

**TEZCAN GALVANIZ A.S.**  
Continuous galvanizing line  
Izmit, Turkey



# State-of-the-art furnace design for high production capacity



▲ The continuous galvanizing line (CGL) n°2 of TEZCAN GALVANIZ A.S. in Izmit, Turkey, went into operation in April 2010.



▲ Top view of the furnace entry

## Furnace design

The furnace is equipped with the latest Direct Fire Furnace (DFF) technology and was designed in a very compact way to minimize the construction cost for the customer. Hence, the furnace maximum height is 25 meters, while the After Pot Cooling (APC) tower height is 29 m, and a total furnace length of 47 m.

## Production capacity

The processable strip thickness ranges from 0.8 mm to a maximum of 3 mm. The current maximum production capacity is 70 t/h for a strip measuring 1,300 mm in width at an operating temperature of 730° C.

Future extensions to the furnace are planned, including an increase in heating capacity in the DFF section and an increase

in the cooling capacity of the Slow Jet Cooling (SJC) section. The cooling capacity of the APC tower can be increased by installing one cooler on a movable platform and an additional one at the level above. In its future configuration, the furnace production capacity will reach a maximum of 83 t/h, allowing production of other steel grades as well.



▲ Cooling unit of the Gas Jet Cooling (GJC) section



▲ KB burners panel – Direct Fire Furnace (DFF) section

## Furnace heating sections

The strip enters the preheating section through a single seal roll assembly and is heated up to 280° C by the waste gases from the DFF. After a transfer zone, the strip proceeds to the DFF for heating to a maximum of 760° C. The precise atmosphere control of the DFF allows a good strip cleaning effect in a reducing atmosphere, and controlled oxidation where required. The strip leaves the DFF and passes through the Radiant Tubes Heating (RTH) and Radiant Tubes Soaking (RTS) zones, equipped with 3 mm-thick W-shaped radiant tubes and on/off burners. From the RTH zone to the exit zone, the strip surface is protected by the  $HN_x$  atmosphere.

## Furnace cooling section

After the heating and soaking zones, the strip passes through the Gas Jet Cooling (GJC) section, which consists of six jet cooler modules located over two vertical passes, where the  $HN_x$  furnace atmosphere is circulated via efficient heat exchangers and through profiled blowing nozzles onto the strip.

The design allows a future extension simply by adding a jet unit opposite each existing unit. Thus, the cooling rate will increase significantly by only doubling the cooling capacity.

For the same strip format, speed, and strip temperature at the entry of the cooler module and using only 5%  $H_2$  (95%  $N_2$ ), the following cooling rates are achieved:

With one cooler unit	CR = 53° C/sec/1 mm
With two cooler units	CR = 63° C/sec/1 mm



▲ Cooling air ducts of After Pot Cooling (APC) tower



▲ Direct Fire Furnace (DFF) section

## Automation and control

The furnace control system has been designed and developed entirely by the ANDRITZ Automation Group and includes all modern control and automation features.

## Quality of products

Part of the galvanized strip produced coming from CGL2 is directed to the painting line next to the continuous galvanizing line.

Heat recovery was another main focus for this furnace. The ANDRITZ Selas design allows the use of waste gases generated by combustion of natural gas to

- preheat the strip up to 280° C in the preheating section,
- heat the combustion air for the DNHA and radiant tube burners which help to lower the consumption of natural gas,
- and heat air to feed the chromatation process with a dedicated air/waste gases heat exchanger.

This furnace features a post-combustion circuit which burns some of the combustion residues coming from DFF fumes in the preheating section.



▲ Top transfer preheating and Direct Fire Furnace (DFF)

# TEZCAN GALVANIZ A.S.

## Continuous galvanizing line, Izmit, Turkey

### Scope of supply and services of ANDRITZ METALS

- Supply of furnace equipment and automation
- Complete engineering
- General planning
- Erection, commissioning and start- up supervision

### Project data

- Start of operation            2010

### Technical data

- Capacity                        300,000 t/a
- Strip thickness                0.8-3.0 mm
- Strip width                      800-1,300 mm
- Process section speed       200 m/min max.
- Steel grades                    CQ, DQ, DDQ, FH

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