The technological demands on Rosendahl Nextrom, the special machine manufacturer for cable, fiber optics and battery production, are very high.

With automation solutions from Siemens and the OPC UA communication standard, Rosendahl Nextrom flexibly connects all production steps. Orders for cable or battery machine production can be implemented more efficiently and complex operating data can be collected simultaneously.
The portfolio includes equipment for the processing of lead electrodes (sleeving, stacking, cast on strap and the assembly to automotive, motorcycle, industrial batteries) and the assembly of lithium-ion modules and battery packs (stacking and compressing, gluing, laser welding, screwing, etc.).

SUPPORT VIA OPC UA
Rosendahl Nextrom has also made a trend-setting decision in favor of the OPC UA communication standard with the objective of problem-free connection of the products to higher-level master computers, machines, customer and cloud systems among other standards. “OPC UA has now become one of the Industry 4.0 standards,” explains Benedikt Wagner, Head of Commissioning and Programming. “Thanks to this solution, we can guarantee high security standards through integrated certificates and user management. On the other hand, the free standard can be adapted dynamically, which perfectly supports our customized approach.”

Rosendahl Nextrom supplies machines for the automotive, telecommunications, energy, explosives and construction industries.
Silicone is an ideal insulating and sheathing material for cables used in fireproof applications such as elevators or alarm systems.

**AREAS OF APPLICATION AT ROSENDAHL NEXTROM**

At Rosendahl Cable & Wire, OPC UA is used for dual operation between individual machines and the orchestration of the entire plant (M2M communication), as well as for further data collection. BM-Rosendahl additionally uses the communication standard for a vertical data transfer in the direction of MES/ERP systems, which are provided by the respective end customer. The integration of the plants into the data interface provided by the end customer in the direction of management systems is possible without any problems.

**PREDICTIVE MAINTENANCE THANKS TO SEMANTIC INFORMATION**

Based on historical data and empirical values, analyses that enable predictive maintenance are carried out for each plant. In the extruder section of the plant, for example, tensile stress, temperature and object data are transmitted using OPC UA. Condition data is also collected to optimize the service life of the screws installed there. Unlike other protocols, semantic information is transmitted so that conversions from Celsius to Fahrenheit, for example, are no longer necessary.

**OPC UA AT ROSENDAHL NEXTROM**

The OPC UA communication standard establishes interoperability between devices from different manufacturers.

**INTERACTION WITH AUTOMATION**

In a long-standing partnership with Siemens, Rosendahl Nextrom first develops new plants in a virtual environment. Tests and optimizations take place on the basis of digital twins in the form of simulations. The construction and use of prototypes has therefore become unnecessary. Siemens enables these processes with TeamCenter, TIA Portal, Mechatronic Concept Designer and other tools. One of the benefits of using these automation protocols is the construction of a new machine for the production of lithium-ion batteries. It is not a linked plant, as is usually the case, but consists of individual production cells, which in turn are automated individually. This allows the production capacities of the machine to be flexibly increased or slowed down and adjusted to market requirements. Since OPC UA is an open communication standard, all existing automation systems can be connected via plug-and-play without any loss of functionality, regardless of the operating system or manufacturer.

**EXPANSION POSSIBILITIES**

In the next step, Rosendahl Nextrom wants to incorporate artificial intelligence into data analysis to make further-reaching predictions. With semantic information, AI can directly relate objects and elements during data analysis, providing a faster and more reliable analysis. OPC UA Alarms & Conditions will also be integrated to provide additional improvements to the process.
FAST INTEGRATION INTO EXISTING SYSTEMS
The changeover to OPC UA took place in the course of a one-month pilot project. Extensive tests were carried out at the pilot plant in the technology center in Pischelsdorf am Kulm. Among other things, it had to be ensured that all required plant components from a wide range of manufacturers could be connected with OPC UA and communicate according to the plant parameters required by Rosendahl Nextrom. The implementation was fast and smooth. The rollout to the operating sites took place promptly.

REDUCTION OF DOWNTIME
“The biggest advantage is, of course, the easier connection of machines to existing systems,” says Benedikt Wagner. “By eliminating hardware adapters, we become more independent and flexible. Conversely, the standard also enables the availability of new process values and comprehensive data access in real time.” According to Benedikt Wagner, these improvements lead to a reduction in downtime of the entire plant as well as to higher quality of the end product.

UNIFORM REPRESENTATION OF PROCESS VALUES
The main task of OPC UA in the manufacturing industry is to facilitate communication independent of platform and manufacturer and to overcome the traditional barriers in industrial communication. All separate protocols are combined into a single secure technology. Unstructured data is contextualized to become easily understandable information. Diverse and distributed plant environments and Big Data scenarios in the area of operational technology (OT) benefit significantly from this.

ADVANTAGES OF OPC UA
Complex and distributed plant environments and Big Data scenarios in the area of operational technology (OT) benefit significantly from a uniform communication standard.