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CONSULTING ENGINEERS

eckelt
a vandaglas company

Process mining pilot at a glass refiner

Supporting production and identifying potential with process transparency and real-time information

An overview

Process mining was used to create a digital image of the entire production process, thereby generating transparency about the process sequences. This made it possible to analyse the production data collected since 2003 holistically for the first time. For this purpose, five areas of specialisation were defined in which an explorative gain in knowledge or a concrete potential for optimisation or automation was suspected. These areas of specialisation were examined in more detail in the project and four use cases were developed to show how process mining can generate added value in glass processing.

Eckelt

- vandaglas Eckelt GmbH, based in Steyr, is a subsidiary of the vandaglas group of companies with sites in Germany, the Netherlands, Austria, England and Switzerland.
- Eckelt specialises in the manufacture of complex XL glass in the façade business.
- Customised products are manufactured on an area of around 20,000 m².

Services

- Creation of a process mining data model based on the MES data stored since 2003
- Development of specific use cases for process mining in Eckelt production
- Creation of analyses for specific areas to increase transparency and exploit optimisation potential
- Development of structures for the sustainable utilisation of the technology at Eckelt

Results

- Development of a production data model with over 6.5 million products produced
- Investigation of the areas of specialisation: Machine utilisation, quality, production costs, waiting time and production mix
- Identification of four specific areas of application in which process mining generates continuous added value

Project description

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Due to customised products in the project business, the variance in production is very high. Many products with different characteristics have to be optimally scheduled into production so that orders can run through production quickly and cost-effectively. Due to the time dependency of the processes and the large amount of data, classic analysis options quickly reach their limits here.

The aim of the project was to demonstrate the added value that can be generated by process mining in the production environment and to enable sustainable use of the technology.

Procedure

- Pain-point recording in the kick-off meeting
- Establishing the data connection
- Data review and feasibility analysis
- Milestone for prioritising the use cases
- Focused analysis of the key use cases as a basis for determining potential
- Final presentation with analysis of the findings and evaluation of the continuous generation of added value

Results

- By analysing the theoretically possible machine utilisation, it was possible to show that the operating time and therefore costs can theoretically be reduced at a workstation with a very high energy requirement (oven).
- An algorithm was developed that determines the actual production costs of each product. In the future, this can be used for comparison with the calculated production costs.
- The generated transparency of throughput times shows that there is considerable potential for optimisation in the buffer times in front of the systems.
- By analysing the breakage reports, it was possible to identify product characteristics that lead to increased rejects.
- By analysing the product mix since 2003, it was possible to derive starting points for trends in demand based on product characteristics.

"The use of Celonis and the support provided by Rothbaum have given us many useful starting points for further optimising our production. The rapid creation of transparency and the targeted work on defined use cases were decisive for the success of the project."

Christian Lechner,
CEO vandaglas Eckelt

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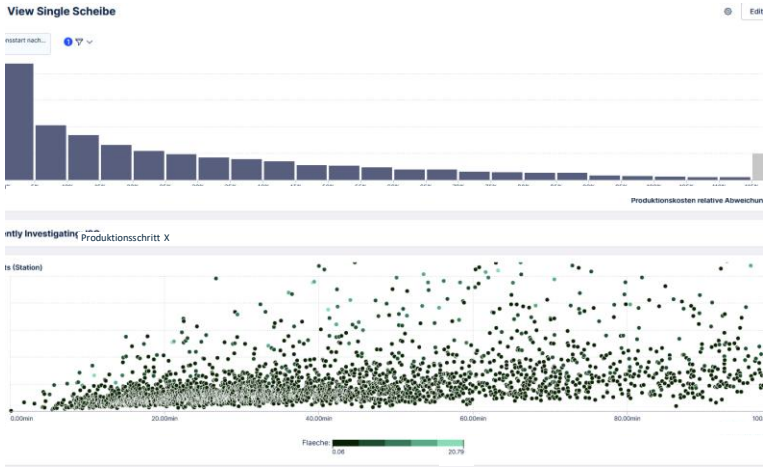
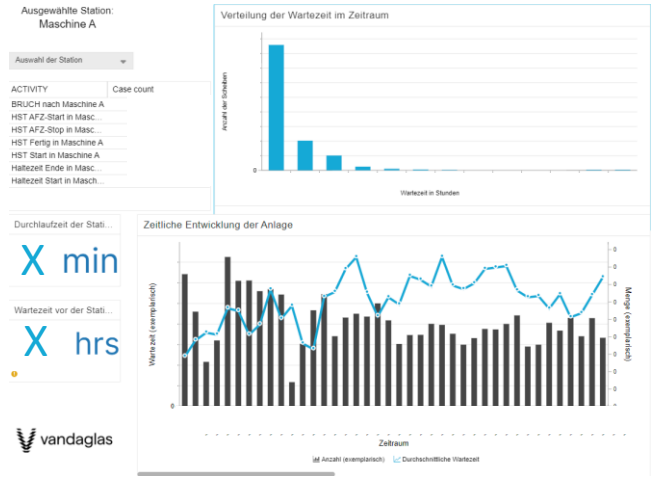
Exemplary insights



A comparison of the actual and calculated costs per workstation and product was created in order to identify differences between the costs. The ability to analyse and clearly present costs strengthens competitiveness.



Analysing the current waiting and throughput time in production enables orders to be scheduled more efficiently based on their production volume. A real-time overview ensures that critical delivery dates can be met.

A Sankey diagram is used to visualise the material flow and the relationship between different work stations. Production can be analysed in a targeted manner by filtering for specific time periods, product or process attributes.

Cost comparison through automated calculation of actual production costs

Transparency in the production process helps to improve production planning and to evaluate process optimisations in a timely manner

I look forward to your questions!

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