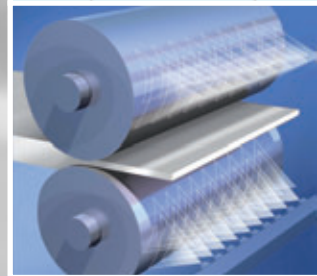
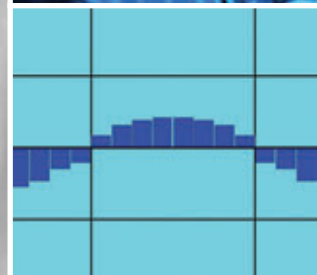
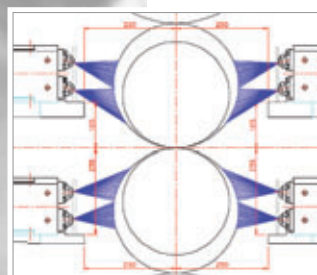




SELECTOSPRAY® **Roll Cooling Systems**



SELECTOSPRAY®



Lechler are the world's leading spray technologists, with more than 130 years of experience in providing spray solutions to global leaders in manufacturing industries. Since the company was founded we have gained unsurpassed knowledge and experience which has enabled us to keep at the forefront of spray technology. Based on the knowledge we have gained we are fully aware of what is required by modern industry and how it can be achieved.



Research and development plays a vital role in maintaining our global position. Teams of highly motivated engineers are constantly striving to develop new products and solutions that will assist you in maintaining the competitive edge in today's fast moving environment.

Our sales and technical specialists around the world have proven track records in building successful business partnerships wherever quality, performance and reliability are important. Allow Lechler engineering to assist you to drive your manufacturing process forward.



Roll Cooling Systems

The Lechler SELECTOSPRAY® roll cooling system is the industry standard for selective roll cooling in the rolling of flat steel, aluminium and other non-ferrous strip.

- Advanced design and engineering capabilities with more than 400 systems and 1000 headers designed and manufactured.
- In depth application know-how and process knowledge.

- Comprehensive range of high-performance electrical, pneumatic and electro/pneumatic valves.
- In house design and build of dedicated control cabinets.
- Bespoke engineered systems as well as standard configurations.
- Production facilities in Germany, China, England, India, Hungary and the USA. Global network of affiliated sales offices and representatives in over 40 countries.



Control cabinet



Zoned selective cooling sprays.

Upper selective roll coolant header

Advanced Design and Engineering Capabilities

The multi-discipline engineering team at Lechler offer the ability to optimise the roll cooling efficiency by the unique ability to offer a bespoke solution to each SRC project.

From initial conceptualisation to complete integration into existing or new mill configurations, the approach is the same. No compromise, with an optimised solution to, maximise process efficiency.

Computational Fluid Dynamics (CFD)

To determine that the internal fluid paths are designed to meet the criteria of near laminar flow.

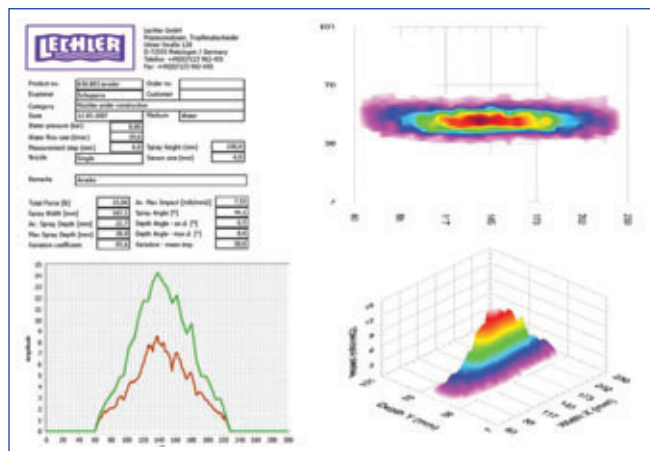
Finite Element Analysis FEA

To ensure loadings are designed and modelled within acceptable stress and deflection criteria.

