

Software

Solutions for your digitalization strategy



Abstract

As a manufacturer and service provider in the surface technology industry, we know exactly what the individual needs of processing companies are. In the area of conflict between perfect surface quality and simultaneous cost pressure, suitable tools are needed to identify concrete measures for optimizing plant performance. To this end, the ASIS Data Science team delivers customized software products, precisely tailored to the requirements of the industry and flexible enough to be adapted to the individual needs of the customer. Instead of offering off-the-shelf products that only cover an intersection of your needs, we deliver software that fits you like a tailor-made suit.



Surface-Analytics

For your digitalization strategy, Surface-Analytics provides you with clear key figures and reports on plant performance and information for end-to-end quality management.



CC-Edit

CC-Edit is the solution for graphical editing of color change sequences. Complex color change sequences can be edited quickly with a simple workflow. Even users without programming knowledge are able to control the color changes.

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1. Standardized plants that are not standard

ASIS solves challenging tasks in automated plant engineering worldwide. The result for their customers are perfect coatings with the highest economic efficiency. The claim „Connecting Technology and People“ stands for perfect cooperation between man and machine and for sustainable value created in harmony with economy and ecology.

The company differentiates itself from its market competitors through its high level of expertise in control technology and the use of digital intelligence.



Fig. 1: ASIS Team

ASIS in numbers

- Founded: 01.05.1998
- CEO: Hans-Jürgen Multhammer
- Quality assurance: ISO 9001
- Information assurance: TISAX
- Export countries: > 30 worldwide

The wide range of competences includes turnkey plants in the field of coating, application technology, quality control, surface treatment, electron treatment, process automation technology and digital simulation.

The internationally positioned systems supplier exports from four locations in Germany and a subsidiary near Shanghai to over 30 countries worldwide.



2. Why ASIS?

ASIS combines technology and practice. Painting and software experts are united under one roof at ASIS and are in lively exchange. This is how software is created that offers the user the maximum benefit. In the sense of our claim „Connecting Technology and People“, we have made it our mission to optimally design the human-machine interface with a high level of solution intelligence in the sense of simplicity and intuitive operation.

A good software solution does not only deliver the bare information, only when information, design and operation interact optimally, it generates the maximum performance for the user. Simplicity and intuitive operation boost the end user's skills and thus the ultimate utility value of the entire software.

3. Surface-Analytics 4.0 - process data analysis

One of the most current topics of digital transformation is the collection and evaluation of data in production plants. The data usually lies unused on the controllers of the plants.

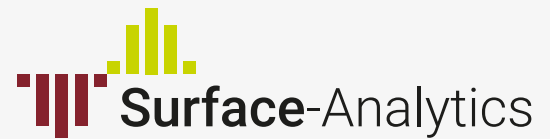
With Surface-Analytics 4.0, ASIS GmbH offers a platform that transfers all relevant data from the PLC to a database and then clearly processes and visualizes it in a web application.

Starting with the evaluation of the plant availability up to the tracing of faulty components, all information is provided centrally in one interface.

3.1. OEE Dashboard

OEE (Overall Equipment Effectiveness) is a common method used to measure and evaluate the availability and performance of industrial equipment and the quality rate achieved with it.

This allows meaningful conclusions about the performance of your plant and further optimization. Surface-Analytics 4.0 collects this information and presents it clearly with several dashboards.



Your advantages:

- Overview of current and historical production data
- Evaluation of data for improved process planning
- Long-term failure archive with various filter options
- Integrated maintenance plans
Future-proof communication standard OPC UA
- Easy access via browser on any end device
- Holistic support from specifications to commissioning
- Export of production data as xlsx file
User-configurable e-mail reporting

