and modeling data, you can clean runMES by the following instructions

6.1. clean up database

- delete database runMES from pgadmin or psql console

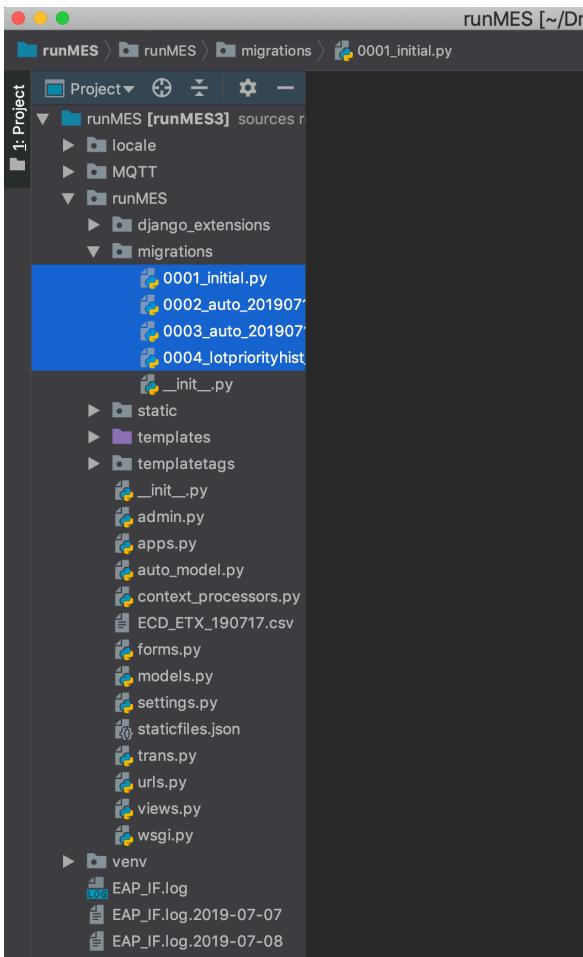


- create new new database runMES (remember the Owner)



6.2. remove old migration files

remove the migration files under runMES/runMES/migrations, keep the `__in__.py` only.



6.1. Migration

Under the directory with `manage.py`, type `python manage.py makemigrations`, then `python manage.py migrate`, the system will create new schema to runMES database.

6.1. Create users

- Startup system
- Under the directory with `manage.py`, type `python manage.py createsuperuser`, input your user name and password for system super user
- login to runMES admin UI (<http://yourip:8000/admin>), start to create user groups ('OP', 'Super', 'Manager', 'Admin') and users, assign user group's privileges to each user.

7. System startup

After system boot up -

7.1. Startup PostgreSQL (please refer to PostgreSQL manual)

7.2. Activate python virtual environment

- Goto the runMES directory with manage.py
- Type source/bin/activate to get into virtual environment

7.3. Startup MQTT (please refer to Mosquitto manual)

7.4. Startup runMES (including web server, async logger, fab monitoring, EAP interface)

- run start_runMES.sh in shell

8. Data modeling - Users and User Groups

If you are install from an empty database for runMES, you have to start from creating an new superuser

- goto the directory with manage.py
- issue command > python manage.py createsuperuser
- input superuser name and password
- goto runMES admin GUI for data modeling (ip:8000/admin)
- The default data modeling for user group must manually model, the required groups are OP, Super, Manger, Admin(type sensitive)
- OP: for query, WIP tracking, data collection
- Super: for lot management(lot start, hold, release, bonus, scrap..)
- Manager: for Work order, Lot start, Fab monitoring
- Admin : for data modeling
- create users and assign groups privileges to each user

8.1. Data backup

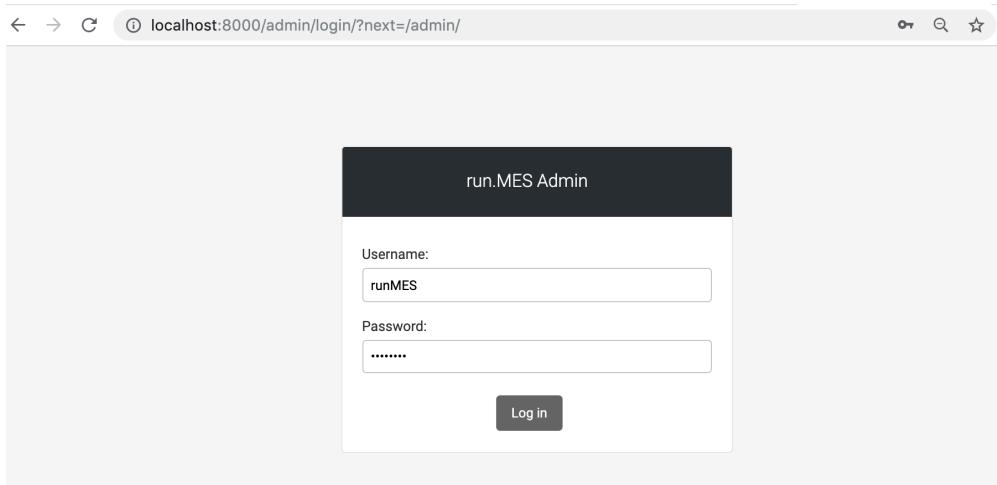
- In a production, it is critical to backup data every day, you can verify the data in a testing environment.

8.2. Data modeling approach

If you are new to runMES, it is recommended you start data modeling manually, once you are familiar with the data relationship in modeling, you can try with modeling import for mass data modeling.

8.3. User name and Group

- Login runMES admin <http://yoursite/admin>



- runMES data modeling GUI

A screenshot of the run.MES Site Admin interface. The top navigation bar shows 'run.MES Admin' on the left and 'WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT' on the right. The main area is titled 'run.MES Site Admin'. It features several sections: 'AUTHENTICATION AND AUTHORIZATION' (Users, Groups), 'DATA COLLECTION MODELING -' (Dc item category, Dc items, Dc item specs, Dc plans), 'BINNING, BREAKING MODELING -' (Bin grades, Binnings, Breakings), and 'LOT/EQ RECORD MODELING -' (Lot records, Eq records). Each section has 'Add' and 'Change' buttons. To the right, there's a 'Recent actions' sidebar listing various recent operations like 'runMES User', 'StressTest-8,PRD:LED RED_1 Work order', and 'CD1-W2 Process parameters'.

8.1. User group

8.1.1. Create user groups:

runMES requires default groups: OP,Super,Admin

8.1.2. Assign Admin privileges: all privileges

The removal of Admin(Super user who has admin privilege) users, please refer to Django manual, this will require command line operations.

The screenshot shows a user interface for managing group permissions. At the top, there's a 'Name:' field containing 'Admin'. Below it, a 'Permissions:' section is divided into two panels: 'Available permissions' (left) and 'Chosen permissions' (right). The 'Available permissions' panel contains a list of permission codes like 'admin | log entry | Can add log entry' and 'auth | group | Can change group'. The 'Chosen permissions' panel contains a similar list, with some items having circular checkboxes next to them. At the bottom of the interface are buttons for 'Delete', 'Save and add another', 'Save and continue editing', and a large 'SAVE' button.

8.1.1. OP, Super, Manager, Admin privileges:

The system divides privileges into four groups, you can create the 4 groups manually or run the script (initial_groups.sh)

One user can assign with multiple groups of privileges

- OP group
For lot query, StepIn, StepOut, Data Collection
- Super group
For lot and EQ status changes, lot split/merge, bonus/scrap, change product
- Manager group
Work order maintain, lot start, fab monitoring
- Admin group
For data modeling and users privileges maintain

8.2. User

- Create a new user
- Assign password
- Choose groups
- Turn on permission for Admin users only
- Save

run.MES Admin

WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT

Home › Authentication and Authorization › Users › runMES

Change user

HISTORY

Username: runMES
Required: 150 characters or fewer. Letters, digits and @/./+/_. only.

Password: algorithm: pbkdf2_sha256 iterations: 150000 salt: eppGB9***** hash: t9cNDS*****
Raw passwords are not stored, so there is no way to see this user's password, but you can change the password using this form.

Personal info

First name:

Last name:

Email address:

Permissions

Active
Designates whether this user should be treated as active. Unselect this instead of deleting accounts.

Staff status
Designates whether the user can log into this admin site.

Superuser status
Designates that this user has all permissions without explicitly assigning them.