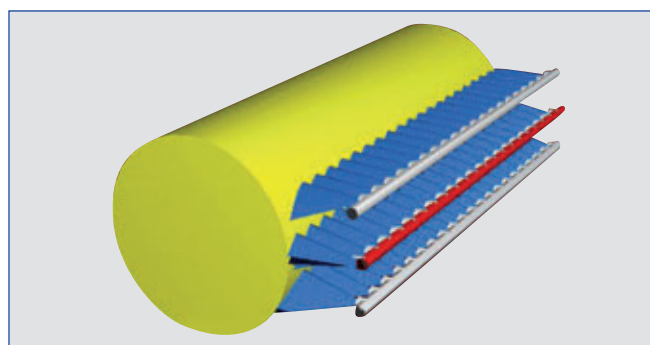
The state of the art tools used to achieve this goal are:

Thermal Modelling to determine the most efficient use of the available coolant.

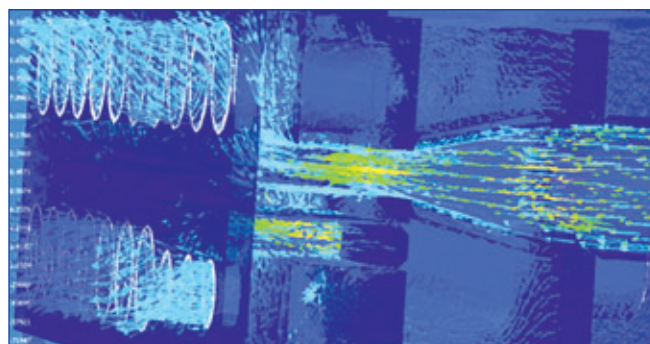
Spray Simulation utilisation of inventor 3-dimensional imaging software to develop symmetrical cooling profiles from the available spray bar position.



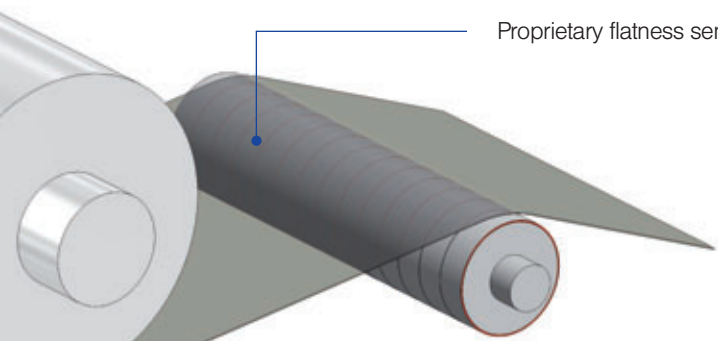
Spray impact / pressure analysis



Roll cooling nozzle arrangement



Header internal flow analysis



Proprietary flatness sensor roll.



Lower selective roll coolant header

Constant flow sprays for stable work roll temperature control.



Lechler scope of supply:

- Selective/non-selective coolant headers
- Control cabinet
- Control connections (electric/pneumatic)
- Spares
- Thermal modelling
- Mill cooling system audits

Application Know-how

Lechler supports a long experience of designing and building roll cooling systems with considerable know-how in the operational and process field through our industry experts.

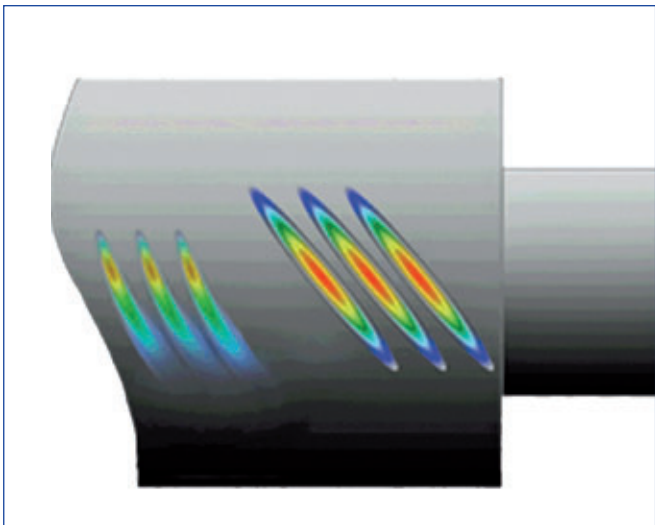
Whilst the principal objectives of the selective roll cooling system is to achieve optimum strip flatness and efficient heat transfer from rolls; ensuring this is achieved by applying minimum coolant is a key

