MOM - AJAX Engineering

Basically Ajax is Looking for a Manufacturing Execution [MES] Kind of solution for their machine Shop were several operations are performed.

Mr. Ajil [Plant manager] who is heading &Looking after machine shop unit explained the requirements based on the opertionwise which are captured below.

**Planning Department:**

Here Based on the daily production plan, they want track Live production status & capture all these Data into MES Software.so that they want to communicate daily production plan with shop floor department, ensuring that their team align & work according to the plan given.

**Shop Floor Department**:

They have Moving conveyor which crosses 10 stations from start to End moving with a speed of 0.5 M/M were one Machine Completely Rolled out [Manufactured] for every 15-20 Minutes. So for this moving conveyor they want to measure the efficiency of Line assembly of each station & efficiency when one machine is rolled out, they want to show & see all this Data to be in dashboard.

They are using Smart Shop Floor [SSF] Integration software which gives information of Entire machine details including part Assembled to each machine, who has assembled what part, what are the tests conducted on machine, snatch found on machine, all these data are to be captured & collected in MES Solution so as to access whenever needed / any concern person login & refer these details.

Other Details also to be captured are such like [power consumption of machine, live Tracking of main Assembly Line, Efficiency of Line, OLE, etc.]

**Process Audit**:

Frequently They conduct process audit for internal purpose so they want record & capture all this reports in MES Software for the future reference.

**Need of Skill matrix**:

In some of the critical station they have critical skill requirement so that work area could be able to Login & start work from skill level. Here they need a Touch screen to select area of work were operator need to Login who have that skill level as said by the supervisor, overall they need skill matrix data to be recorded in MES.

**Assembly Line:**

1)There are 10 Assembly stations in their Assembly conveyor for this integration of Assembly conveyor they want to capture & see result of data like

* Efficiency of Assembly Line at each station along with machine posing time
* Live status of machine machine saying what is the Location of machine as per the station number.

At the End of day, they want to get Ready Generated Report of all these activities which ensures that what all types of machines are rolled out for that day, these all information & data could be referred by anyone when they want.

2) In Every station of Assembly Line conveyor they have operatable pose button & emergency button, so whenever they have any concern in particular station they press pose button which is recorded in their PLC but they want to collect this data & store, manage in the folder for as record of reference the agenda behind this is to identify in which station there is high traffic which leading to more time consumption which they want to reduce.

**Sub Assembly Station:**

Out of main Assembly Line conveyor there are total 16 sub assembly stations were major operations like Engine body building, Pump, & other parts are manufactured. So here they have 3 Main Station they are considering & looking after some Need.

* Engine Station [Implementation for phase-1]
* Pump Station
* Load cell Station

Every pose in particular station need to be managed by MES were they will provide step by step process information of each station. So that operator will login into the MES & access the information like [Daily checklist points, Activities assigned to him, Activities he has completed,]

So that he can start his activity as per the plan given & task assigned to him. Also they need a Barcode Reading feature were the employee could read this simultaneously doing his work, were he can type so that typing tool will show the standard values / specifications to be matched [ex) Standard Torque Value Needed = Operating Torque Value] once both are matched it has to proceed to next step. [Step Details will be provided by the client].

At the End of day, he has to complete all tasks assigned to him ensuring the operations carried out by him for Engine Building is rolled out successfully from sub assembly station.

**Maintenance:**

As in Maintenance they are using Energy management system which measures important data like Energy consumption / machine of plant.

ex) If there are 30 Machines Rolled out / manufactured today they want to calculate & refer Energy consumption calculation information of each machine / particular machine.

Along with that they have Compressor connected to PLC System which calculates

* Temperature calculation [They want to calculate Real Time Data for all these points]
* Running Time,
* Loading Hours,
* Live Machine condition.

Once All these are calculated by PLC they collect this data from PLC put it in MES so that all these data to be accessible & available within a platform Developed.

Here they want to integrate PLC with MES for data migration data to cloud which also includes [Machine pose time, Machine counting time, etc.]

**OLE Calculation**:

1) As they have daily Plan given to their Employees at the starting of the Day once at the End of day if for example,

Ex) If 20 Machines are Rolled out at 4.00 PM it has to calculate Efficiency at that instance of time.

They want all these data to be calculated by IOT & sensor Application

Secondly calculating Quality of work calculation like

Ex) Total machines Rolled out = 30

Machines Rolled out with issue = 3

Then Finally Quality = 30-3 = 27 Machines with Good Quality & Acceptance Product of All

these factors will help to calculate OLE.

2) After this they need data like Current station of Machine based on Station Number with help of Active Reading feature, because there are different models of machine Rolled out from each station so from starting of point of station / At first station they need RFID tag or Barcode feature on the machine to read so that referring to this they can check status of every station & information like what is current Location of machine as per the station Number.

**Note - Finally All the Above Data to be captured & available to view in dashboard.**

Supply Fluid System:

* They have fluid supply system were several fluids [hydraulic oil, diesel, coolant, abluant] will be filled so here they want see [Fluid stock in sump, Qty of oil to be filled, Time of Refilling oil,] As PLC is managing all these activities but they want to Record & digitize this data Based on the serial number of machines.
* All these activities are managed at the site level by maintenance guy were they get Alarm Notification for reminding which only given at site level only by maintenance team but they want this Alerts & Notifications to be received sitting in office or even when away from site.
* The complexity here is They have different models of machines so when the Fluid is filled to each machine, they want to measure what amount oil is filled in that particular machine.
* MES Should provide information on Daily basis like machine filling capacity, Quantity of oil to be filled, etc.
* For PLC fuel system needs a modification based on for which machine based on (SL.NO/Cut off) once calculated by PLC they want to Migrate this Data into Cloud.

Currently they do not have any facility to capture & record these data so they want AIQOD to Develop software which helps to capture this Data & manage all these activities.