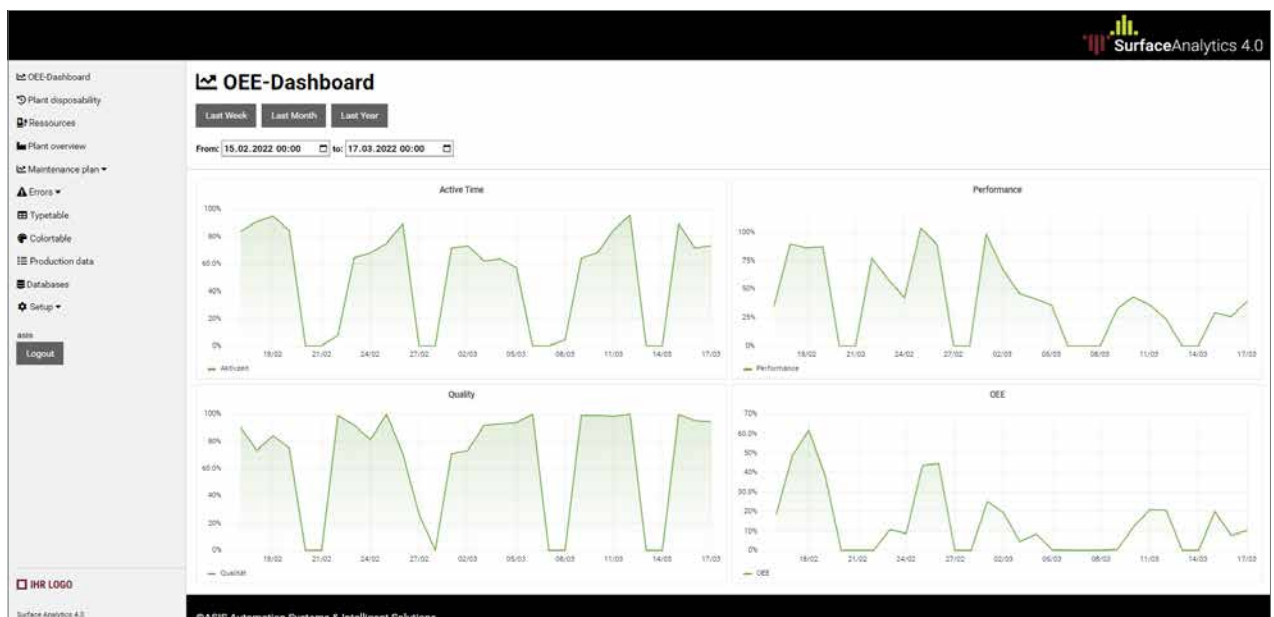


Fig. 2: OEE Dashboard

3.2. Production data

Improve your quality management with the help of continuous process data recording. Selected parameters from each production step are recorded for each product carrier that passes through the production line and stored in a database. In this way, when tracing faulty components, conclusions can be drawn about the processing times and process parameters, and thus the processes can be optimized in a targeted manner.