Groups:

Available groups	Chosen groups
<input type="text"/> Filter	<input type="text"/> Admin OP Super

Important dates

Last login: Date: Today |
Time: Now |

Date joined: Date: 2019-05-17 Today |
Time: 23:28:22 Now |

Action Buttons

Delete **Save and add another** **Save and continue editing** **SAVE**

8.3. Data modeling sequence

Each Process Step includes step operations by modeling

- StepIn (default): stands for start of a process step
- StepOut (default): stands for end of a process step
- Data collection (optional): to collection material, tools, metrology, equipment parameters and sensors information
- Breaking (optional): for product has breaking operation, the result will change to new product and quantity of the lot
- Binning (optional): for product needs grading, the result will divide the lot to sub lots by each grades

8.3.1. Step 1: create groups(OP, Super, Manage, Admin), users

8.3.2. Step 2:

- Data Collection
Data collection category > Data item > Data item spec > DC Plan
- EQ
Area > EQ Group > Equipment
- Binning
Bin Grade > Binning

8.3.1. Step 3:

- Records
Lot Record, EQ Record (Based on Data Collection)

8.3.1. Step 4:

- Process (no Breaking in process steps, since Breaking need special take care)
Step Category > Process Step > Process > Product
- Process with the Breaking in a Process Step
Since Breaking needs to assign a new Product, the new Product required Process < Process Step < Step Category related modeling should be completed before the Breaking modeling as previous process modeling sequence.

e.g.

If you have a LED Wafer product with a breaking process step, the breaking operation will change to a LED Chip product, the sequence of modeling will be

1. LED Chip product required modeling: Step Category > Process Step > Process
2. LED Wafer product required modeling: Step Category > Process Step > Process

8.3.1. Step 5:

- **Codes modeling (no sequence, you can do any time before production)**

Lot Bonus/Scrap, Lot Hold/Release, EQ Hold/Release

8.4. Models relationship

Product <map to> Process Flow

One process flow have many process steps, each process step can have many operations such as StepIn, StepOut, Data collection, break or binning

- Process Flow
 - ✓Process Step 1
 - StepIn
 - StepOut
 - ✓Process Step 2
 - StepIn
 - DC Plan 2
 - StepOut
 - ✓Process Step n
 - StepIn
 - Break
 - StepOut
- DC Plan <map to> ProcessStep
- DC Plan <map to> Lot Record
- DC Plan <map to> EQ Record

One DC Plan can have many DC Items

- ✓DC Plan 1
 - Chamber Temp 1
- ✓DC Plan 2
 - AOI Width 1
 - AOI Offset 1
- ✓DC Plan 3
 - Material PN
 - Material SN

8.5. General rules for data modeling

- Act(active) flag: this item can be seen from other data modeling
- Frz(freeze) flag: once the flag turn on, the record will be frozen, it can not change anymore, and it must turn on in order to let other data modeling use this item
- In order to protect the product in product line, once the lot start with the related data modeling will be protect from change(only limited fields can be changed after frozen, eg. active) or delete from modeling GUI
- If you do not need some data models, you just turn off the Act flag and it will not choose by other modeling anymore.

The screenshot shows a web-based administration interface for 'run.MES Admin'. The top navigation bar includes links for 'WELCOME, JC', 'VIEW SITE / CHANGE PASSWORD / LOG OUT', 'Home', 'Runmes', 'Dc item categories', and 'Add dc Item category'. The main content area is titled 'Add dc Item category'. It contains several input fields: 'Name' (with a blue border indicating focus), 'Description', 'Type' (a dropdown menu), 'Unit', and two checkboxes for 'Act' and 'Frz'. At the bottom right are three buttons: 'Save and add another', 'Save and continue editing', and a large 'SAVE' button.

8.6. Code

- bonus scrap codes
- Lot hold release codes
- Eq hold release codes

CODE MODELING -		
Return codes		Add
Bonus scrap codes		Add
Lot hold release codes		Add
Eq hold release codes		Add

8.7. EQ modeling

- Area: for reporting purpose
- Eq group: eq group will map to process step
- Eq: each eq belongs to a eq group

run.MES Admin

WELCOME, JC. VIEW SITE / CHANGE PASSWORD

Home > Runmes > Eqs

Select eq to change

NAME	GROUP NAME	EQ TYPE	PARENT	AREA NAME	ACT	FRZ	UPDATE
Bin-01	Binning	STANDALONE	-	Fab1-1F	✓	✓	March 30, 2019, 1:33 a.m.
Dummy	裁板	STANDALONE	-	Fab1-2F	✗	✗	Jan. 22, 2019, 5:17 p.m.
LED Binning-01	LED Binning	STANDALONE	-	Fab1-1F	✓	✓	May 12, 2019, 4:40 p.m.
LED Binning-02	LED Binning	STANDALONE	-	Fab1-1F	✓	✓	April 6, 2019, 10 p.m.
LED 切割-01	LED 切割	STANDALONE	-	Fab1-1F	✓	✓	May 15, 2019, 12:04 a.m.
LED 鮑刻-01	LED 鮑刻	STANDALONE	-	Fab1-1F	✓	✓	May 15, 2019, 12:01 a.m.
LED 鍍膜-01	LED 鍍膜	STANDALONE	-	Fab1-1F	✓	✓	May 14, 2019, 11:55 p.m.
LED 黃光-01	LED 黃光	STANDALONE	-	Fab1-1F	✓	✓	May 14, 2019, 11:59 p.m.
LED 切割-02	LED 切割	STANDALONE	-	Fab1-1F	✓	✓	April 7, 2019, 1:36 a.m.
LED 鮑刻-02	LED 鮑刻	STANDALONE	-	Fab1-1F	✓	✓	April 7, 2019, 1:35 a.m.
LED 鍍膜-02	LED 鍍膜	STANDALONE	-	Fab1-1F	✓	✓	April 7, 2019, 1:33 a.m.
LED 黃光-02	LED 黃光	STANDALONE	-	Fab1-1F	✓	✓	April 6, 2019, 9:57 p.m.

FILTER

- By name
- All
- Fab1-1F
- Fab1-2F

- By name
- All
- Binning
- Dummy
- LED Binning
- LED 切割
- LED 鮑刻
- LED 鍍膜
- LED 黃光
- 中 AOI
- 內 AOI
- －檢
- －銅

8.8. EQ states

The EQ states vs runMES validation for StepIn as following

- ('RA','Run Available')
- ('RN','Run Not Available')
- ('PM','Maintenance')
- ('ID','Idle')
- ('DM','Down')
- ('LN','Lend')
- ('SU','Setup')

Only RA, ID and LN states are allow to StepIn

8.9. Data collections

8.9.1. Data item category

For data item modeling consistency, runMES provides the item category to reduce naming issue for each data items

NAME	TYPE	UNIT	ACT	FRZ
AOI 偏移_1	FLOAT	MIL	✓	✓
AOI 線寬_1	FLOAT	MIL	✓	✓
PH 值	FLOAT	pH values	✓	✓
TOOL PN	TEXT	EA	✓	✓
TOOL SN	TEXT	EA	✓	✓
壓力	FLOAT	Kg/cm square	✓	✓
尺寸	INTEGER	mm	✓	✓
斜邊	INTEGER	mm	✓	✓
比重	FLOAT	SG	✓	✓
清洗	BOOLEAN	手動作業	✓	✓
溫度	FLOAT	Degree C	✓	✓

8.9.2. Data items

Data item modeling by choosing item category

The screenshot shows the 'run.MES Admin' interface with the URL 'run.MES Admin'. The top navigation bar includes 'WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT'. Below it, the breadcrumb navigation shows 'Home > Runmes > Dc items > Add dc item'. The main content area is titled 'Add dc item'. It features a 'Name:' input field and a 'Category:' dropdown menu. The 'Category:' dropdown is open, showing a list of items categorized under 'Act' (AOI 偏移_1, AOI 線寬_1, PH 值, TOOL PN, TOOL SN) and 'Frz' (壓力, 尺寸, 斜邊, 比重, 清洗, 溫度, 目檢). At the bottom right are three buttons: 'Save and add another', 'Save and continue editing', and a large 'SAVE' button.

8.9.3. Data item Spec

Data item spec defined the dc item spec and OOS actions

The screenshot shows the 'run.MES Admin' interface with the URL 'run.MES Admin'. The top navigation bar includes 'WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT'. Below it, the breadcrumb navigation shows 'Home > Runmes > Dc item specs > Add dc item spec'. The main content area is titled 'Add dc item spec'. It features a 'Select Spec Item' section with a 'Name:' input field containing 'test width' and an 'Item:' dropdown set to '尺寸-寬'. Below this is a 'Query' tab. Under the 'Query' tab, there are several input fields: 'Unit:' (mm), 'Data Type:' (I), 'Integer Spec Target:', 'Integer Spec High:', 'Integer Spec Low:', 'Screen High:', and 'Screen Low:'. At the bottom of the form, there are several checkboxes: 'OOS Hold Lot', 'OOS Hold EQ', 'OOS Send Mail', 'Active', and 'Freeze'. A large 'Save' button is located at the bottom right.

