Montanstahl is a dynamic family-owned company active in the production and supply of high quality special steel shapes. Established in 1983 in Switzerland, Montanstahl has achieved a high level of knowhow and ranks among the worldwide market leaders in its business segment.

Demand for custom tailored products is continuously rising and Montanstahl adapted to these market requests by investing in innovative technologies. All types of steel from low carbon, through SBQ to stainless and tool steel grades are processed.

In close co-operation with our customers we continuously search for new products and optimized manufacturing processes. During design stage of new profiles we make sure that all manufacturing technologies are taken into consideration to give customers the most cost effective solution and at the same time highest quality standard.

In this brochure you will find detailed data about our products, technologies, processed materials and size ranges.

Today we master 7 different production technologies that enable us to manufacture near net shapes:

- Hot Rolling
- Cold Rolling
- Cold Drawing
- Laser Welding
- Low Impact Laser Welding
- 3D Laser and Laser Hybrid Welding
- Mechanical Crimping

For further information, please visit www.montanstahl.com
QUICK FACTS

- Solid steel sections
- Cost efficient technology
- High design flexibility
- Medium to large volume production
- Small and midsize profiles
- Good surface finish
Hot Rolling

Hot rolled special profiles are produced at Montanstahl by forming wire rod, which can have a diameter of max. 60 mm, by a continuous rolling process at a temperature of about 1100°C. Hot rolling is by far the most popular and well-known technology to produce steel profiles. Depending on the type of raw material, the desired shape, mechanical properties and the surface aspect, the process of hot rolling was found to be a particularly suitable and cost effective manufacturing method.

Compared to conventional billet-based rolling mills, Montanstahl operates a special rolling mill, which starts from wire rod. This different production set up offers considerable cost savings to customers as smaller lots can be produced and tooling costs are lower.

Special profiles can be rolled in a large variety of steel grades like carbon steel, low and high-alloyed steel as well as stainless steels.

The sections can be supplied either as bars in lengths up to max. 8,500 mm or coiled up again to suite downstream processes like cold drawing.

Minimum quantities start at 5,000 kg for stainless steel profiles and at 15,000 kg for carbon steel.

PROFILE DATA

- Material thickness: min. 2.5 mm
- Size range: fit in circle of max. 100 mm
- Weight: from 0.5 kg/m to 10 kg/m
- General tolerances: ±0.5 mm
QUICK FACTS

- Solid steel sections
- Cost efficient technology
- High design flexibility
- Small volume production
- Small and midsize profiles
- Excellent surface finish
Cold Rolling

Cold rolled profiles are produced at Montanstahl by forming round wire rod, which can have a diameter of max. 25 mm, by a continuous rolling process without heating up the material. Cold rolling is a very efficient manufacturing process, which has been developed mainly for small sections. Compared to hot rolling, cold rolling offers some considerable advantages. Excellent surface finish, tight tolerances (h9) and the possibility to produce very small production lots are the most obvious.

Furthermore, cold rolling gives the possibility to change the mechanical properties of the material and produces certain useful combinations of hardness, strength, stiffness and ductility by means of selective annealing processes.

Montanstahl has placed its strategic focus on high alloyed and stainless steel. The profiles can either be supplied as bars in fix lengths up to 6,000 mm or be recoiled. The bundles can be cut to length with a tolerance of +/- 10 mm. Typical production quantities start at 500 kg.

PROFILE DATA
Material thickness: min. 0.5 mm
Size range: fit in circle of max. 50 mm
Weight: from 0.1 kg/m to 4 kg/m
General tolerances: ±0.05 mm
QUICK FACTS

- Solid steel sections
- Cost efficient technology
- High design flexibility
- Midsize to large profiles
- Very good surface finish
Cold Drawing

This technology is a precision forming process, which reduces the cross sectional area of metal wire or pre-rolled profiles into a secondary or final shape by pulling it through precision dies. Montanstahl has specialized in stainless steel cold drawn sections and offers special shapes as per customer drawings as well as standard steel sections like flats, half rounds and key steel.

Cold drawing is an extremely cost-effective technology to refine tolerances and surface condition of medium and larger size sections.

The profiles can be supplied as bars in fix lengths up to 10,000 mm. The bundles can be cut to length with a tolerance of +/- 10 mm. Production quantities start at 500 kg.

PROFILE DATA

- Material thickness: min. 2 mm
- Size range: fit in circle of max. 200 mm
- Weight: from 1 kg/m to 30 kg/m
- General tolerances: ±0.1 mm
QUICK FACTS

• Solid and hollow steel sections
• High design flexibility
• Small to large volume production
• Small, midsize and large profiles
• Good surface finish
Montanstahl is the worldwide market leader in welding solid steel and stainless steel profiles with laser technology. The profile components are predominantly laser- or plasma-cut flat strips but can as well be other solid profiles like rounds, squares or hollow profiles like tubes. The welds are made with powerful lasers without the use of filler material, producing very small weld seams. Virtually any commercially available mild steel and stainless steel can be processed achieving monolithic welds up to a depth of 25 mm.

Laser welded sections generally feature small internal and external radii and are classified as sharp corner profiles (SCP). Standard structural profiles like angles, channels, tees or beams (HEA, HEB, IPE) as well as square and rectangular hollow sections, are produced on a regular base. The manufacturing technology is very flexible when it comes to quantities. Projects with small volumes, or even 1-bar-prototypes, can be served as well as large projects with more than 100 tons per batch.