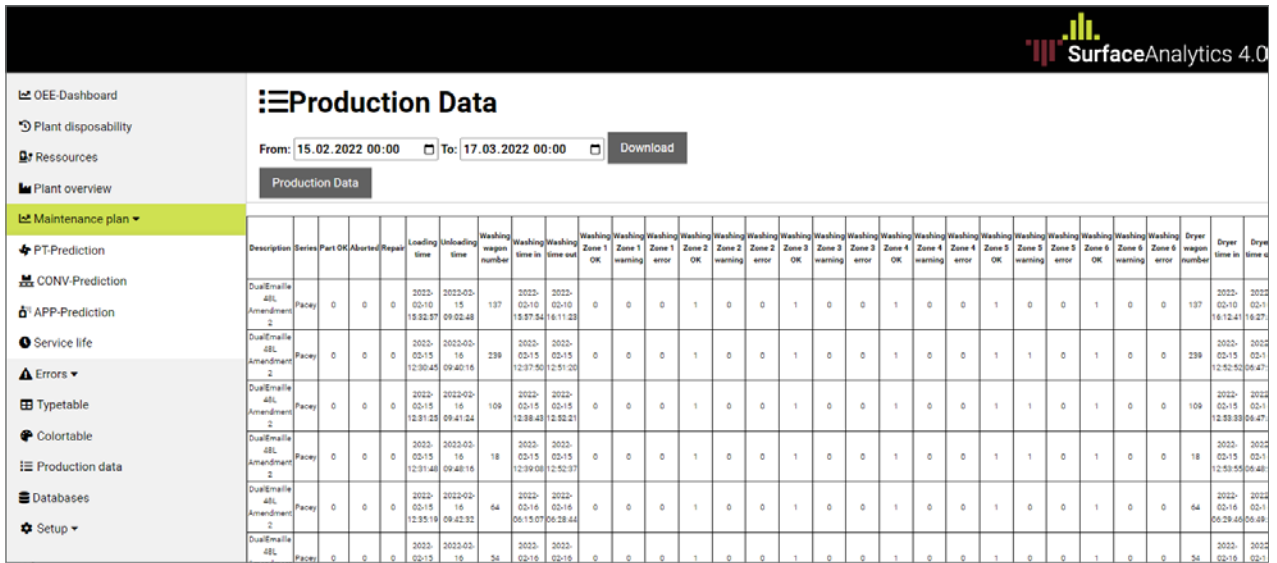


Fig. 4: production data

Usecase:

Traceability of faulty components

Task:

- A batch of components from a powder coating plant has failed quality control. The task is now to determine what has caused this.
- The process data evaluation from Surface Analytics shows which process in the plant these components went through and when. Each process is marked in the system as „OK“ or „not OK“.
- In the event of a fault, it is now determined that the process technology had a malfunction during the coating process and that the humidity and temperature in the booth were not ideal because of this.

Benefit:

- If this happens again in the future, it is now possible to react in the process. The components are manually discharged, cleaned and recoated before they enter the curing oven. This means that the entire batch can be used.



Fig. 3: cooking chamber

3.3. Malfunction message archive

The malfunction archive supplements both the process data and the OEE evaluation. Using predefined filter options, fault frequencies and fault times can be viewed and evaluated over any period of time.

In this way, the causes of plant downtimes and quality deficiencies can be specifically identified and eliminated.

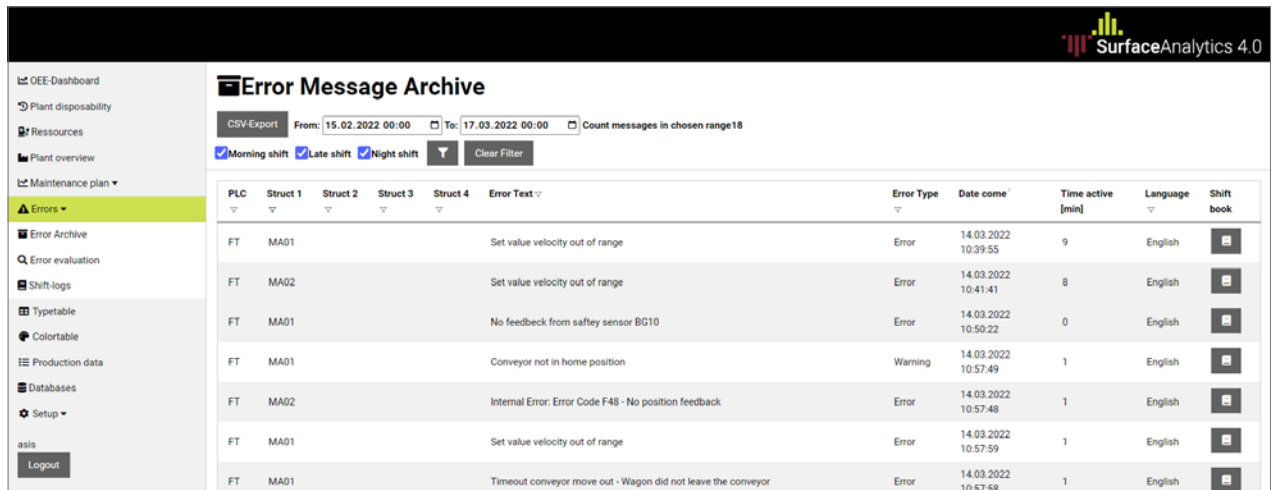


Fig. 6: Malfunction message archive

3.4. Recording of energy consumption

Rising energy prices are a major cost factor in the industry. This problem tends to get worse and worse. Therefore, it is even more important to know the energy consumption of your plants in order to minimize it.