8.9.4. Data collection plan

A data collection plan is a set of data collection items and specs for a Process Step, Lot record, EQ record

Lot Record will not check item specs(since Lot Record will not validate Lot and EQ), therefore if the dc spec is only will be used by Lot Record it will be meaningless.

Again, the data item and spec 'Act' and 'Frz' flag must turn on before the data collection plan modeling can see it

The screenshot shows a web-based application interface for managing data collection plans. At the top, there's a header bar with the title 'run.MES Admin' and a 'WELCOME, JC. VIEW SITE / CH...' link. Below the header, a breadcrumb navigation path reads 'Home > Runmes > Dc plans > A-發料'. The main content area has a title 'Change dc plan' and several input fields:

- A checkbox labeled 'Act' is checked.
- A 'Name:' field contains 'A-發料'.
- A 'Description:' field is empty.
- An 'Update:' field shows 'March 15, 2019, 12:48 a.m.'
- A 'Frz:' field has a green checkmark.
- An 'Items:' field lists '基板 SN, 基板 PN, 銅皮 SN, 銅皮 PN'.
- An 'Spec:' field lists 'A-發料 銅皮 PN, A-發料 基板 PN'.

Below these fields is a table titled 'DC PLAN DC ITEMS' with three columns: 'DCITEMS', 'DCITEM SPEC', and 'IS REQUIRED'. The table contains four rows, each with a checked checkbox in the 'IS REQUIRED' column:

DCITEMS	DCITEM SPEC	IS REQUIRED
Plan:A-發料,Item:基板 PN 基板 PN	A-發料 基板 PN	<input checked="" type="checkbox"/>
Plan:A-發料,Item:基板 SN 基板 SN	-	<input checked="" type="checkbox"/>
Plan:A-發料,Item:銅皮 PN 銅皮 PN	A-發料 銅皮 PN	<input checked="" type="checkbox"/>
Plan:A-發料,Item:銅皮 SN 銅皮 SN	-	<input checked="" type="checkbox"/>

8.9.5. Breaking

The break operation is for cutting or breaking process, the lot quantity will change base on the break operation defined quantity and change to a new product, therefore the quantity will be different from StepIn to StepOut

Limitation: current version support only one new product

run.MES Admin

WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT

Home > Runmes > Breakings > LED Breaking

Change breaking

HISTORY

Act

Name:	LED Breaking
New Prod:	LED BIN
Brk Qty:	500
Description:	
Update:	April 6, 2019, 11:14 p.m.
Frz:	<input checked="" type="checkbox"/>

Save and add another Save and continue editing SAVE

8.9.1. Bin Grade

Define grade level

The screenshot shows a table titled "Select bin grade to change". The columns are NAME, DESCRIPTION, UPDATE, ACT, and FRZ. There are five rows:

NAME	DESCRIPTION	UPDATE	ACT	FRZ
BIN 3 EI-2	lv:39.99, Wd:464.9	Feb. 1, 2019, 11:44 p.m.	✓	✓
BIN 2 EI-1	lv:34.99, Wd:464.9	Feb. 1, 2019, 11:44 p.m.	✓	✓
BIN 1 EH	lv:44.99, Wd:459.9	Feb. 1, 2019, 11:43 p.m.	✓	✓
NG	Not Good	Feb. 1, 2019, 11:39 p.m.	✓	✓

8.9.2. Binning

Binning is for grading lots, once the lot divides to many grades, the lot will split to each grade after StepOut.

Binning define what bin grades should be included

The screenshot shows a form titled "Change binning". It includes fields for Name (LED A Bin), Description, Update (Feb. 1, 2019, 11:45 p.m.), Frz (checkbox checked), and Bin_Grade (NG, BIN 1 EH, BIN 2 EI-1, BIN 3 EI-2). At the bottom are buttons for Save and add another, Save and continue editing, and SAVE.

<input checked="" type="checkbox"/> Act
Name: LED A Bin
Description:
Update: Feb. 1, 2019, 11:45 p.m.
Frz: <input checked="" type="checkbox"/>
Bin_Grade: NG, BIN 1 EH, BIN 2 EI-1, BIN 3 EI-2

[Save and add another](#) [Save and continue editing](#) **SAVE**

8.10. Process Steps

Process step is a collections of manufacturing operations and define recipe, instruction.
The operations can be multiple (DC Plan + Break)
Sequence: Step Check > StepIn > DC Plan > Break > Bin > StepOut

The screenshot shows the 'run.MES Admin' application interface. At the top, there's a navigation bar with 'WELCOME, Jc. VIEW SITE / CHANGE PASSWORD / LOG OUT'. Below it, a breadcrumb navigation shows 'Home > Runmes > Process steps > Add process step'. The main area is titled 'Add process step'. It contains several input fields and dropdown menus:

- Name: [Input field]
- Description: [Input field]
- Category: [Dropdown menu with edit (+) and add (+) icons]
- Recipe: [Input field]
- EQ Grp: [Dropdown menu with edit (+) and add (+) icons]
- Step Check: [Dropdown menu with edit (+) and add (+) icons]
- DC Plan: [Dropdown menu with edit (+) and add (+) icons]
- Bin: [Dropdown menu with edit (+) and add (+) icons]
- Break: [Dropdown menu with edit (+) and add (+) icons]
- Instruction: [Large text area with scroll bars]
- Act
- Frz

At the bottom right, there are three buttons: 'Save and add another', 'Save and continue editing', and a large 'SAVE' button.

8.10.1. StepIn, StepOut

Are default to each process step(not show up in modeling UI).

8.10.2. Category

Category is only for reporting categories

8.10.1. Recipe

Define the process step recipe

8.10.2. EQ Grp

Map to EQ Group

8.10.3.DC plan

Optional, link to dc plan > dc items > dc specs

8.10.4.Step Check

Optional, the system will require EQ Record check if the equipment recipe or product is different from previous lot

8.10.1.Instruction

For process step instruction, it can modify after the record 'Frz' is on.
Product

8.11. Process

Process is to select sequence of process steps together

NAME	PROCESS STEP NAME	ACT	FRZ	LASTUPDATE
LED RED_1	LED 100 Kitting > LED 200 鎔膜 > LED 300 黃光 > LED 400 蛻刻 _1 > LED 500 切割	✓	✓	April 13, 2019, 9:14 a.m.
LED RED	LED 100 Kitting > LED 200 鎔膜 > LED 300 黃光 > LED 400 蛻刻 > LED 500 切割	✗	✓	April 13, 2019, 9:14 a.m.
LED BIN	LED 700 Binning	✓	✓	April 6, 2019, 11:13 p.m.
Break No new Prod	067 Breaking-No New Product	✓	✗	April 5, 2019, 5:23 p.m.
Break No new Proc	066 Breaking-No New Process	✓	✓	April 5, 2019, 5:23 p.m.
Before Break-4	065 Breaking	✓	✓	April 4, 2019, 10:28 a.m.
After Break-4	850 包裝 > 900 入倉	✓	✓	April 2, 2019, 5:13 p.m.
Bin-Process	830 Binning	✓	✓	March 27, 2019, 10:54 p.m.
New Product - A	600 防焊 > 630 文字 > 900 入倉	✓	✓	March 26, 2019, 10:02 p.m.
PCB-B	110-8 內乾-8 > 150 蛻刻-1 > 900 入倉	✓	✓	March 20, 2019, 10:55 p.m.
PCB Flow-A	100 發料 > 150 蛻刻-1 > 200 AOI-1 > 250 氧化 > 300 壓合 > 350 機鑽 > 400 鏤銅-1 > 450 檢驗-1 > 500 蛻刻-2 > 550 AOI-2 > 600 防焊 > 650 電鍍 > 700 印刷 > 750 清洗 > 800 檢驗-2 > 850 包裝 > 900 入倉	✓	✓	March 15, 2019, 1:41 a.m.
PCB Matl Proces	050 Kitting Matl Check > 862 包裝	✓	✓	Feb. 7, 2019, 11:55 p.m.
LED Packing	862 包裝	✓	✓	Feb. 7, 2019, 11:36 p.m.
PCB 16 LYS	050 發料 > 060 裁板 > 110-16 內乾-16 > 150 內乾 > 160 內撫-16 > 170 內AOI-16 > 220 黑化 > 230 壓合-16 > 310 機鑽-16 > 640 電漿 > 420一銅 > 430一檢 > 510 外乾 > 550 外鈍 > 580 中AOI > 610 防焊 > 710 金手指 > 740 化金 > 630 文字 > 810 成型-16 > 850 成測-16 > 862 包裝	✓	✓	Jan. 3, 2019, 12:14 p.m.