engineering and production priority resulting in a consequential reduction in the volume being processed for recovery or disposal of spent coolant which significantly reduces primary operating cost.

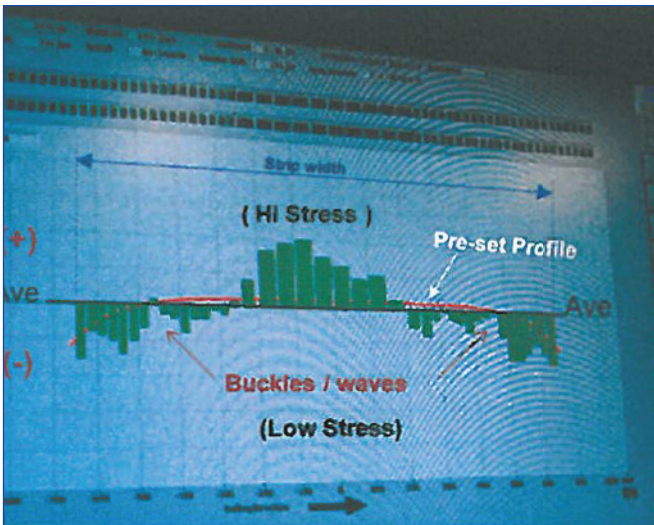
Efficient application of the coolant and lubrication media also ensures minimal generation of detritus and particulates in the process further improving service quality and strip brightness.

Lechler systems are "designed in" to the existing mill configurations as an integral part of the rolling process ensuring optimum interaction and integration with the rolling process.

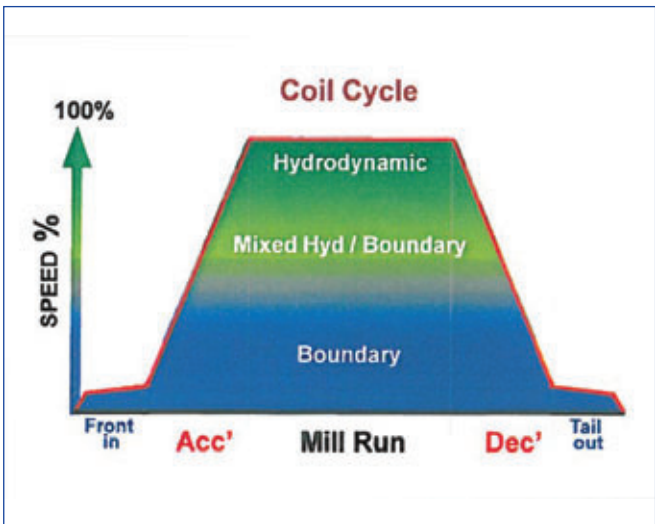
Lechler provides participative contributions to ensuring clients process needs are considered a priority.



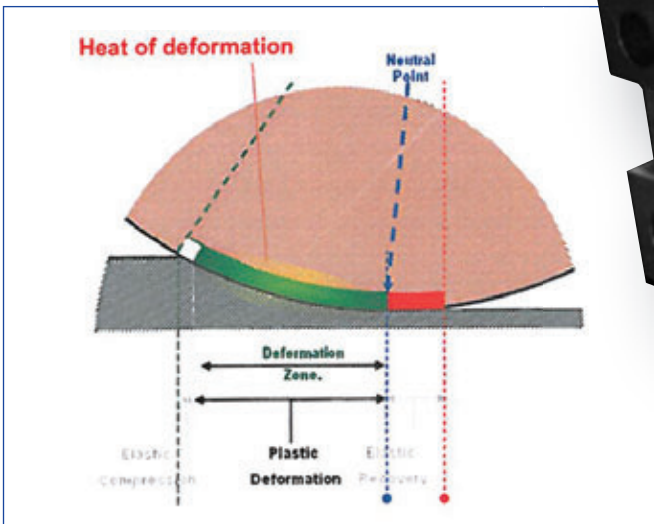
Spray pattern symmetry (non ideal on left, ideal on right)



