

Product Release Europe Ltd

Background

Product Release is a family-owned business, which historically specialised in the manufacture and coating of industrial bakeware products.

Whilst they have grown within this major sector, the business has also diversified and has developed an excellent reputation within a variety of industrial sectors, for providing solutions to problems relating to “sticking,” friction, chemical attack, and heat resistance.

Key products and services include:

Industrial Bakeware

- Manufacture and coating of new bakeware
- Cleaning, refurbishment and re-coating of used bakeware
- Cleaning and re-coating of food contact equipment and machinery

Product Coating

Coating and re-coating of new and used industrial plant for the Food, Automotive, Printing, Packaging, Chemical, Oil, Gas, Renewables, Medical, Pharmaceutical and General Industrial sectors.

Challenge

The company management team identified several challenges, specifically the more efficient use of high energy assets, such as the conveyor fed burn-off and cure ovens.

Delivery Partner



This equipment list also includes an ABB Robot, located in their Turkish Operations, that has been purchased to undertake automated spraying of components.

Due to personnel changes, further technical assessment needs to be undertaken via their appointed technical partner (AI Auto) to assess its functionality and added value to operations.

There is clear scope for optimisation of production planning which may lead to reduced energy usage and overall improved factory efficiency and capacity with reduced operating costs.

This can be done using simulation and modelling.

The Horizon’s LJMU teams proposed creating a Digital Twin of the factory, including the process of cleaning and surface preparation, coating and spraying, and oven cure and burn off, cooling and packing, ready for factory gate dispatch.

This can be used as a starting point to model the workflow through the factory whilst doubling up as a template for potential future projects, such as environmental monitoring (heat, light, temperature) and associated optimisation monitoring and control systems (including barcoding).

This will allow the company to improve the workflow process using simulation techniques.



Delivery Partner



Solution

To assist with optimising processes in the factory, the first stage of support was the development of a digital working model of factory operations.

Within the simulated model, changes can be made to variables to optimise throughput and reduce energy costs, improving overall energy efficiency.

Experts from LJMU's Horizons Team delivered this action.

This will assist the beneficiary to identify ways to improve their workflow, by using the model to simulate production and workflow scenarios, such as changes and any additions to plant and processes.

Based on this, the key elements of the support package are as follows:

- Creation and development of a factory process workflow Digital Model.
- Assist the beneficiary to use the model to improve their understanding for workflow optimisation.
- Identify potential process and production improvements.
- Identify further opportunities to improve their processes and services.

Impact

LJMU's Horizons team have created a Digital Model of the principal factory batch flows, from despatch to customer. This includes typical timings for each stage of the cleaning, coating, baking, and packing stages and can assist the beneficiary to identify potential improvements in factory operations, optimising productivity and efficiencies whilst reducing energy consumption.

Via a site meeting, the LJMU Horizons teams also introduced the Product Release to a potential barcode solutions provider, to address the challenges of tracking batch flow through the factory.

Finally, the teams aided Product Release with a Horizons Capital Grant Application, to part fund the proposed adaption of Cobot type Robotics technologies for improving materials handling and throughput.

The creation of a Digital Factory process simulation model will enable Product Release to identify potential improvements in their factory operations. The model will support simulations of different flow and batch rates, the reduction of non-value-added processes, such as reducing material handling, and the optimisation of batch size, batch numbers as well as being able to analyse production cycles.

Product Release has since decided to import their ABB Robot from their Turkish Operations as LJMU's Horizon Team will assist with the assessment for purpose and the implementation of the robot within their Knowsley factory, through appropriate support mechanisms.