Surface-Analytics 4.0 records all consumptions - from electricity to compressed air - and prepares them graphically in a clear way. This way, power peaks as well as standby consumption in your plant can be detected and reduced.



Fig. 5: Recording of energy consumption

3.5. Excel Import & Export

Surface-Analytics 4.0 also offers the possibility to export the collected data for own evaluations. Type tables and production plans can also be imported from Excel and then loaded into the plant control system.

3.6. Maintenance plan & shift book

By integrating maintenance plans and shift books, the platform can be perfectly integrated into the daily work of maintenance and plant operators.

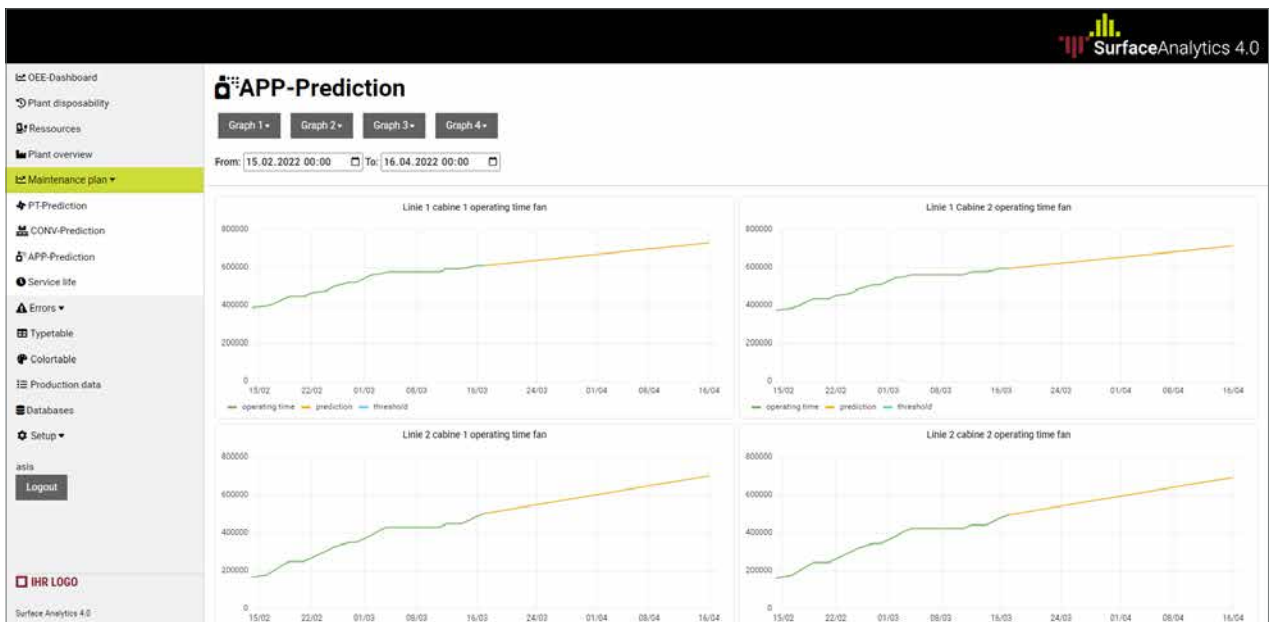


Fig. 7: maintenance plan with predictive curve

Usecase:

Maintenance plan

Task:

- The filters of air handling units must be replaced regularly. They are set up for this purpose in the Surface Analytics maintenance plan and a maintenance interval is defined.
- The maintenance plan adds up the actual operating hours of the ventilation system and uses them to calculate the expected time, when the maintenance interval will be reached.

Benefit:

- Production interruptions are detected and included in the calculation. This excludes the possibility that the filters are changed too early.



