3YOURMIND

Machine Connectivity - Use Cases

3YOURMIND Agile MES

Listed below we identified relevant Use Cases for integrating 3D Printing data into our software.

Available

Use Case	Description	Information in Interface	Relevant	Priority	Comment
Identify and match machines of manufacturers	● As a production manager, I want to identify and connect a printer to a workstation in the Agile MES in a standardized way.	● Manufacturer name ● Machine ID	YES NO	HIGH MED LOW	
Match running machine with Job in the Scheduler	● As an operator, I want to start a machine and automatically connect the machine job with the job in the Gantt chart.				
Monitor Remaining Printing Time	● As an operator, I want to know when jobs are finished to organize machine preparation and part removal. ● As a Production planner, I want to know the job finishing time to schedule further jobs.	● Remaining build time ● Last layer exposure time ● Last recoating time ● Est. job end time ● Interruptions (Pause) ● Cancellations			
Adjust Job time of running job and warning	● As an operator/production planner, I want to see the actual job time in the Gantt chart and get notified if the running job is overlapping with other scheduled jobs.				
Monitor Machine Status	● As a production manager, I would like to have an overview if production is running in the Gantt chart or mobile device.	● Running ● Idle ● Paused ● Stopped ● Error ● Warning			
Overview errors and warnings and history	● As a production manager, I want to know when errors and warnings during build jobs happen on machines to counteract problems. ● As a production manager I want to see a history of errors and warnings on a build job.				

Considered

Use Case	Description	Information in Interface	Relevant	Priority	Comment
View LogFile	• As a scheduler, I want to access the log data of a print job at any time.				
View real time data	• As an operator, I want to view current process and machine parameters in real time.				
View past real time data	• As a scheduler, I want to access the real time data from historic jobs from the last X days.				
View Media usage statistics	• Production manager wants to know consumption statistics of machines.	• Powder consumption • Gas consumption (Argon/Air) • Energy consumption			
View Job independent machine data in real time	• As an operator, I want to view current job independent shop floor data in real time.	• Shop Floor Temperature			
Upcoming manual activities	• As an operator, I want to be informed where the next manual actions are required.	• Maintenance operations required (e.g. next scan field calibration) • Est. build finished event • Planned build start event • Machine supply required (powder refill) • Filter changes • Filter module material states (waste+precoat material) • Powder state tanks / overflow bottles etc.			
Upcoming maintenance cycles	• As a Production manager, I want to plan the calibration of a machine.	• Last time scanner calibration • Last time laser power calibration • Definable calibration events			
Machine tool state	• As a Production manager, I want to know the state of the machine tools for planning maintenance.	• e.g. recoater blade			
Transfer Print Job	• As an Operator, I want to transfer the build file to the printer from the Software.				
Start Print Job	• As an Operator, I want to start the build job from the Software.				

Production KPI	• As a production planner, I want to know the effectiveness of production facilities.	• Machine cycle times • Machine down-times • Machine maintenance times • Build Job failures			