Press Release

Deluxe cleaning and pretreatment
Aluminum materials can be finished to very high standards with plant technology from EISENMANN

Boeblingen/Essen, 14 September 2010. Cleaning and particularly the pretreatment following later in the manufacture of aluminum products are of decisive importance for the quality of the finished item. "With our advanced plant technology, which has already proved its value more than 60 times in practice, we can assure a surface finish of very high quality," says Axel Weiand, Head of Sales of the Process & High Temperature Technology Business Unit at EISENMANN. His words are confirmed by cases such as the lithographic sheet pretreatment plant for AGFA-GEVAERT. Sophisticated plant technology is needed to give the lithographic sheet its high-quality surface finish before it is later converted into printing plates.

Aluminum strips are processed in a detailed and highly complex process which always depends on the material's subsequent use. The international plant manufacturing company EISENMANN includes suitable cleaning and pretreatment processes for all varieties in its portfolio. The company based in Boeblingen can also supply the required waste water and exhaust air purification systems. Its safe and reliable plant technology stands out by comparatively very short process times.

Cleaning process

The cleaning process removes any dirt adhering to the aluminum. A combination of spray jets or immersion baths with rinsing zones and driers is used for this purpose, as required by the material. The cleaning effect is realized by an acid or alkaline cleaner, as desired by the customer. Alkaline cleaners are considered more effective and make it possible to build shorter cleaning plants. Acid cleaners, on the other hand, are associated with lower consumption costs but involve higher investment and maintenance costs on account of the more complex plant technology. In most cases, however, choosing the right cleaner depends on the material and its later use. In the case of lithographic sheet, for instance, a cleaner with stronger pickling effect also prepares the surface of the aluminum for the subsequent electrochemical process. An acid cleaner is therefore better in this case.

Depending on the thickness of the material and the planned plant speed, the cleaning zones can be arranged horizontally or vertically. A horizontal arrangement is used above all for aluminum strips up to 6 mm thick, for example in the automotive industry. Vertical cleaning zones are the most effective and also the most compact variety if normal plant speeds of 400 m/min – or even 500 m/min in some cases – can be realized with the material to be processed. The required plant length can then be reduced to roughly one-quarter as compared to a horizontal arrangement.
Pretreatment

A further intermediate stage often follows between the cleaning process described above and the pretreatment process which is also included in EISENMANN's portfolio. This intermediate stage depends on the condition of the material. Hard materials which are subsequently used as façade plate, for example, must be stretched and leveled after cleaning. Soft materials which are later to be formed, such as the lids of yoghurt tubs, are now heat-treated.

After this intermediate stage, the material proceeds to the pretreatment zones. Depending on its later use, it is once again cleaned and pickled to remove the oxide layers, among other things. A conversion solution is applied in a second stage. This solution replaces the chromate used in the past and serves to improve adhesion of the subsequent coating as well as the resistance to corrosion. Further pretreatment stages, such as electrolytic roughening and anodization with subsequent conversion treatment are required in the case of more demanding materials, such as lithographic sheet.

EISENMANN's product range includes plants for cleaning and pretreatment of strips up to 2,300 mm wide and between 40 µm and 6 mm thick. The strip speed ranges from 50 to 500 m/min.

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EISENMANN (www.eisenmann.com) is one of the leading international suppliers of general finishing technology, materials flow automation and environmental technology as well as high temperature technology. Close to 2,500 qualified employees develop new technologies and facilities for production, assembly and distribution. Engineers, technicians and specialists from various disciplines handle the planning, design, construction and start-up operation of the most advanced systems, including maintenance and system operation.
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Aluminum strip pretreatment in a painting line for façade plate

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