



**GOODRICH**



**DELAVAN**<sup>®</sup>  
Spray Technologies



**NOZZLES  
FOR METAL  
MANUFACTURING**

**Product Guide**

# Continuous Casting

The Continuous Casting of metals is still a relatively new process in the steel industry but even more tremendous strides in development have been made in recent years.

In the constant pursuit of technological improvements Delavan Engineering staff have worked with steel mills around the world to implement many improvements in the casting process.

Air mist cooling had almost entirely superseded ordinary hydraulic nozzles on many casters around the world, but with the introduction of the Continuous Strip Processing Mills a move back towards hydraulic nozzles has taken place, but these now tend to work at much higher pressures typically 15 Bar (200 psi) and lower volumes to cope with the newer range of machinery in use.

Working with mill designers and mill operators Delavan is able to offer the complete range of nozzles to suit your process.

## BETTER COOLING WITH LESS WATER....

Features and Benefits of Delavan Continuous Casting Nozzles:-

- Highly uniform droplets with constant surface area per given spray volume
- More controllable and even cooling
- Reduced air consumption, saving energy through reduced air compressor load
- Wide passages to prevent plugging
- Maximum heat transfer
- Large turn-down ratio
- Constant spray angle over wide pressure range

Oval Spray Nozzle

Mould Cooling Nozzles

Cool Casting Tips

Cool Casting Nozzles

## DESCALING FOR QUALITY PRODUCT MANUFACTURE

Features and Benefits of Delavan Descaling Nozzles:-

- Alignment aids for accurate spray placement
- Filter stabilisers to eliminate turbulence, improve spray stability and increase impact force
- Exceptionally hard tungsten carbide inserts for long life
- Available in hardened stainless steel or tungsten carbide in different grades to suit application
- Highly uniform, knife-edge flat spray for working pressures upto 4000 psi
- Maximum impingement force with low energy losses

Alternative Designs of Descaling Nozzles

# Descaling nozzles

Elimination of scale has never had a higher priority with present day steelmakers. Their customers are becoming more critical in their demands for quality of product and rolled in scale is a major problem both commercially and technically.

Development in the design of hydraulic descaling nozzles and improved techniques in the evaluation of their performance has enabled Delavan to offer designers and users of descaling equipment the ability to make substantial energy savings.

More efficient nozzle design can achieve equal impact values at lower pressures or water volumes to existing equipment and the power and water savings are shown to be an important factor in steel plant economies.

Descaling Nozzles with Fitted Stabilising Filter

# Roll Cooling in the Steel Mill

In a rolling mill the cooling of the rolls in the mill stand is a critical and often misunderstood process. Efficient application of coolant will extend roll life and improve product quality and cleanliness.

Delavan have a complete range of nozzles that will interchange and allow quick and accurate replacement.

Nozzles are generally available in brass and stainless steel. Tungsten carbide lined nozzles are also available where the quality of cooling water causes damage and erosion to softer materials.

Typical Nozzles used in Roll Cooling

Full Cone Nozzle

LD Self Aligning Nozzle

AD Self Aligning Nozzle

Wide Angle Full Cone Nozzle

Features and Benefits of Delavan nozzles for the Roll Cooling Mill:-

- High impact, even distribution
- Dovetail fitting guarantees alignment of interchangeable tips
- Interchangeable with other systems
- Nozzle orifice offset by 5° or 15° to avoid spray impingement
- Full cone and square pattern nozzles available for roll cooling in hot mill
- Wide range of oval spray nozzles also available.

# Tiny droplets

## for large improvements



As a world expert in spray technology, Delavan can engineer droplets to give you the process controllability you seek. We can give you powerful tools to meet the ever-increasing demands in metal producing industries.

Delavan Spray Technologies is part of the Goodrich Corporation, a leading aerospace and industrial enterprise with world-class products. The company's business is conducted on a global basis with manufacturing, service & sales undertaken in various locations throughout the world.

Spray nozzles are an integral part of the way metal is produced and are used extensively in all applications throughout the steelmill. Whether you need a very fine spray for surface coating or extreme pressure for surface descaling. If you need small droplets for evaporation or even distribution for surface cooling... Our nozzles will allow you to control your process. Totally.

At the same time, Delavan droplet control enables you to meet corporate demands for:

- Higher surface quality
- Tighter pollution controls
- Lower energy consumption
- Flexibility to manufacture a wider product mix at optimum productivity

Wherever droplets are involved with metals manufacture, Delavan is there, with what you need to control your process better.



Even after metal producing processes are finished Delavan nozzles are still used in all the secondary processes such as pickling, galvanising, strip oiling and coating.

Even in the production of automobiles, Delavan nozzles are used by all the major manufacturers in the pre-treatment lines preparing the steel you have produced for the motor industry

**Comprehensive information relating to all of the spray nozzles depicted in this brochure is available in our main "Total Control" Specifiers Guide or on relevant data sheets.**

Contact our Customer Service Team or your local distributor for further details

Tel: + 44 (0) 151 424 6821 or alternatively e-mail: [sales@delavan.co.uk](mailto:sales@delavan.co.uk)

USA Tel: Toll free: 1-800 Delavan or alternatively e-mail [sales@delavaninc.com](mailto:sales@delavaninc.com)

# Everything you'll ever need to know about nozzles

## Total Control - Specifiers Guide

available in book or CD format.

With over 30,000 nozzle and accessory listings and details. Also featuring an in-depth guide to nozzle technology.



### Short Form Catalogue

A brief overview of Delavan, the markets and applications we serve and the products we supply. Available in:

English Spanish  
French Italian  
German Chinese  
Dutch



### Spray Drying Product Guide

This guide includes an introduction to spray drying technology as well as Delavan's comprehensive range of Spray Drying nozzles.



### Spray Nozzles and Showers Catalogue

This 12 page guide includes nozzles and showers needed for the various stages involved in the paper making process.



### Variable Coating Nozzle

This guide gives a brief overview of our new VCN nozzle, showing its use in a wide variety of applications.



### Safety Showers & Eyebaths

A 20 page guide of our comprehensive range of emergency safety showers, eyebaths and associated products.



### Oil Burner Guide

A new guide to Delavan's extensive range of oil burner nozzles.



Visit our website @ [www.delavan.co.uk](http://www.delavan.co.uk) for further details

Dealer Stamp

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