Home > Runmes > Processes > LED RED_1

Change process HISTORY

Act

Name: LED RED_1

Description: -

Lastupdate: April 13, 2019, 9:14 a.m.

Frz: ✓

PROCESS PROCESS STEPS

PROCESS STEP
process:LED RED_1,step:LED 100 Kitting LED 100 Kitting
process:LED RED_1,step:LED 200 鎔膜 LED 200 鎔膜
process:LED RED_1,step:LED 300 黃光 LED 300 黃光
process:LED RED_1,step:LED 400 蛻刻_1 LED 400 蛻刻_1
process:LED RED_1,step:LED 500 切割 LED 500 切割
-
-
-
+ Add another Process process step

Save and add another Save and continue editing SAVE

8.12. Process parameters

The process parameters is used for parameters passing between process step in a process flow, how ever, this feature should be integrated with EAP, typical application is R2R control and APC.

The screenshot shows a web-based administrative interface for managing process parameters. At the top, there's a header bar with 'run.MES Admin' on the left and 'WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT' on the right. Below the header, a breadcrumb navigation shows 'Home > Runmes > Process parameters > CD1-W1'. The main content area is titled 'Change process parameters' and contains the following fields:

- Name:** CD1-W1
- Process:** PCB 8 LYS (with edit and add icons)
- Data type:** NUMERIC
- Value:** (empty input field)
- Status:** Active
- Freeze:**

At the bottom of the form are three buttons: 'Delete' (red), 'Save as new', 'Save and continue editing', and 'SAVE' (highlighted).

8.13. Product

Product map to a process, different can map to same process

The screenshot shows the 'run.MES Admin' interface. At the top, there's a navigation bar with 'WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT'. Below it, a breadcrumb trail shows 'Home > Runmes > Products > LED RED_1'. The main title is 'Change product'. On the right, there's a 'HISTORY' button. The form fields include:

- Act
- Name: LED RED_1
- Process: LED RED_1
- Unit: Wafers
- Description: new version process version 1
- Update: April 14, 2019, 11:37 a.m.
- Frz:

At the bottom right are three buttons: 'Save and add another', 'Save and continue editing', and a large 'SAVE' button.

8.14. Product parameters

Same as process parameters, this is product level

The screenshot shows the 'run.MES Admin' interface. At the top, there's a navigation bar with 'WELCOME, JC. VIEW SITE / CHANGE PASSWORD / LOG OUT'. Below it, a breadcrumb trail shows 'Home > Runmes > Product parameters > Add product parameters'. The main title is 'Add product parameters'. The form fields include:

- Name:
- Product:
- Data type:
- Active
- Freeze

At the bottom right are three buttons: 'Save and add another', 'Save and continue editing', and a large 'SAVE' button.

8.15. Lot Record

Lot Record is a lot based data collection, it will not validate lot or eq input in operator GUI, therefor the spec check will not processed in the DC Plan

Add lot record

Name:

Description:

Dcplan: ⚡ +

Act
 Frz

8.16. EQ Record

EQ record is used to collect data from equipment, the data modeling will need to choose EQ Group from existing modeling data, dc spec in the DC Plan will be processed for spec check.

Add eq record

Name:

Description:

EQ GRP: ⚡ +

Instruction:

Dcplan: ⚡ +

Act
 Frz

8.17. Data modeling by import CSV files

If you are familiar with manual data modeling, you understand the modeling sequence and relationship, you can try data modeling import with CSV file, there are sample file under runMES/csv_samples, the web site is runMES_IP:8000/modeling, user must have Admin group privilege to access

The data modeling import covers all items in manual modeling as well as the users account import

runMES Modeling Import

Data Collection ▾ EQ ▾ Records ▾ Binning ▾ Process/Step ▾ Codes ▾ Account ▾ runMES | ['OP', 'Super', 'Manager', 'Admin']

Data Item Category Import

dc_category 190804.csv

Reply:

Item	Value
views	model_dc_category
Result	OK
Records	8
Time	Aug. 17, 2019, 12:50 a.m.

8.18. Language translation

User can change the main menu translation in the operation GUI

- Go to the directory with manage.py
 - Update language files for each languages : django.po
 - Translate the text in msgstr as you wish
 - Compile language file:
 django-admin compilemessages

```
runMES [runMES3] sources 208 #: runMES/templates/base.html:188
└─ locale 209 msgid "Change Product"
    └─ cn 210 msgstr "批号产品变更"
        └─ LC_MESSAGES 211
            └─ django.mo 212
            └─ django.po 213 #: runMES/templates/base.html:193
        └─ en 214 msgid "EQ Manager"
            └─ LC_MESSAGES 215 msgstr "设备管理"
                └─ django.mo 216
                └─ django.po 217 #: runMES/templates/base.html:196
            └─ tz 218 msgid "EQ List"
                └─ LC_MESSAGES 219 msgstr "设备列表"
                    └─ django.mo 220
                    └─ django.po 221 #: runMES/templates/base.html:197
                └─ MQTT 222 msgid "EQ Query Lot"
                    └─ LC_MESSAGES 223 msgstr "设备可用批号"
                    └─ django.mo
                    └─ django.po
└─ runMES 224 #: runMES/templates/base.html:199
    └─ django_extensions 225 msgid "EQ Record"
    └─ migrations 226 msgstr "设备点检"
    └─ scripts 227
    └─ static 228 #: runMES/templates/base.html:200
    └─ templates 229 msgid "EQ Record History (last 200 records)"
        └─ admin 230 msgstr "设备点检纪录(最近200笔)"
        └─ static
```



9. Operator GUI

Open browser, input the http://runMES ip:8000/home, input user name and password

Language setting: by clicking the available language options on right corner 繁中|简中|EN



run.MES Info

Note	run.MES (Manufacturing Execution System)
Version	19.05.7
Author	Joshua Chin
Last Update	2019/05/19
Copyright	StepTech Systems @2019

9.1. Change Password

Users can change password from runMES GUI



Change Password

User Name: runMES

Old Password:

New Password:

Confirm

9.2. Fab management

This function required 'Manager' privilege for accessing

9.2.1. Work Order

this function is for work order input and define related information

run.MES 批號查詢▼ 批號作業▼ 批號管理▼ 設備管理▼ 工廠管理▼ 登出 manager1 | ['Super', 'OP', 'M']

Work Order

Work Order:	DEMO-0
ERP_ref:	ERP_WO-001
Product:	DEMO-PCB ▾
Qty:	100
Lot Type:	Product ▾
Lot Priority:	High ▾
Target Date:	July ▾ 9 ▾ 2019 ▾
OP:	manager1
Owner:	Test
Owner email:	test@steptech.io
Owner Phone:	123
Instruction:	Work Order instruction: 1. Call 123 if any delay 2. material constraint: XXX
Annotation:	
Active:	<input checked="" type="checkbox"/>
Freeze:	<input checked="" type="checkbox"/>
Confirm	

Item	Value
views	work_order
Result	OK
Time	July 9, 2019, 11:01 p.m.

