

ELECTROLYTIC  
PICKLING TUNNEL  
FOR PICKLING OF  
TUBES AND BARS  
IN CONTINUOUS

WITH AN ATTENTIVE  
EYE TO NATURE



The traditional system for stainless steel tubes and bars pickling has been turned upside-down by a New plant solution proposed by Condoroil Stainless.

With this new pickling system all steps, from pickling up to marking and packaging, are carried out directly on the production line.

No further handling of bundles is required.



The first **electrolytic pickling tunnel** produced in Italy, has been operating at Marcegaglia Forlì for some years already.

In the developing process of the Company it represents an important part for the reduction of the expensive handling operations of the bundles.

The plant uses an electrolytic solution, DESCALINOX P23, sulphuric acid based, free of hydrofluoric and nitric acid, classified as corrosive.

It is clear the advantage of managing a pickling bath without handling toxic or very toxic (traditional pickling) solutions. No more hydrofluoric acid gaseous emissions, no more NOx.



### ELECTROLYTIC TUNNEL

The electrolytic tunnel at induced current has been studied for the in line electrolytic pickling and passivating of stainless steel tubes and bars.

The material pass inside the treatment tunnel where the surface is subject alternatively to anodic and cathodic currents that carry out the pickling action.

In particular, the anodic section allows to solubilise the depleted chromium layer and to passivate the material while the cathodic section makes the oxide expulsion easier and produces a gas evolution approx. three times higher than the anodic section.

The pickling liquid level inside the tunnel is kept constant and is adjusted to the working temperature of 40°C by a cooling system in continuous of the working solution.

The pickled material is washed inside the tunnel through three rinse steps in back current with demineralised water.

The amount of current for surface unit is kept constant for the kind of treated tubes and speed of the tool.

Eventual defects raised in the line (i.g. with the Eddy current system) cause the temporary stop of the machine that will start again only after the defect has passed the drying area. In particular the stop and the restart of the different treatment areas (pickling, rinse, drying) are carried out gradually and in automatic

### WASTES TREATMENT

The tunnel creates two kind of wastes that must be properly treated: the spent pickling product and the rinse water.

Both are originated by a process using non toxic solutions and are characterized by the presence of saline pollutants absolutely compatible with traditional chemical physical purification plants.

In any case it is possible to optimize the water treatment

cycle by introducing optional modules for the sulphuric based electrolytic bath regeneration and for the water "zero discharge".



### EMISSIONS TREATMENT

The emissions are essentially composed by hydrogen and oxygen with eventual drag outs from the electrolytic solution (DESCALINOX P23 based). The entire pickling line is equipped by a proper suction hood that guarantees the immediate gas scavenging and by a washing tower for the abatement of eventual traces of acid drag outs. In any case the plant meets the requirements of the legislation, also according to the emissions.

### ADVANTAGES

<b>Pickling costs reductions:</b>	Cost of raw materials used in the induced current electrolytic system is sensibly lower than the one in the traditional system
<b>Automation of working cycle</b>	Working cycle is totally automatic on the line up to marking of the piece. Intermediate steps of accumulation and relevant bundles handling are eliminated
<b>Employees reduction:</b>	The pickling line does not require any personnel
<b>Accidents prevention:</b>	The use of a harmless pickling solution (Descalinox P23) improves the working conditions and remarkably reduces the risks related to the management of the working and storage steps.
<b>Environment protection:</b>	The electrolytic tunnel is prepared for the "zero discharge" management of the waste with the regeneration of the electrolytic solution and water recycle

