Stainless Steel Structurals

Stainless Structurals is a global producer and supplier of stainless steel structural shapes and special custom profiles in both stainless and carbon steels. We service a vast network of local, regional and international distributors, fabricators and original equipment manufacturers. We work closely with engineers, architects, and end users to help them realize their designs suited for a diverse mix of projects in multiple industries.

Demand for custom tailored sections is continuously rising and Stainless Structurals can meet this demand by our production methods and investments in innovative technologies.

No matter the size and scope of your project, we are committed to helping you meet your exact needs.

In this brochure you will find detailed information about our capabilities, products, size ranges and more. Today, we offer these production technologies that enable us to manufacture near net shapes.

- Laser Fusion
- Low Impact Laser Fusion
- 3D Laser and Laser Hybrid Fusion
- Hot Rolling
- Cold Rolling
- Cold Drawing

Sections can be produced according to various international standards. For more information please visit our web page www.stainless-structurals.com
Laser Fusion

Stainless Structural is a worldwide leader in laser fused stainless steel profiles. We can also produce carbon steel profiles with our laser technology. The profile components are predominantly laser or plasma cut strips that are laser welded together to form a certain section. The welds are made with powerful lasers without the use of filler material, producing very small weld seams. Virtually any commercial available stainless or mild steel can be processed achieving monolithic welds up to a depth of almost 1”.

Laser fused sections generally feature small internal and external radii and can be classified as sharp cornered, sharp-edged profiles. Standard structural profiles like angles, beams, channels, tees as well as square and rectangle hollow sections are produced on a regular basis.

This manufacturing technology is the most flexible when it comes to quantities. We can produce for projects as small as 1-piece prototypes or for large projects up to 100 tons per run or more.

Laser fused profiles can be produced in lengths from 10 feet to 40 feet or longer with profile widths of up to 39” and profile heights of up to 50”. Small sections starting from 0.5” 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

The low impact laser welding method allows for the welding of pre-polished flat components into a custom 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 spatter free laser beam, almost any profile design can be achieved at an affordable price.

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

With this technology, we offer eye-catching standard and custom profiles generally produced in stainless steel type 304/L and 316/L but other alloys are available upon 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.

Low Impact Laser Welding

PROFILE DATA
Material thickness: min of 0.075”
Size range: Max diameter of 10”
Weight per foot: up to 15 LBS
General tolerances: +/- 0.012”
3D Laser and Laser Hybrid Welding

This state of the art machinery combines the advantages of laser welding with the flexibility of a 5-axis robot, allowing for the production of extremely complex, non-linear or curved profiles and fabricated components. Subject to the properties of the requested product, the system operates selectively in a laser-alone or laser-hybrid mode.

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

The laser hybrid method is applied when the gap between the parts that have to be welded is too big for the laser alone. These bigger gaps usually occur where the joining zone is not neat or precise, which is commonly the case when hot rolled or extruded shapes have to be welded together.

This method is ideal when the single components do not have clean or regular joining zones.

PROFILE DATA

- Material thickness: from 0.120” to 1.25”
- Size range: Max 50” x 40”, profile dependent
- Weight per foot: up to 250 LBS or more, profile dependent
- General tolerances: +/- 0.020”

QUICK FACTS

- Solid and hollow profiles
- Non-linear steel profiles
- Near net shape components
- Low residual stress in component
- High accuracy and tolerances
- Combination of different raw materials is possible (i.e. hot rolled or extruded pre-shapes)
- Quality surface finish
Our hot rolled special profiles are produced by forming wire rod, which can have a max diameter of 2.36”, by a continuous rolling process at a temperature of approximately 2000 F. 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, the mechanical properties and the surface aspect, hot rolling was found to be a suitable and cost effective manufacturing method.

Compared to conventional billet-based rolling mills, we operate a special rolling mill which starts from wire rod. This particular production technique offers considerable cost savings to customers as smaller lots can be produced and tooling costs are relatively low.

These custom profiles can be rolled in a large variety of steel grades including, low-carbon, high-alloy carbon and stainless steels. The hot rolled sections can be supplied in lengths up to 30 feet or recoiled to suite downstream processes like cold drawing.

Minimum production quantities start at 3 – 5 tons for stainless steel profiles and 10 – 15 tons for carbon steel profiles.

**Profile Data**

- **Material thickness:** min of 0.100”
- **Size range:** Max diameter of 4”
- **Weight per foot:** up to 6.7 LBS
- **General tolerances:** from 0.006” to 0.020”

**Quick Facts**

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

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**Hot Rolling**

- Our hot rolled special profiles are produced by forming wire rod, which can have a max diameter of 2.36”, by a continuous rolling process at a temperature of approximately 2000 F. 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, the mechanical properties and the surface aspect, hot rolling was found to be a suitable and cost effective manufacturing method.
- Compared to conventional billet-based rolling mills, we operate a special rolling mill which starts from wire rod. This particular production technique offers considerable cost savings to customers as smaller lots can be produced and tooling costs are relatively low.
- These custom profiles can be rolled in a large variety of steel grades including, low-carbon, high-alloy carbon and stainless steels. The hot rolled sections can be supplied in lengths up to 30 feet or recoiled to suite downstream processes like cold drawing.

**Profile Data**

- **Material thickness:** min of 0.100”
- **Size range:** Max diameter of 4”
- **Weight per foot:** up to 6.7 LBS
- **General tolerances:** from 0.006” to 0.020”
**Cold Rolling**

Our cold rolled profiles are produced by forming wire rod, which can have a max diameter of 0.984", by a continuous rolling process without heating up the material. Cold rolling is a very efficient manufacturing process, which was developed mainly for small sections. Compared to hot rolling, cold rolling offers some considerable advantages. These include excellent surface finish, tight tolerances and the possibility to produce very small production lots.

Cold rolling also allows for the possibility to change the mechanical properties of the material allowing for certain combinations of hardness, strength, stiffness and ductility by means of selective annealing processes.

We have placed a strategic focus on high alloyed and stainless steel cold rolled profiles. These sections can be supplied in lengths up to 20 feet or recoiled. The bundles can be cut to length with a tolerance of +/- 0.393". Minimum production quantities start at 0.5 tons.

**PROFILE DATA**
- Material thickness: min of 0.020"
- Size range: Max diameter of 2"
- Weight per foot: up to 2.70 LBS
- General tolerances: as small as 0.0006"
Cold Drawing

This technology is a precision forming process, which reduces the cross sectional area of wire rod or pre-rolled profiles into a final shape by pulling it through precision dies.

We specialize in stainless steel cold drawn sections and can offer custom shapes as per customer drawings as well as standard sections like flats, half-rounds, and square bar.

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

The size range is typically between 0.305" to 3" in cross sectional surface area.

Cold drawn profiles can be supplied in lengths up to 32 feet.

The bundles can be cut to length with a tolerance of +/- 0.393".

Minimum production quantities start at 3 – 5 tons.