

FOR GREATER SAFETY

Impressive M1 automation system

with integrated safety solution

Industrial plants place demanding requirements on measurement and control technology: It must be able to withstand the most adverse ambient conditions and reliably comply with safety specifications. Thermo Fisher Scientific GmbH, based in Erlangen, Germany, supplies systems for the metal and plastics industry, and uses the M1 automation system from Bachmann electronic and its integrated safety solution.

Thermo Scientific products include a broad range of measurement and control systems for the thickness and coating weight gauging of flat sheet or web products in the metal, plastic and rubber industry. These systems are used in many locations: They can be found in hot and cold rolling mills and metal process lines, as well as in hot dip galvanizing, lacquer coating and electrolytic coating plants. Their fields of activity also include flat film extruders, plastic and rubber calender machines, as well as textile production lines. Non-contact and non-destructive radiometric measuring devices enable the online measurement and control of material and coating thickness during ongoing production. Depending on the application or measured material, the measuring systems use beta, gamma, X-ray or infrared radiation sources for controlling and optimizing the manufacturing processes and the quality of the end product.

M1: powerful, precise and robust

To achieve this, the measured data is provided online and in real time during production. Integration in the control system of the production plant ensures that corrective interventions in the

process can be made as quickly as possible in order to minimize the number of rejects or even fully exclude them. The resulting flood of data is huge and can only be mastered with a powerful automation system. »We found the right partner with Bachmann and its M1 automation solution,« a delighted Gerald Schöppner, head of R&D Materials & Minerals at Thermo Fisher, is convinced.

However, the synchronization of the measuring points in production lines for lacquer coating base materials also requires a high level of CPU performance. »In this process, the base material as well as the precoat and topcoat are measured in the wet and dry state at different points,« Gerald Schöppner explains. »This must take place at exactly the same points at the top and bottom.« These production lines can easily be up to 100 meters in length. »If you then also take into account the fact that the strip vibrates, you can imagine how difficult it is to hit exactly the same measuring point at the different locations in the process,« Gerald Schöppner explains. »This process generates a real flood of data. The M1 provides the performance we need to handle this challenge reliably.«

ThermoFisher
SCIENTIFIC

Thermo Fisher Scientific Messtechnik GmbH is based in Erlangen (Germany) and has around 250 employees. Under the Thermo Scientific brand the company manufactures measurement and control systems for thickness and coating weight gauging within the metal industry as well as radiation and fine particle dust measuring devices. The company is part of Thermo Fisher Scientific Inc. based in Waltham, Massachusetts.

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Gerald Schöppner
Head of R&D for Materials & Minerals at Thermo Fisher

Impressive safety

Each plant must also be compliant with the relevant safety standards. »For example, one of our customers has a lacquer coating line that they wanted to overhaul. The customer also had to comply with the latest legal requirements, which made adaptations necessary to the entire system – particularly with regard to safety. Different requirements were therefore placed on our measuring system,« Gerald Schöppner explains. Basic functions such as extensive radiation monitoring are standard features of Thermo Scientific systems. However, the customer also had very special requirements, as an actual example shows: »There is a risk of explosion in the ovens if too much solvent is introduced. This can be detected with the coating weight gauging function,« the R&D manager describes. »We therefore use the Bachmann Safety PLC. This receives measuring results as well as process data from the M1 controller and thus detects any problems. Input/ output modules, which can be connected in redundant pairs, communicate with the controller for the entire plant.« This process enables safety solutions compliant with the latest safety regulations and standards such as ISO 13849, IEC 62061, EN 61511, IEC 61508, PLCopen Safety and IEC 61131 to be implemented.

Partnership you can trust

»With Bachmann, the whole package is right,« Gerald Schöppner emphasizes. »The M1 automation system offers us a powerful and user-friendly system, which also allows us to implement safety concepts quickly and simply.« However, Bachmann is also a partner that you can rely on in any situation. »When we need help, we get it quickly and without any complications. Bachmann is always keen for further developments. Our relationship is also very open: We tackle any challenges together and always find an optimal solution – for us important criteria for a successful partnership,« Gerald Schöppner sums up.



▲ **Thermo Scientific Sipro gauges for hot strip lines.** The upper arm in the photo contains the two X-ray sources. The detector arrays are located in the other arm below the hot strip. The gauging system delivers the hot strip thickness cross profiles every 5 milliseconds.