Abb. 8: Air handling unit

4. CC-Edit - Optimization of color change sequences

In plants with more complex coating applications, the commissioning and optimization of fully automatic color change processes is a major challenge. For this application ASIS has developed the ColorChangeEditor (CC-Edit). CC-Edit is a graphical Windows application that allows easy and clear editing of color change sequences and loading them into the control system. For the communication with the controller OPC UA, the secure communication standard, is used. With this solution ASIS offers the possibility to implement adaptations or changes easily and quickly without programming knowledge. In addition, the color change processes can be saved online and offline.

4.1. Simple editor

Each coating application is divided into different rinsing groups in order to be able to rinse and press them separately. CC-Edit maps exactly these groups and makes it possible to optimize the different areas of the application separately from each other. The step chain that runs in the system control is displayed graphically in CC-Edit for editing.

For each step it is selected which valves are opened and how long this step is active. It is also possible to wait for predefined conditions for switching on, e.g. robot positions.



Your advantages:

- Easy changes and optimization of color change sequences via a graphical user interface
- Offline preparation possible
- Runs on Windows 10 and 11 PCs
- Future-proof through communication via OPC UA
- Changes also possible during running production
- Simple graphic change of the valve interlock also for maintenance work
- Data backup online as well as offline

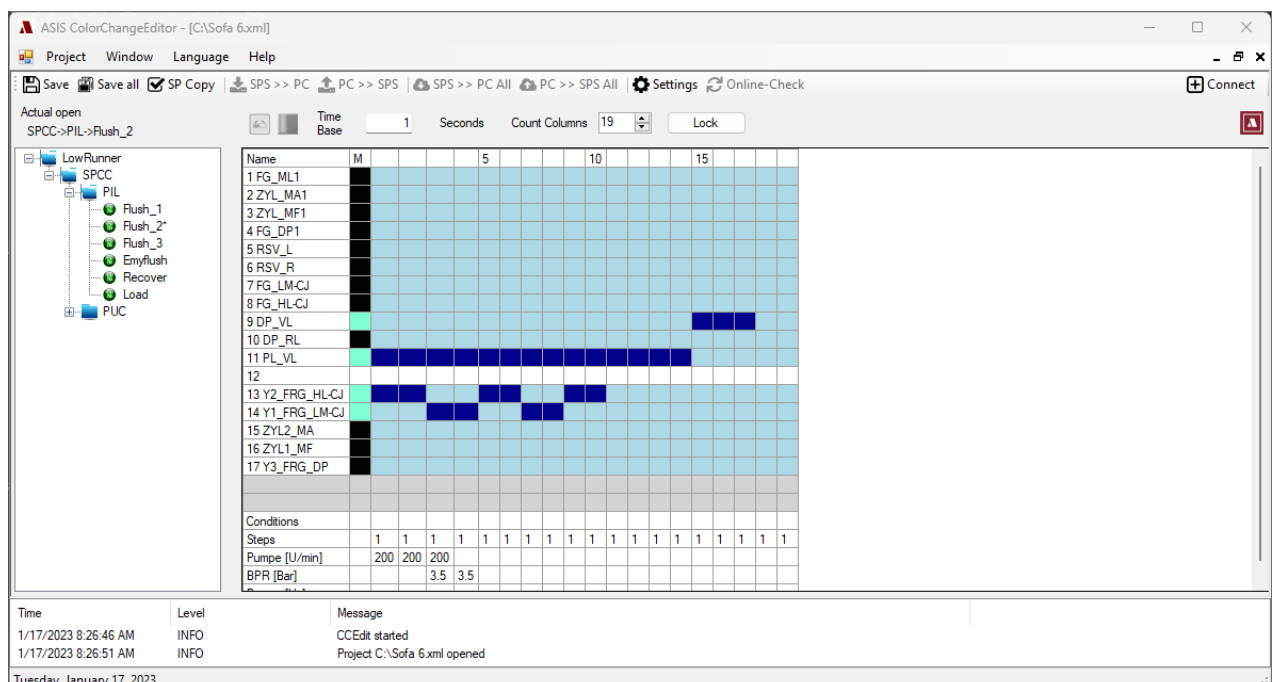


Abb. 9: CC-Edit

4.2. Pressure and speed specifications

One of the biggest challenges of a color change is to keep paint losses and solvent consumption as low as possible. To control color changes even more precisely, CC-Edit offers the function of flexibly changing the setpoints for pumps and pressure controllers during the process. This allows color changes to be optimized even better.