9.2.2. Work Order Query

run.MES 批號查詢 ▾ 批號作業 ▾ 批號管理 ▾ 設備管理 ▾ 工廠管理 ▾ 登出 manager1 | ['Super', 'OP', 'Manager']

Work Order Query

Show 10 ↕
entries

Search:

NAME ↴	ERP_REF ↴	PRODUCT ↴	LOT_TYPE ↴	QTY ↴	QTY_LEFT ↴	LOT_PRIORITY ↴	START_DATE ↴	TARGET_DATE ↴	OWNER_EMAIL ↴	IS_CLOSE ↴	ACTIVE ↴
DEMO-0	ERP_WO-001	DEMO-PCB	P	100	100	3	July 9, 2019, 11:01 p.m.	July 9, 2019, midnight	test@steptech.io	False	True

Showing 1 to 1 of 1 entries

Previous 1 Next

9.2.3. Work Order Import

For a batch order input, you can manually generate a work order CVS file by an spread sheet or generate from ERP

- a spread sheet example (export to CSV):

	A	B	C	D	E	F	G	H	I	J	K	L
1	name	ERP_ref	product	lot_type	qty	lot_priority	target_date	owner	owner_email	owner_phone	instruction	annotation
2	DEMO-1	ERP_1	DEMO-PCB	D	100	5	2019-07-30	Joshua	test@steptech.io	123		
3	DEMO-2		DEMO-PCB	P	200	4	2019-07-30	Joshua	test@steptech.io		WO instruction	Annotation test
4	DEMO-3	ERP_3	DEMO-PCB	E	100	3	2019-07-30	Joshua	test@steptech.io		WO instruction	
5												
6												
7												

- CSV file sample:

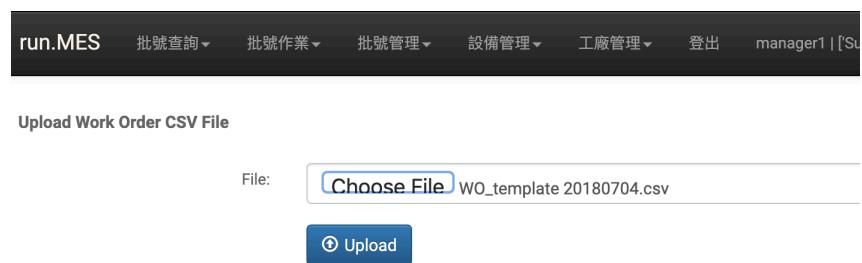


```

WO_template 20180704.csv
1 |name,ERP_ref,product,lot_type,qty,lot_priority,target_date,owner,owner_email,owner_phone,instruction,annotation
2 DEMO-1,ERP_1,DEMO-PCB,D,100,5,2019-07-30,Joshua,test@steptech.io,0963-047-075,,,
3 DEMO-2,,DEMO-PCB,P,200,4,2019-07-30,Joshua,test@steptech.io,,WO instruction,Annotation test
4 DEMO-3,ERP_3,DEMO-PCB,E,100,3,2019-07-30,Joshua,test@steptech.io,,WO instruction,
5

```

- import csv file:



run.MES 批號查詢▼ 批號作業▼ 批號管理▼ 設備管理▼ 工廠管理▼ 登出 manager1 | [S]

Upload Work Order CSV File

File: WO_template 20180704.csv

Reply:

9.2.4. Lot start

- This is for single lot start function
- Lot start by input Work Order, Lot ID, Qty.
- After lot been started, it will assign to process flow and ready to run process steps

Lot Start

Work Order:

Product	Qty	QTY LEFT	OWNER	TARGET DATE
PCB Product A	1000	500		March 31, 2019, 1:44 a.m.

LOT	QTY	OP	LOT START DATE
W-A-001-1	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-2	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-3	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-4	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-5	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-6	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-7	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-8	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-9	50	jc	March 15, 2019, 1:47 a.m.
W-A-001-10	50	jc	March 15, 2019, 1:48 a.m.

Add New Lot

Lot: (Aa-Zz, '0-9', ',', '-' ONLY) Max 16

Qty:

OP: jc

Target Time:

Date:

Time:

Product: PCB Product A

Work Order: W-A-001

Lot Type: P

Reply:

Item	Value
TNS	tx_lot_start
ECD	0
ETX	Succeed
lot	PCB-A-001
product	PCB Product A
work_order_txt	W-A-001
qty	20
Time	May 21, 2019, 6:48 p.m.

9.2.5. Batch lot start

- Batch lot start is for start more than one lot
- Lot number extensions are base on the batch quantity

Batch Lot Start

Work Order:

Product	Qty	QTY LEFT	OWNER	TARGET DATE
PCB Product A	1000	480		March 31, 2019, 1:44 a.m.

Batch New Lot

Start Lot ID: ('Aa-Zz', '0-9', '_', '-' ONLY, Max 12, extension '1-n' will add on automatically)

Lot Qty: (Max batch size 9999)

OP: jc

Target Time:

Date:

Time:

Product: PCB Product A

Work Order: W-A-001

Lot Type: P

Reply:

Item	Value
TNS	tx_batch_lot_start
ECD	0
ETX	Succeed
LOT SET	['PCB-B-100-1', 'PCB-B-100-2', 'PCB-B-100-3', 'PCB-B-100-4', 'PCB-B-100-5', 'PCB-B-100-6', 'PCB-B-100-7', 'PCB-B-100-8', 'PCB-B-100-9', 'PCB-B-100-10', 'PCB-B-100-11', 'PCB-B-100-12', 'PCB-B-100-13', 'PCB-B-100-14', 'PCB-B-100-15', 'PCB-B-100-16', 'PCB-B-100-17', 'PCB-B-100-18', 'PCB-B-100-19', 'PCB-B-100-20', 'PCB-B-100-21', 'PCB-B-100-22', 'PCB-B-100-23', 'PCB-B-100-24']
PRODUCT	PCB Product A
WORK ORDER	W-A-001
TOTAL	480

9.2.6. Real time Fab monitoring dashboard

EQ Realtime Monitoring

EQ States:

DM - Down **RA** - Run Available **RN** - Run Not Available **ID** - Idle **PM** - PM **LN** - Lend **SU** - Setup

Show 25 ▾

Search:

entries

ID	STATE	HOLD	LAST RECIPE	LAST PRODUCT	LOT LIST
DEMO-AOI-01	ID	True			
DEMO-AOI-02	ID	False			
DEMO-Bin-02	ID	False			
DEMO-Bing-01	ID	False			
DEMO-Break-01	ID	False			
DEMO-Break-02	ID	False			
DEMO-Etch-01	RA	False	DEMO-Etch	DEMO-PCB	DEMO-0-01
DEMO-Etch-02	ID	False			
DEMO-Kitting-01	RA	False	DEMO-Kitting	DEMO-PCB	DEMO-0-03 DEMO-0-02
DEMO-Kitting-02	ID	False			
DEMO-Reflow-01	ID	False			
DEMO-Reflow-02	ID	False			
ST-AOI-01	ID	False			
ST-Bin-02	ID	False			
ST-Bing-01	ID	False			
ST-Break-01	ID	False			
ST-Etch-01	ID	False			
ST-Kitting-01	ID	False			
ST-Reflow-01	ID	False			

Previous

1

Next

9.3. Lot query

9.3.1. Lot Info

Get lot detail information

Lot Info

Lot ID:

ST-8-3

Query

Lot Detail

Lot ID:

ST-8-3

Lot Query Binning

Lot ID: ST-8-6

EQ ID: LED Binning-01

Query

LOT BIN: LED A BIN

BIN VER:

LOT QTY: 10000

OP: OP1

Annotatio

GRADE	DESCRIPTION	QTY
NG	Not Good	50
BIN 1 EH	lv:44.99, Wd:459.9	4000
BIN 2 EI-1	lv:34.99, Wd:464.9	5000
BIN 3 EI-2	lv:39.99, Wd:464.9	950

Send

Reply:

Item	Value
TRANS	tx_lot_bin
ECD	0
ETX	Succeed
GRADE SET	[{'CHILD LOT': 'ST-8-6.1', 'QTY': '50', 'GRADE': 'NG'}, {'CHILD LOT': 'ST-8-6.2', 'QTY': '4000', 'GRADE': 'BIN 1 EH'}, {'CHILD LOT': 'ST-8-6.3', 'QTY': '5000', 'GRADE': 'BIN 2 EI-1'}, {'CHILD LOT': 'ST-8-6.4', 'QTY': '950', 'GRADE': 'BIN 3 EI-2'}]
Time	May 21, 2019, 11:11 a.m.