Flatness display



Lubrication coolant phases



Generation of heat in roll

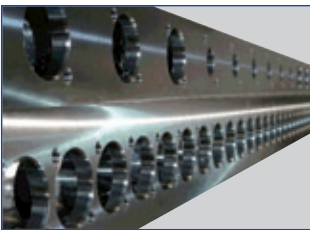
SELECTOSPRAY® Header Evolution

State of the art design and manufacturing has seen Lechler headers develop from a mixture of small fabricated mild steel plates to current industry leading standards for conventional mill configurations using stainless steel plates or heavier stainless steel forgings as a basis of our robust custom built solutions when for example a roll change support rail is required.

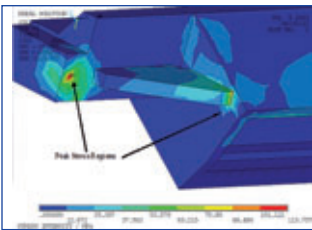
Lechler's header design concepts ensure quicker times to

market, more competitive pricing whilst development of smaller valves that match the flow of traditional larger valve designs; result in more compact headers, affording the optimising process a further iteration.

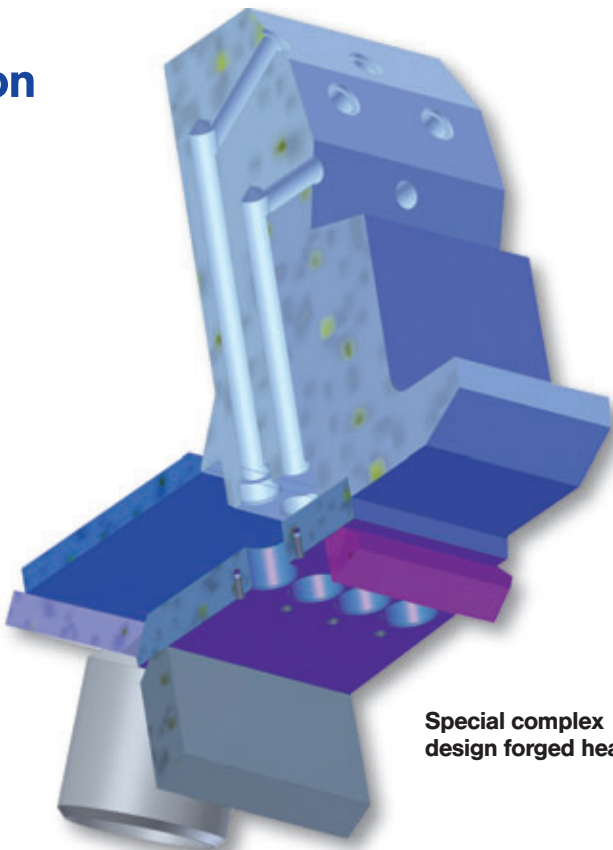
Utilising the Lechler in house manufacturing and design facilities, the ethos of complete structural integrity is a precursor to creating header designs that have high impact resistance as well as and including such things as integral roll change rails.



