

The latest design and technology for air knives and strip wiping on galvanising lines

Efficient and controllable wiping of strip at the exit of galvanising pots is the key to accurate control of galvanised layer thickness and strip corrosion properties, especially in high-speed process lines. FOEN® has received a number of orders from China in recent months, testimony to its engineering capabilities.

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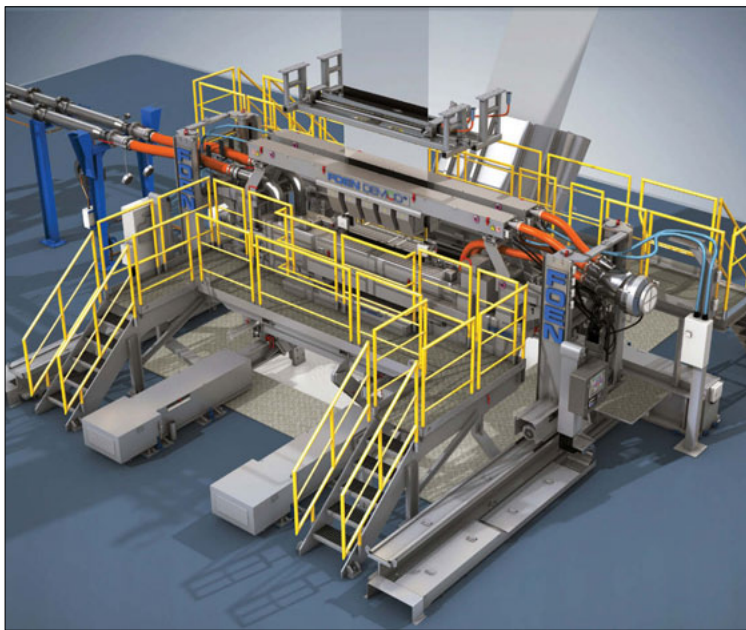


Fig 1 FOEN® wiping equipment with DEMCO electromagnetic strip stabiliser

In recent months, FOEN® has received orders for air knife equipment for five new continuous galvanising lines despite strong competition and a stagnant steel market. Such air knives are used for wiping pure zinc, Zn-Al or various combinations of alloys from steel strip emerging from the galvanising pots. They have been characterised as being the heart of a galvanising line as they have a determining influence on the thickness and quality of the protective coating.

By adjusting different parameters like pressure, knife height and distance, the strip producer is able to control the coating to customer requirements accurately. Although they are traditionally called air knives they can be operated with either air or nitrogen.

A special feature of all these lines is the high process speed.

BAOSHAN IRON & STEEL (GROUP) CO. – 1,550 CGL 1

Baoshan Iron & Steel is installing a new hot dip continuous galvanising line in Zhanjiang, China. The line will go into operation in 2017 and will produce 272,000t/yr of strip coated with either zinc or galvalume at a maximum speed of 160m/min. The strip width can vary between 700 and 1,450mm at a strip thickness from 0.3 to 1.6mm. The coating weight for zinc will be 30-225g/m²/side and for galvalume 30-100g/m²/side.

MEISHAN IRON & STEEL – CGL 1

Meishan Iron & Steel is revamping continuous galvanising line No. 1 in Nanjing, China. FOEN® will deliver the air knife in 2016 for this line that will have an annual capacity of 200,000t/yr of coated strip. The coating weight for zinc will be 30-225g/m²/side at a maximum line speed of 160m/min. The strip width is between 700 and 1,250mm and the strip thickness is 0.2 to 1.5mm.

TANGSHAN IRON & STEEL GROUP – CGL 5 & 6

Tangshan Iron and Steel Group is installing two new continuous galvanising lines at Tangshan, China, in 2016 to produce high-quality steel for the automotive industry.

CGL 5 will have an annual capacity of 258,500 tonnes of zinc-coated strip. The coating weight will be 30-225g/m²/side at a maximum line speed of 180m/min. The strip width will be between 850 and 1,300mm at a strip thickness of 0.18-1.5mm.

The annual capacity of CGL 6 is 412,400 tonnes at a strip width of 850-1,600mm and strip thickness of 0.5-3.0mm. CGL 6 will produce both zinc-coated and Al-Si-coated strip. The maximum speed for zinc will be 180m/min and for Al-Si it will be 110m/min. The coating weight for zinc is 30-225g/m²/side and for Al-Si 20-100g/m²/side. FOEN® will also supply top dress robots to clean the surface of the bath for both lines.

A special facility of the CGL 6 is the electromagnetic strip stabilising system FOEN DEMCO® (Dynamic Electro-Magnetic Coating Optimiser).

The reduction of strip vibrations in the process section enables significant improvements in coating quality. FOEN® has developed this strip correction and vibration-dampening system, which is characterised by its compact size, high force application, and very fast control times. The stabilising effect is achieved through inductive measurement of the strip position and control of several magnetic forces across the strip width. Depending on the strip width, three or five pairs of coils are used. Only the centre coil is fixed; the other pairs move synchronously.

In contrast to conventional hot-dip galvanising lines where undesired strip movement occurs, the FOEN DEMCO® eliminates the need for an over-coating target to ensure that the required minimum coating is reliably achieved over the full strip surface.

SHANDONG IRON & STEEL GROUP – 1880 CGL

In 2017, Shandong Iron & Steel Group will launch its new continuous galvanising line in Rizhao, China. The annual capacity will be 400,000 tonnes of zinc-coated strip. With a strip width of from 900 to 1,880mm and a strip thickness of from 0.3 to 2.5mm, the coating weight will be 30-225g/m²/side. This line has a maximum line speed of 180m/min. **MS**

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