The maximum bar length is 15,000 mm with a profile width of 1,000 mm and a height of 2,000 mm. Small shapes, starting from 20 x 20 mm, can be produced as well.
QUICK FACTS

- Lightweight sections
- High design flexibility
- Free combination of material thickness
- Precise and barely noticeable weld seam
- Parallel flanges with accurate rectangularity
- High accuracy on dimensions and geometry
- High-end surface finish
After 10 years of experience in the field of laser welding, Montanstahl has developed a low impact laser welding method, which allows welding pre-polished flat components to a special profile without damaging the visible surface. These products have been specifically developed for high-end stainless steel architecture and design. With a special low heat and splatter free laser beam, almost any profile design can be achieved at an affordable price.

Due to the great design flexibility, functional optimization and high precision, these new products are popular among architects for visible and representative steel curtain walls, canopies, high end shop furniture and a wide range of other uses.

For this purpose, we offer eye-catching standard and custom profiles, which are generally produced in stainless steel 304/304L (1.4301/1.4307) and 316/316L (1.4401/1.4404), but other alloys are available on request.

Low impact laser profiles offer a very high degree of design freedom, not only in size and geometry, but also in aesthetic design. From small perforations to large cut-outs, the web and flange can be designed in a unique way, creating attractive solutions.

PROFILE DATA
Material thickness: min. 2 mm
Size range: fit in circle of max. 250 mm
Weight: from 1 kg/m to 20 kg/m
General tolerances: ±0.3 mm
QUICK FACTS

- Solid and hollow profiles
- Curved steel profiles
- Near net shape components
- Low residual stress in component
- High accuracy and tolerances
- Composite profiles
This state-of-the-art machinery unifies all advantages of laser welding with the flexibility of a 5-axis robot, allowing the production of extremely complex, non-linear or curved profiles, fabricated components and composite profiles. Subject to the properties of the requested product, the system operates selectively in a laser-alone or laser-hybrid mode. In the 3D laser-hybrid welding mode an arc welding (MIG/MAG) device is added to the laser torch, improving the characteristics of a conventionally arc welded product.

Advantages are a reduced distortion of the welded component due to less heat input, a good gap bridging ability at high process speeds and a deeper weld penetration.

The laser-hybrid kicks in when the gap between the parts that have to be welded is too big for the laser-alone mode. Bigger gaps usually occur where the joining zone is not neat and precise, this is commonly the case while welding composite profiles, which are a laser welded combination of hot extruded pre-shapes among each other or with flat bars to a new, greater or complexer profile, that otherwise would not be feasible with each technology by its own. Furthermore, different steel alloys can be combined.

The laser-hybrid process is therefore an ideal production method, when the single components do not have clean and regular joining zones.

**PROFILE DATA**
- Material thickness: 3 – 30 mm
- Size range: fit in circle of max. 2500 mm
- Weight: from 0.5 kg/m to 200 kg/m
- General tolerances: ±0.3 mm
QUICK FACTS

- High design flexibility
- Small to large volume production
- Thermal barrier profiles
- Insulated hybrid profiles
- Good surface finish
Mechanical crimping allows combining dissimilar materials with the purpose to achieve a thermal, acoustic, magnetic or electrical decoupling. Montanstahl preferably uses special glass fiber reinforced polyamides as web material and solid metals like common mild steel and stainless steel for the flanges. Special alloys like bronze, copper and brass can be used as well for the flanges. The process requires a precision U-shaped adapter, which can be made from steel or stainless steel and is laser welded on the flanges.

The fixing of the polyamide web is achieved by a continuous mechanical crimping process, which squeezes the steel against the web. The result is a strong frictional joint. The thickness and the width of the flanges can be defined according to the technical requirements.

The profiles can be produced with rounded or sharp corners (external radii below 1 mm) by using cold rolled or laser cut flanges.

The maximum bar length is 8.000 mm. These products are mainly used to manufacture thermally insulated window and door sections, frames for climatic chambers, electric rails or stiffening sections for plastic window frames.

**PROFILE DATA**
- Flange thickness: 3 – 12 mm
- GRP web thickness: 3 or 6 mm
- Size range: fit in circle of max. 200 mm
- General tolerances: ±0.3 mm
OFF THE SHELF ALLOYS

• 304 (1.4301)
• 304L (1.4307)
• 316 (1.4401)
• 316L (1.4404)
• 316Ti (1.4571)
• Other alloys can be produced upon request.
Even though stainless steel structural steel has been available since the 60’s, the industry did not show great interest until the last decade. Main reasons have been small volumes, irregular consumption, few supply sources, long delivery times, high prices and little material knowledge. Montanstahl focused on these market inadequateness in the early 90’s and achieved some significant changes thanks to enhanced supply networks as well as by introducing new manufacturing technologies.

The following products are available on the shelf through Montanstahl’s distribution partners.

- equal leg angles
- unequal leg angles
- equal flange tees
- unequal flange tees
- European standard channels - UPN
- parallel flange channels - UPE
- miscellaneous channels with parallel flange - UPA
- European wide flange beams - HEA, HEB, HEM
- European I beams - IPE
- European standard beams - IPN
- square hollow sections
- rectangular hollow sections

Montanstahl’s laser welded profiles set the highest quality standard for "Architecturally exposed structural steel" (AESS). For a distributor in your area please visit www.montanstahl.com