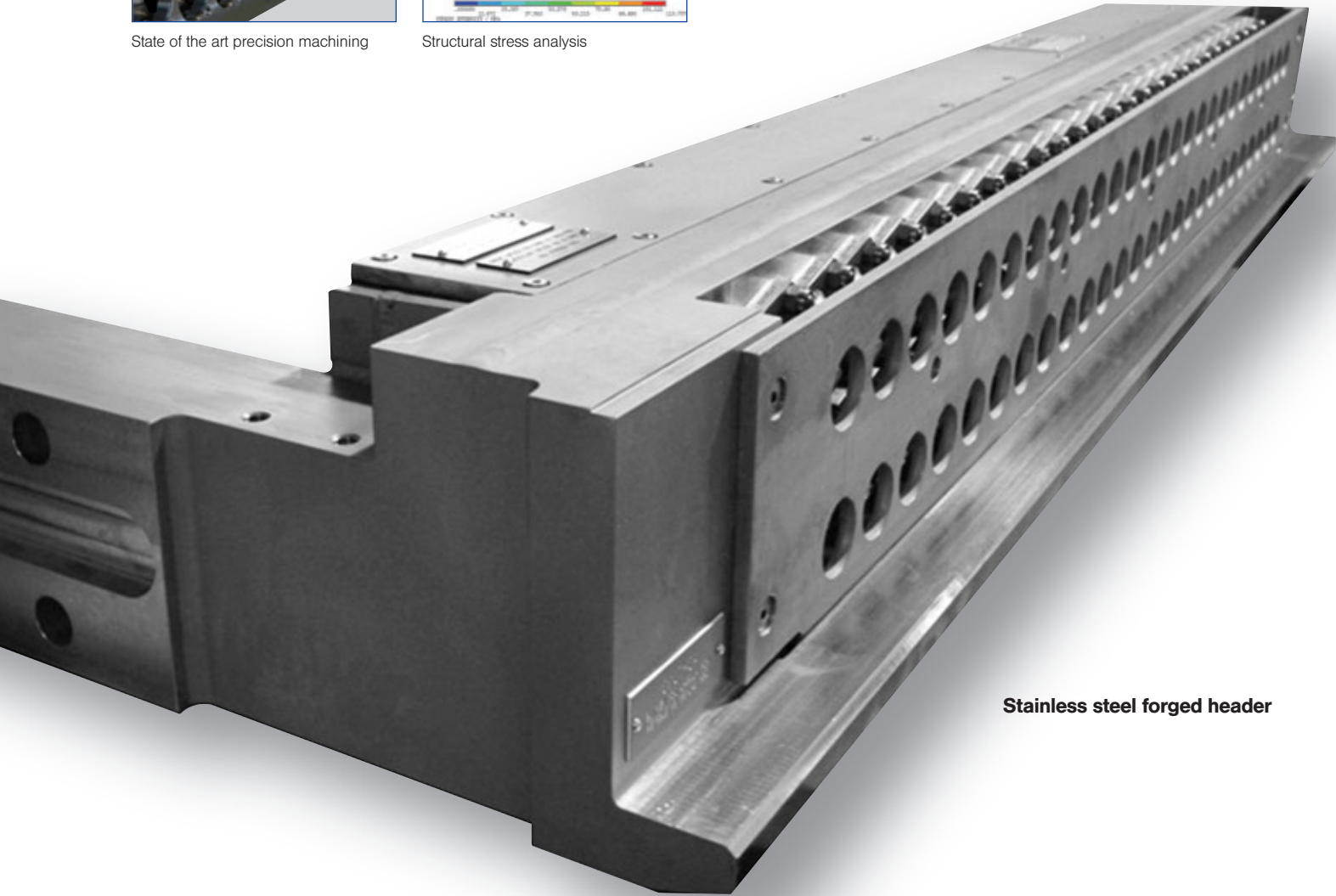
State of the art precision machining



Structural stress analysis



Special complex design forged header



Stainless steel forged header

SELECTOSPRAY® Valve Family

Selective roll cooling headers are fitted with the appropriate valve type from our family of valves. Valve type and design is carefully selected for optimum performance to give consistent and reliable spray control in each application.

The proven Lechler valve designs are available in pneumatic and electric versions:

- **Modulax** pneumatically controlled with the solenoid in the control cabinet outside of the mill. Pneumatic valves are primarily used for steel rolling systems.
- **EVA** purely electrically controlled. Electrical valves are used primarily for aluminium rolling systems.