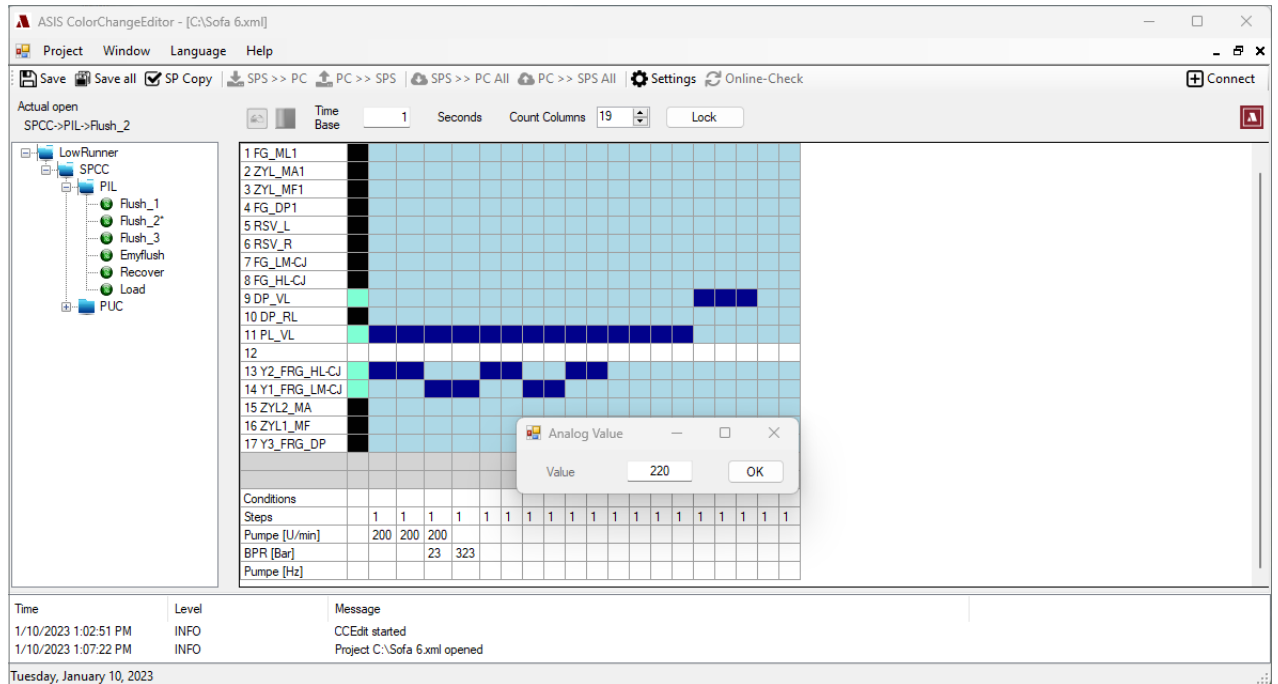


Abb. 10: Enter analog values

Usecase:

Special paint supply

Task:

- Rarely used and cost-intensive paints have to be included in a coating line. The loss of paint when changing the color should be kept as low as possible.
- With the help of CC-Edit, all elements of a special color station, such as pumps, pigging systems and runback regulators, can be optimally adjusted and controlled so that losses are kept as low as possible.

Benefit:

- Thanks to the optimized color changes, several milliliters of paint can be saved with each rinsing and press-on operation. In total, this offers high potential for cost savings.



Fig. 11: ASIS Special-Paint-Sup Performance

4.3. Valve interlock

The valve interlock prevents incorrect conditions in the system and possible damage. The interlock defines which valves may be open at the same time. This applies both in the editor for the color change sequences and in the maintenance mode of the system.

All valves are recorded against each other in a matrix in CC-Edit and can be easily selected and deselected graphically.