9.3.2. Lot List

- Lot List (WIP) : query lot in production
- Lot List (Shipped) : query lot already shipped
- Lot List (Terminated) : query lot already terminated

Lot List Query

Show 10 ↴
entries

Search:

NAME	PRODUCT	WO	TYPE	CURR_EQ	STEP	RECIPE	CHECK	DC	BREAK	BIN	HOLD	STATE	NEXT	QTY
WO-01.1	Change Product -A	WO-01	P	防焊-01	600 防焊	A-防焊		None	None		False	R	SO	20
WO-01.2	PCB-8-LYS-A	WO-01	P	None	110-8 内乾-8	内乾-8		内乾			False	I	SI	20
WO-01.3	PCB-8-LYS-A	WO-01	P	None	060 裁板	裁板	None		None		False	I	SI	20
WO-01.4	PCB-8-LYS-A	WO-01	P	發料_01	050 發料	發料	None	發料	None	None	False	R	SO	20
WO-01.5	PCB-8-LYS-A	WO-01	P	發料_01	050 發料	發料	None	發料	None	None	False	R	SO	20
WO-01.7	PCB-8-LYS-A	WO-01	P	發料_01	050 發料	發料	None	發料	None	None	False	R	SO	10
WO-01.8	PCB-8-LYS-A	WO-01	P	發料_01	050 發料	發料	None	發料	None	None	False	R	SO	20
WO-01.9	PCB-8-LYS-A	WO-01	P	發料_01	050 發料	發料	None	發料	None		False	R	SO	10
WO-01-10	PCB-8-LYS-A	WO-01	P	None	060 裁板	裁板					False	I	SI	3
WO-01-10.1	PCB-8-LYS-A	WO-01	P	None	060 裁板	裁板					False	I	SI	5

Showing 1 to 10 of 10,385 entries

9.3.3. Lot Query EQ

Find available EQ for the Lot

Lot Query EQ

Lot ID:

Available EQ List

NAME	DESCRIPTION	EQ_TYPE	PARENT	AREA	GROUP	CTRL_STATE	IS_HOLD	IS_VIRTUAL	ACTIVE
内乾 02	None	A	None	Fab1-1F	内乾	ID	False	False	True
内乾 01	None	A	None	Fab1-1F	内乾	ID	False	False	True

9.3.4. Lot History

Find lot history of Step(StepIn, StepOut, Lot Record)

Lot History Query

Lot ID	WO-01.2	<input type="button" value="Query"/>
--------	---------	--------------------------------------

LOT	EQ	OP	RECIPE	PRODUCT	PROCESS	PROCESS_STEP	QTY	TRANSACTION	TRANS_TIME	ANNOTATION
WO-01.2		jc	發料	PCB-8-LYS-A	PCB 8 LYS	050 發料	None	lot_start	Jan. 10, 2019, 12:19 a.m.	
WO-01.2	發料_01	jc	發料	PCB-8-LYS-A	PCB 8 LYS	050 發料	None	step_in	Jan. 19, 2019, 2:21 p.m.	
WO-01.2	發料_01	jc	裁板	PCB-8-LYS-A	PCB 8 LYS	060 裁板	None	tx_step_out	Jan. 21, 2019, 11:13 p.m.	
WO-01.2	發料_01	jc				050R Kitting	None	record	Jan. 23, 2019, 6:07 p.m.	testing
WO-01.2	裁板_01	EAP	裁板	PCB-8-LYS-A	PCB 8 LYS	060 裁板	20	tx_step_in	April 11, 2019, 11:18 p.m.	EAP testing
WO-01.2	裁板_01	EAP	裁板	PCB-8-LYS-A	PCB 8 LYS	060 裁板	20	tx_step_out	April 11, 2019, 11:20 p.m.	EAP testing

9.3.5. Lot Data Collection History

Query lot data collection history

Lot DC Hist Query

Lot ID **Lot Bonus**

LOT	ST-8-2	Lot:	WO-01.2	
ET	發	Bonus Code:	B01,B,Found	gRvnQE7MpkoAQ2aLQH
ST-8-2	發	Qty:	2	gRvnQE7MpkoAQ2aLQH
		OP:	jc	
ST-8-2	LF 刻	Annotation:		HeFFqmqGY9gbnYpVh
ST-8-2	LF 刻	Confirm		
ST-8-2	LF 刻	Item	Value	
ST-8-2	LF 刻	TNS	tx_bonus_scrap	HeFFqmqGY9gbnYpVh
ST-8-2	LF 刻	ECD	0	HeFFqmqGY9gbnYpVh
ST-8-2	LF 刻	ETX	Succeed	HeFFqmqGY9gbnYpVh
ST-8-2	LF 刻	NEW QTY	24	HeFFqmqGY9gbnYpVh
ST-8-2	LF 刻	LOT	WO-01.2	HeFFqmqGY9gbnYpVh
		QTY	2	
		BONUS_SCRAP	B	
		CODE	B01	
		OP	jc	
		ANNOTATION		
		Time	May 21, 2019, 4:12 p.m.	

9.3.6. Lot Run Card Query

Query Lot all Process Step at current Product

Query Run Card

LOT: ST-8-3

Confirm

Process Step List

NAME	CATEGORY	RECIPE	EQ_GROUP	STEP_CHECK	DCPLAN	BINNING	INSTRUCTION
LED 100 Kitting	Kitting	LED Kitting	發料	None	LED Kitting	None	LED 100 Kitting Step Instruction
LED 200 鍍膜	Plating	LED 鍍膜	LED 鍍膜	None	None	None	LED 200 鍍膜 Step Instruction
LED 300 黃光	Photo	LED 黃光	LED 黃光	None	None	None	LED 300 黃光 Step Instruction
LED 400 蝕刻_1	Etching	蝕刻_1	LED 蝏刻	None	蝏刻 Plan	None	New DcPlan
LED 500 切割	Breaking	LED 切割	LED 切割	None	None	None	

9.4. Lot operations

9.4.1. StepIn

- StepIn input fields: Lot Id, EQ and Annotation(option)
- runMES will validate lot's process, process step and correct EQ
- If the current process step require step check, StepIn will validate whether the target equipment has the same for Step Check data collection, recipe
- Reply message: ECD '0' stands for succeed otherwise it shows some errors happened
- Recipe, Qty, Step Instruction and Word Order instruction can set up in data modeling.

Lot Step In

LOT: WO-01.2

EQ: 内乾 01

Annotation:

OP: super1

Confirm

Item	Value
TNS	tx_step_in
ECD	0
ETX	Succeed
LOT	WO-01.2
RECIPE	内乾-8
QTY	20
EQ	内乾 01
OP	super1
STEP INSTRUCTION	110-8 内乾-8 instruction:
WO INSTRUCTION	None
Time	May 20, 2019, 12:56 a.m.

- Step Check

if the process require step check for recipe or product change, user will see the following message when the step check (EQ Record) has not processed

The screenshot shows the 'Lot Step In' screen of the run.MES software. At the top, there is a navigation bar with links like 'run.MES', '批號查詢', '批號作業', '批號管理', '設備管理', '工廠管理', '登出', and a user session indicator 'manager1 | ["Super", "OP", "Manager"]'. The main area is titled 'Lot Step In' and contains input fields for 'LOT' (DEMO-0-01), 'EQ' (DEMO-Etch-01), 'Annotation' (empty), and 'OP' (manager1). A blue 'Confirm' button is located below these fields. Below the input area is a table with the following data:

Item	Value
views	lot_step_in
ECD	E04
ETX	需要點檢
ERR	
EQ	DEMO-Etch-01
OP	manager1
Time	July 10, 2019, 3:25 p.m.

9.4.2. EQ Lot StepIn

Input EQ and choose lot from a lot list, the lot list will arrange base on the lot priority

EQ Lot StepIn

EQ:

OP:

Annotation:

Choose Lot:



9.4.3. StepOut

Similar to StepIn operation, input Lot and EQ, Annotation(option)

Lot Step OUT

LOT:	WO-01.2
EQ:	内乾 01
Annotation:	
OP:	super1

Confirm

Item	Value
TNS	tx_step_out
LOT	WO-01.2
ECD	0
ETX	Succeed
EQ	内乾 01
QTY	20
OP	super1
NEXT STEP	160-8 内檢-8
PRODUCT	PCB-8-LYS-A
Time	May 20, 2019, 1:11 a.m.

Lot Step OUT

LOT:	ST-8-6
EQ:	LED 切割-01
Annotation:	
OP:	op1

Confirm

Item	Value
TNS	tx_step_out
LOT	ST-8-6
ECD	0
ETX	Succeed
EQ	LED 切割-01
QTY	10000
OP	op1
NEXT STEP	LED 700 Binning
PRODUCT	LED BIN
Time	May 21, 2019, 11:05 a.m.

9.4.4. Data collections

Require to input Lot ID, EQ ID the press Query, runMES will show data collection items for you to input data, after data input press Send, runMES will reply data collection result, if there are SPEC checks error, it will show in OOS field

Lot Query DC

Lot ID:

EQ ID:

DC PLAN: TST-REFLOW

Annotate:

ITEM NAME	CATEGORY	UNIT	DATA TYPE	DATA VALUE
TST-Reflow-1	溫度	Degree C	F	<input type="text" value="100"/>
TST-Reflow-2	溫度	Degree C	F	<input type="text" value="160"/>

Reply:

Item	Value
views	lot_dc
ECD	0
ETX	輸入完成
ERR	
LOT	TST-OOS-2-3
EQ	TST-Reflow-01
OOS	{OOS: 'SPEC HIGH', 'ITEM': 'TST-Reflow-2', 'VAL': '160', 'SPEC HIGH': '150.0', 'Hold EQ': 'TST-Reflow-01'}
OP	admin2
Time	June 6, 2019, 11:18 p.m.