All valve versions offer:

- Very large coolant entry ports.
- Easily removable from the header front and are protected by the header itself.
- All valves carry self aligning flat jet nozzles.

| Valve type | Spacing | Flow (L/M) at 6 bar | Pulse rate (s) |
|-------------|---------|---------------------|----------------|
| EVA STD | 52 | 159 | 0.1 |
| mini | 26 | 59 | 0.1 |
| Modulax STD | 52 | 149 | 2 |
| mini | 26 | 59 | 2 |

Typical flow rates: Lechler Valves (26/52 mm zones)



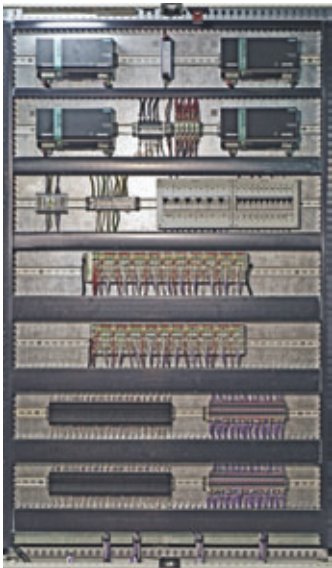
SELECTOSPRAY® Control Cabinets

Lechler control cabinets offer the customised control interface to drive pneumatic or electrical SELECTOSPRAY® systems.

We provide control system components that meet the latest industry requirements:

- All cabinets are custom-made in-house by Lechler.
- Use only industry standard parts.

- Hardwired from remote I/O.
- Siemens as standard, Wago I/O unit optional.
- Robust stainless steel hose design with ease of connection.
- Closed loop control by feedback from shape meter or touch screen, push buttons.





Lechler world-wide

With representatives in more than 40 countries we offer presence and established experience wherever you are.



Lechler Ltd.
1 Fell Street
Newhall
Sheffield S9 2TP / United Kingdom
Phone: (0114) 2492020
Fax: (0114) 2493600

E-Mail: info@lechler.com
Internet: www.lechler.co.uk



Headquarters Germany: Lechler GmbH · Ulmer Strasse 128 · P.O. Box 13 23 · 72544 Metzingen · Phone: (49) 71239620 · Fax: (49) 7123962444 · info@lechler.de
Belgium: Lechler S.A./N.V. · Avenue Mercatorlaan, 6 · 1300 Wavre · Phone: (10) 225022 · Fax: (10) 243901 · info@lechler.be
China: Lechler Intl. Trad. Co. Ltd. · Beijing · Rm. 418 Landmark Tower · No. 8 Dong San Huan Bei Lu · Phone: (86) 1084537968, Fax: (86) 1084537458 · info@lechler.com.cn
Finland: Lechler Oy · Posliinitehtaankatu 7 · 04360 Kerava · Phone: (358) 207856880 · Fax: (358) 207856881 · info@lechler.fi
France: Lechler France, S.A. · Bât. CAP2 B51 · 66-72, Rue Marceau · 93558 Montreuil cedex · Phone: (1) 49882600 · Fax: (1) 49882609 · info@lechler.fr
India: Lechler (India) Pvt. Ltd. · Plot B-2 · Main Road · Wagle Industrial Estate · Thane (W) · 400604 · Phone: (22) 40634444 · Fax: (22) 40634497 · lechler@lechlerindia.com
Sweden: Lechler AB · Spärrgatan 8 · SE-653 41 Karlstad · Phone: (46) 54137030 · Fax: (46) 54137031 · info@lechler.se
Spain: Lechler S.A. · Avda. Pirineos 7 · Oficina B7, Edificio Inbisa I · 28700 San Sebastián de los Reyes, Madrid · Phone: (34) 916586346 · Fax: (34) 916586347 · info@lechler.es
USA: Lechler Inc. · 445 Kautz Road · St. Charles, IL. 60174 · Phone: (630) 3776611 · Fax: (630) 3776657 · info@lechlerUSA.com