Abb. 12: Valve interlock

4.4. Work and save offline

Another plus point of CC-Edit is that program settings can be made comfortably offline. In the background, an XML project file is used to store all the necessary information. Changes can be conveniently prepared at the office and then imported into the system later. The XML project file also enables easy archiving of the color change processes.

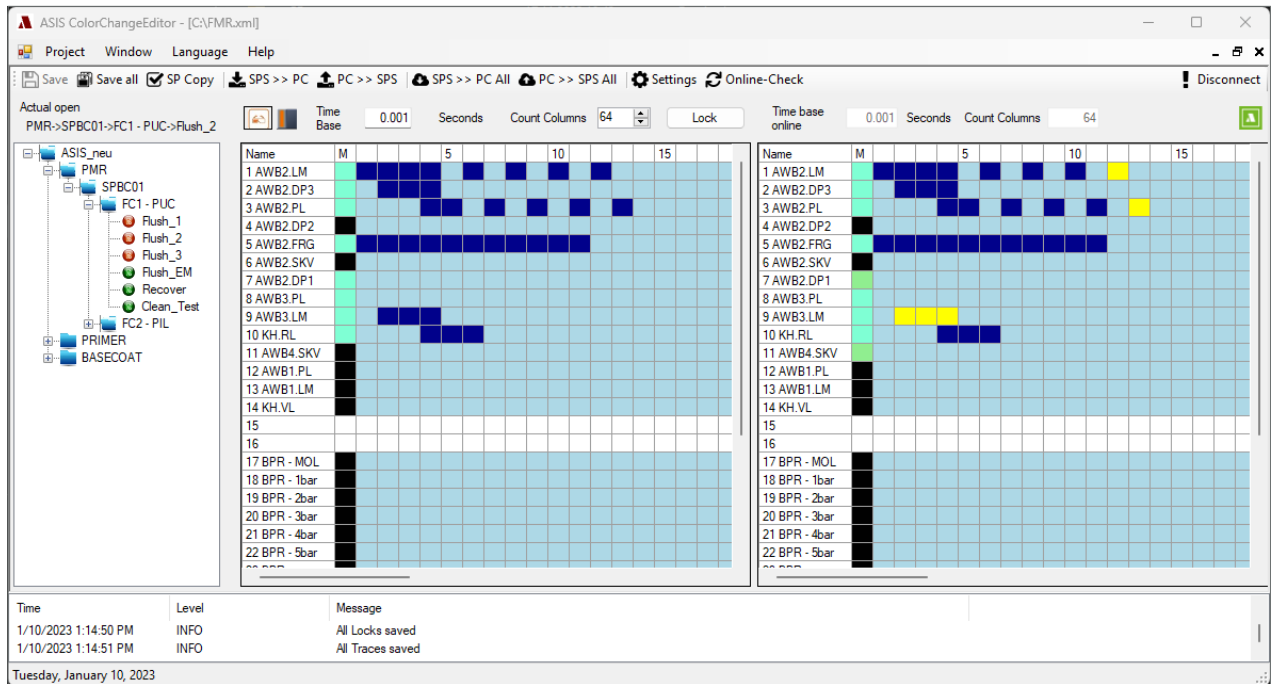


Abb. 13: on-/offline comparison

Usecase:

Use of coatings with different viscosities

Task:

- In a coating line, paints with widely differing viscosities are used. This means greatly differing run times for rinsing and pressing when changing colors.
- With CC-Edit, several color change programs can be created for the same rinsing group. This allows press-on rinsing programs with different intensities and run times to be created.

Benefit:

- Now during operation, the different color change programs can be assigned to the colors so that each color can be optimally used in the application.

5. Summary

Intelligent planning services mean for us to know you and your environment exactly. We develop customized solutions with an overview of the entire value chain of surface technology. With the use of latest software systems, we create long-term, economic and sustainable value.

We provide the link between theory and practice. From the many projects we have implemented in surface technology, we know exactly where the problem lies. Our software experts are familiar with the requirements of the industry down to the smallest detail and are optimally networked with coating specialists. Thanks to complete in-house development, we are also able to integrate individual wishes.

6. Contact

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