9.4.5. Breaking

The Lot must has a breaking operation the current process step and current operation is breaking, user need to input Lot ID and EQ ID,
Breaking will change lot qty base on data modeling, the product will also change after StepOut

The screenshot shows the run.MES software interface. At the top, there is a navigation bar with links: 批号查询▼, 批号作业▼, 批号管理▼, 设备管理▼, 登出, 使用人: op1 | OP, 语言:cn, and 繁中|简中|EN. Below the navigation bar, the main title is "Lot Breaking". The form contains the following fields:

Lot:	ST-8-6
EQ:	LED 切割-01
Annotation:	(empty)
Op:	op1

Below the form is a blue "Confirm" button.

At the bottom, there is a table showing the transaction details:

Item	Value
TNS	tx_lot_breaking
ECD	0
ETX	Succeed
LOT	ST-8-6
NEW QTY	10000
Time	May 21, 2019, 11 a.m.

9.4.6. Binning

Lot binning require to input Lot ID, EQ ID the press query for binning grades, then input each grade's qty.

The lot will split into the child lots, the original lot will be terminate.

StepOut for child lots

9.4.7. Lot Record

Lot record is for pure data collection base on Lot and EQ, it will not validate Lot, EQ status or any rules.

User can collect any information base on data modeling

Choose pre-defined Step for Lot Record, input Lot, EQ and the data in input fields

Step:

OP: op1

Confirm

Lot:

EQ:

Annotation:

DC PLAN: LR-內乾

ITEM NAME	CATEGORY	UNIT	DATA TYPE	DATA VALUE
LR-內乾 溫度-1	溫度	Degree C	F	<input type="text" value="50"/>
LR-內乾 溫度-2	溫度	Degree C	F	<input type="text" value="60"/>

Send

Record Reply:

Item	Value
TNS	tx_lot_record
ECD	0
ETX	Succeed
LOT	ST-8-6
DC_PLAN	LR-內乾
EQ	內乾 01
ITEM_SET	[{'item_name': 'LR-內乾 溫度-1', 'category': '溫度', 'unit': 'Degree C', 'data_type': 'F', 'val': '50'}, {'item_name': 'LR-內乾 溫度-2', 'category': '溫度', 'unit': 'Degree C', 'data_type': 'F', 'val': '60'}]
SPEC_ERR	{}

9.5. Lot managements

Lot management functions are limited for supervisor

9.5.1. Lot Split

Lot can not manually split lot during 'RUN' state(between StepIn and StepOut) unless build in Process Step binning process

If Parent lot quantity equal to child lot quality, the parent lot will be terminated

Lot Split

Parent Lot:

Child Lot Qty:

Annotation:

Op: super1

Item	Value
TNS	tx_split_lot
ECD	0
ETX	Succeed
PARENT LOT	WO-01.2
PARENT QTY	10
NEW LOT	WO-01.2.1
NEW LOT QTY	10
OP	super1
Time	May 21, 2019, 3:49 p.m.

9.5.2. Lot Merge

2 Lots merge are limited to same Product, Process and Process Step, the lot state needs to be in 'IDLE' state

Child lot will be terminated

Merge lots will cause future traceability difficulty, be caution of use merge function

Lot Merge

Parent Lot: WO-01.2

Child Lot: WO-01.2.1

Annotation:

Op: jc

Confirm

Item	Value
TNS	tx_merge_lot
ECD	0
ETX	Succeed
PARENT LOT	WO-01.2
CHILD LOT	WO-01.2.1
OP	jc
Time	May 21, 2019, 4 p.m.

9.5.3. Lot SplitMerge Hist

Lot Split Merge Hist Query

Parent Lot

WO-01.2

Query

PARENT	P_QTY	CHILD	C_QTY	S/M	OP	TID	TIME	ANNOTATION
WO-01.2	20	WO-01.2.1	10	S		RQ7M6wMm6theD4VWSkQHak	May 21, 2019, 3:49 p.m.	test
WO-01.2	10	WO-01.2.1	10	M		ma2CBTAjDtDYBXsAQHmpjQ	May 21, 2019, 4 p.m.	

9.5.4. Lot Bonus

Lot bonus is to add quantity to lot, user need to choose code from UI for the reason

Lot Bonus

Lot:	ST-5-4
Bonus Code:	B2-Repaired,B
Qty:	5
OP:	manager1
Annotation:	

Confirm



9.5.5. Lot Scrap

Lot scrap is to remove quantity from lot, normal cases is inspection result out of spec.

Lot Scrap

Lot:

Scrap Code:

Qty:

OP: jc

Annotation:

Confirm

Item	Value
TNS	tx_bonus_scrap
ECD	0
ETX	Succeed
NEW QTY	20
LOT	WO-01.2
QTY	2
BONUS_SCRAP	S
CODE	S01
OP	jc
ANNOTATION	
Time	May 21, 2019, 4:20 p.m.

9.5.6. Lot BonusScrap Hist

Lot Bonus Scrap Hist Query

Parent Lot

LOT	STEP	EQ	B/S	OLD QTY	B/S QTY	CODE	OP	TID	TIME	ANNOTATION
WO-01.2	160-8 内檢-8	None	B	20	2	B01	jc	CpXY3Nj5Eora6jnnKC4ZcG	May 21, 2019, 4:10 p.m.	
WO-01.2	160-8 内檢-8	None	B	22	2	B01	jc	VFaL6srhcZ7hJ5Nu9NuRRA	May 21, 2019, 4:12 p.m.	
WO-01.2	160-8 内檢-8	None	S	24	2	S03	jc	8vjE6jTtQNGMdUzsqVFxkb	May 21, 2019, 4:17 p.m.	
WO-01.2	160-8 内檢-8	None	S	22	2	S01	jc	U4bfAX8ConTv2VsTua4xf7	May 21, 2019, 4:20 p.m.	

9.5.7. Lot Hold

Lot Hold	
LOT:	WO-01.2
Hold Code:	LH-002,H,Customer Hold
OP:	jc
Annotation:	

Lot Hold

Reply:

Item	Value
TNS	tx_lot_hold
ECD	0
ETX	Succeed
LOT	WO-01.2
IS_HOLD	True
op_txt	jc
HOLD CODE	LH-002
RELEASE CODE	
annotation_txt	
Time	May 21, 2019, 5:47 p.m.

9.5.8. Lot Release

Lot Release

LOT: WO-01.2 ▾

Release
Code: LR-002,R,Customer Release ▾

OP: jc

Annotation: **Lot Release**

Reply:

Item	Value
TNS	tx_lot_hold
ECD	0
ETX	Succeed
LOT	WO-01.2
IS_HOLD	False
op_txt	jc
HOLD CODE	
RELEASE CODE	LR-002
annotation_txt	
Time	May 21, 2019, 5:53 p.m.

9.5.9. Lot HoldRelease Hist

Lot Hold Release Hist Query

Lot

LOT	H/R	HOLDCODE	RELEASECODE	OP	TID	TIME	ANNOTATION
WO-01.2	H	LH-002		jc	UaViSjnbtKvDxmVVa4PNo6	May 21, 2019, 5:47 p.m.	None
WO-01.2	R		LR-002	jc	svF2rrUmYbX3fT8kTPqTk3	May 21, 2019, 5:53 p.m.	None

9.5.10.Lot State

Lot state is for manual change Lot Control State, this is only used for trouble shooting purpose

Lot Control State:

Lot:

Ctrl state:

Annotation:

Op: jc

Item	Value
TNS	tx_lot_ctrl_state_change
ECD	0
ETX	Succeed
lot_txt	WO-01.2
op_txt	jc
old_state	R
new_state	I
annotation_txt	
Time	May 21, 2019, 6:15 p.m.

9.5.11.Lot Ship

Lot only in 'F'(Finished) state can be ship

Lot Ship

Lot:

OP: jc

Annotation:

Confirm

Item	Value
TNS	tx_lot_ship
ECD	0
ETX	Succeed
LOT	W-B-01-1
STATE	S
Time	May 22, 2019, 9:44 a.m.

9.5.12.Change Product

This is a function for trouble shooting, it should be carefully input the new product and process step.

If some lots in production and process need to be changed(ECN), one way is use change product to new product and process step to fix it.

