

Professional and sustainable aluminum finishing

Full flexibility with the JUMO mTRON T scalable measurement, control, and automation system

The automation system from JUMO is already used in a large number of industries. The varied areas of application are a clear sign of the system's flexibility. Due to this flexibility the applications of the JUMO mTRON T include production processes for industrial furnace construction, mechanical engineering, and the food and beverages industry. The system also demonstrates all its strengths in surface finishing of metals.

The anodizing process Aluminum is a light and stable material that is used in many products. One drawback, however, is that untreated aluminum oxidizes due to reaction with the oxygen in the air or the effects of weather. One option for protecting the material from this corrosion is the process of anodizing. Here, an electrochemical process transforms the surface of the aluminum into a thick and very hard oxide layer. The processed aluminum is very hard, corrosion-resistant, and non-conductive of electricity – and it can be produced in various colors. A special variant of this surface technology is hard anodizing. This process uses extremely high currents of several thousand amperes which produces significantly thicker and harder layers than those in normal anodizing.

DIENER & RAPP GmbH & Co. KG in Villingen-Schwenningen, Germany has specialized in this process. The finishing process itself takes place in acid immersion baths and uses the chemical process of electrolysis. The challenge in hard anodizing is the generation of heat in these acid baths due to the high currents. However, as the temperature is a key influencing variable for the process results, efficiently controlled cooling of the acid baths becomes very important. DIENER & RAPP uses special cooling baths from the Balingen based company Karl Schlegel GmbH. This innovative specialist in cooling and air-conditioning planned the entire custom plant and carried out the job as a turnkey project.

As a central measurement and control unit JUMO mTRON T controls, regulates, and records all cooling processes. There are many reasons why this system was chosen. With previous solutions a large number of different measurement, control, and display units were housed in the control cabinets. The JUMO mTRON T system meant that cabling work could be significantly reduced during installation. The individual modules of the system are simple to mount and the Plug and Play design makes them particularly easy to service. In addition, complex cutting work at the control cabinet door is no longer

necessary as the plant is now operated via a single display rather than several panel controllers / panel display units. All this saves time, reduces cost, and makes handling much easier.

With the multifunction panel 840, all process data can now be centrally accessed. There is no longer any need to compare a large number of display units. The setup program enables convenient plant configuration and parameterization. Customers are also won over by another special feature of the JUMO system: control takes place on a process screen specifically created for this particular application. The entire process can be viewed on a single screen with a clear visual structure.

This also displays significantly more information – such as the exact output level of individual control valves – in a clear format. With the help of the touchscreen, the entire plant can be operated with much greater ease. In addition to visualization, the multifunction panel also permits convenient handling of controllers and program generators. On top of this, it offers user-dependent access to parameter and configuration data for the overall system.

The recording function of a fully fledged paperless recorder is implemented as a special feature as well. This means tamper-proof recording of the individual measured values and data. The entire application is recorded in its own project file, which greatly simplifies project administration and version maintenance. Last but not least, the JUMO mTRON T offers remote maintenance with the help of an integrated web server.

With regard to the ErP 2015 energy directive, the planning and implementation by Karl Schlegel GmbH has enabled the anodizing firm DIENER & RAPP to reaffirm its role as a pioneer. Excess thermal energy is used at DIENER & RAPP to heat the building and the process water. In the cold winter months, “free cooling” is also used. Thanks to its flexibility, the JUMO system scores top marks in all of these monitoring and control tasks. In choosing the JUMO mTRON T, both Karl Schlegel GmbH and DIENER & RAPP GmbH & Co. KG have selected a cost-effective, userfriendly, and modern application solution. Karl Schlegel GmbH has been using highquality and efficient products from JUMO since 1972.