Change Product:

Lot:	WO-01.2
To Product:	LED RED_1
To Process Step:	LED 300 黃光
Annotation:	for testing
Op:	jc

Confirm

Item	Value
TNS	tx_change_product
ECD	0
ETX	Succeed
LOT	WO-01.2
FROM PRODUCT	PCB-8-LYS-A
FROM PROCESS	PCB 8 LYS
FROM STEP	160-8 內檢-8
TO_PRODUCT	LED RED_1
TO_PROCESS_STEP	LED 300 黃光
OP	jc
Time	May 22, 2019, 10:15 a.m.

9.5.13.Lot Priority Change

Lot priority has 5 grades ('Urgent', 'Hot', 'High', 'Regular', 'Low'), user can alter the priority.

Lot Priority Change

LOT:

Lot Priority:

Annotation:

Item	Value
views	lot_priority_change
ECD	0
ETX	Succeed
ERR	
LOT	DEMO-0-02
OP	manager1
Time	July 18, 2019, 11:43 a.m.



9.6. EQ management

9.6.1. EQ List

List all equipment

EQ List Query

Show 10 ▾

Search:

entries

NAME	DESCRIPTION	EQ_TYPE	PARENT	AREA	GROUP	CTRL_STATE	IS_HOLD	IS_VIRTUAL	ACTIVE
文字-1	None	A	None	Fab1-2F	文字	RA	False	False	True
文字-2	None	A	None	Fab1-2F	文字	ID	False	False	True
裁板_01	None	A	None	Fab1-1F	裁板	ID	False	False	True
裁板_02	None	A	None	Fab1-1F	裁板	RA	False	False	True
内檢_01	None	A	None	Fab1-1F	内檢	ID	False	False	True
外乾_01	None	A	None	Fab1-1F	外乾	ID	False	False	True
Dummy	None	A	None	Fab1-2F	裁板	ID	False	True	False
發料_01	Virtual EQ	A	None	Fab1-1F	發料	RA	False	True	True
内乾 01	None	A	None	Fab1-1F	内乾	ID	False	False	True
内乾 02	None	A	None	Fab1-1F	内乾	ID	False	False	True

Showing 1 to 10 of 53 entries

Previous

1

2

3

4

5

6

Next

9.6.2. EQ Query Lot

Find available lots for the equipment

EQ Query Lot for StepIn

EQ ID:

LED 切割-02

Query

Available Lot List

NAME	PRODUCT	WO	CURR_EQ	STEP	RECIPE	CHECK	DC	BREAK	BIN	HOLD	STATE	NEXT	QTY
ST-8-3	LED RED_1	StressTest-8	None	LED 500 切割	LED 切割			LED Breaking		False	I	SI	20

9.6.3. EQ Record

This function is used to input data collection for equipment base on data modeling, typical application is for step check, equipment daily check or equipment SPC/FDC in EAP automation, one eq can have many kinds of EQ Record.

EQ Record

EQ:	DEMO-Etch-01
OP:	manager1
<input type="button" value="Confirm"/>	

Query EQ Record

EQ Record:	DEMO-Etch,DCP:DEMO-Etch
<input type="button" value="Confirm"/>	

EQ Record

EQ:	DEMO-Etch-01
OP:	manager1
<input type="button" value="Confirm"/>	

Annotation:

DC PLAN: DEMO-ETCH

ITEM NAME	CATEGORY	UNIT	DATA TYPE	DATA VALUE
DEMO-HCL-S.G.	DEMO-Etch-S.G.	S.G.	F	1.35
DEMO-Etch-Temp-1	DEMO-Etch-Temp	Degree C	F	80
DEMO-Etch-Temp-2	DEMO-Etch-Temp	Degree C	F	90
DEMO-Etch-Air Pressu	DEMO-Etch-Air Pressu	PSI	I	20
DEMO-Etch-Air Pressu	DEMO-Etch-Air Pressu	PSI	I	18

Record Reply:

Item	Value
views	record_eq
ECD	0
ETX	OK
ERR	
OOS	{'OOS': 'SPEC HIGH', 'ITEM': 'DEMO-HCL-S.G.', 'VAL': '1.35', 'SPEC HIGH': '1.2', 'Hold EQ': 'DEMO-Etch-01'}
EQ	DEMO-Etch-01
OP	manager1
Time	July 10, 2019, 3:42 p.m.



9.6.4. EQ Record Hist

List eq record history for last 200 records

EQ Record Hist Query

EQ	<input type="text" value="內蝕_01"/>	<input type="button" value="Query"/>
----	------------------------------------	--------------------------------------

EQ	DCPLAN	TRAN	TIME	ANNOTATION	OP	ITEM	TYPE	UNIT	VALUE	TID
內蝕_01	蝕刻 Plan	E	May 10, 2019, 9:54 a.m.		None	蝕刻液比重	F	SG	1.31	ELxLguEkvWWMJKVBUTSdFF
內蝕_01	蝕刻 Plan	E	May 10, 2019, 9:54 a.m.		None	蝕刻液鹽酸濃度	F	HCL	16.7	ELxLguEkvWWMJKVBUTSdFF
內蝕_01	蝕刻 Plan	E	May 10, 2019, 9:54 a.m.		None	蝕刻液氯酸鈉濃度	I	NaClO3	13	ELxLguEkvWWMJKVBUTSdFF
內蝕_01	蝕刻 Plan	E	May 10, 2019, 9:54 a.m.		None	蝕刻液溫度	F	Degree C	66.9	ELxLguEkvWWMJKVBUTSdFF
內蝕_01	蝕刻 Plan	E	May 10, 2019, 9:54 a.m.		None	蝕刻液上噴壓力	F	Kg/cm square	18.3	ELxLguEkvWWMJKVBUTSdFF
內蝕_01	蝕刻 Plan	E	May 10, 2019, 9:54 a.m.		None	蝕刻液下噴壓力	F	Kg/cm square	20.2	ELxLguEkvWWMJKVBUTSdFF
內蝕_01	蝕刻 Plan	E	May 10, 2019, 9:54 a.m.		None	蝕刻滾輪清洗	B	手動作業	True	ELxLguEkvWWMJKVBUTSdFF

9.6.5. EQ Hold

This function will change EQ status of hold, it will block any lot to StepIn in this EQ
User have to assign hold code

EQ Hold	<input type="text" value="內蝕_01"/>
eq:	<input type="text" value="內蝕_01"/>
Hold Code:	<input type="text" value="EH-002,H,Engineer Request"/>
OP:	<input type="text" value="jc"/>
Annotation:	<input type="text" value="Joshua test"/>

EQ Hold	<input type="button" value="Reply"/>
Reply:	
Item	Value
TNS	tx_eq_hold
ECD	0
ETX	Success
EQ	內蝕_01
IS_HOLD	True
op_txt	jc
HOLD CODE	EH-002
RELEASE CODE	
annotation_txt	Joshua test
Time	May 22, 2019, 11:19 a.m.

9.6.6. EQ Release

To release EQ from Hold status, user have to assign release code

EQ Release

EQ:	內蝕_01
Release Code:	ER-002,R,Engineer Request
OP:	jc
Annotation:	Joshua test

EQ Release

Reply:

Item	Value
TNS	tx_eq_hold
ECD	0
ETX	Success
EQ	內蝕_01
IS_HOLD	False
op_txt	jc
HOLD CODE	
RELEASE CODE	ER-002
annotation_txt	Joshua test
Time	May 22, 2019, 11:22 a.m.

9.6.7. EQ State Change

Choose the new EQ state

- ('RA','Run Available')
- ('RN','Run Not Available')
- ('PM','Maintenance')
- ('ID','Idle')
- ('DM','Down')
- ('LN','Lend')
- ('SU','Setup')

Only RA, ID and LN states are allow to StepIn

EQ Control State

EQ:

Ctrl state:

Annotation:

Op: jc

Confirm

Item	Value
TNS	tx_eq_change_state
ECD	0
ETX	Succeed
EQ	內蝕_01
OP	jc
STATE	SU
ANNOTATION	
Time	May 22, 2019, 11:37 a.m.

Appendix A – Hardware reference

1. For testing and development

- Celeron J1900 Processor
 - 4G RAM
 - 120G SSD
- Or Above

2. For production

It depends on your production volume, process steps and data collection frequency, it should base on some test result from a testing machine for hardware sizing

- HA architecture is recommended
- a mirrored disk for database
- A replicated database for reporting
- backup database every day
- for a massive data collection for EQ Record(e.g. 100 values/sec FDC data collection), you should consider an independent runMES for each area and only for EQ Record.