

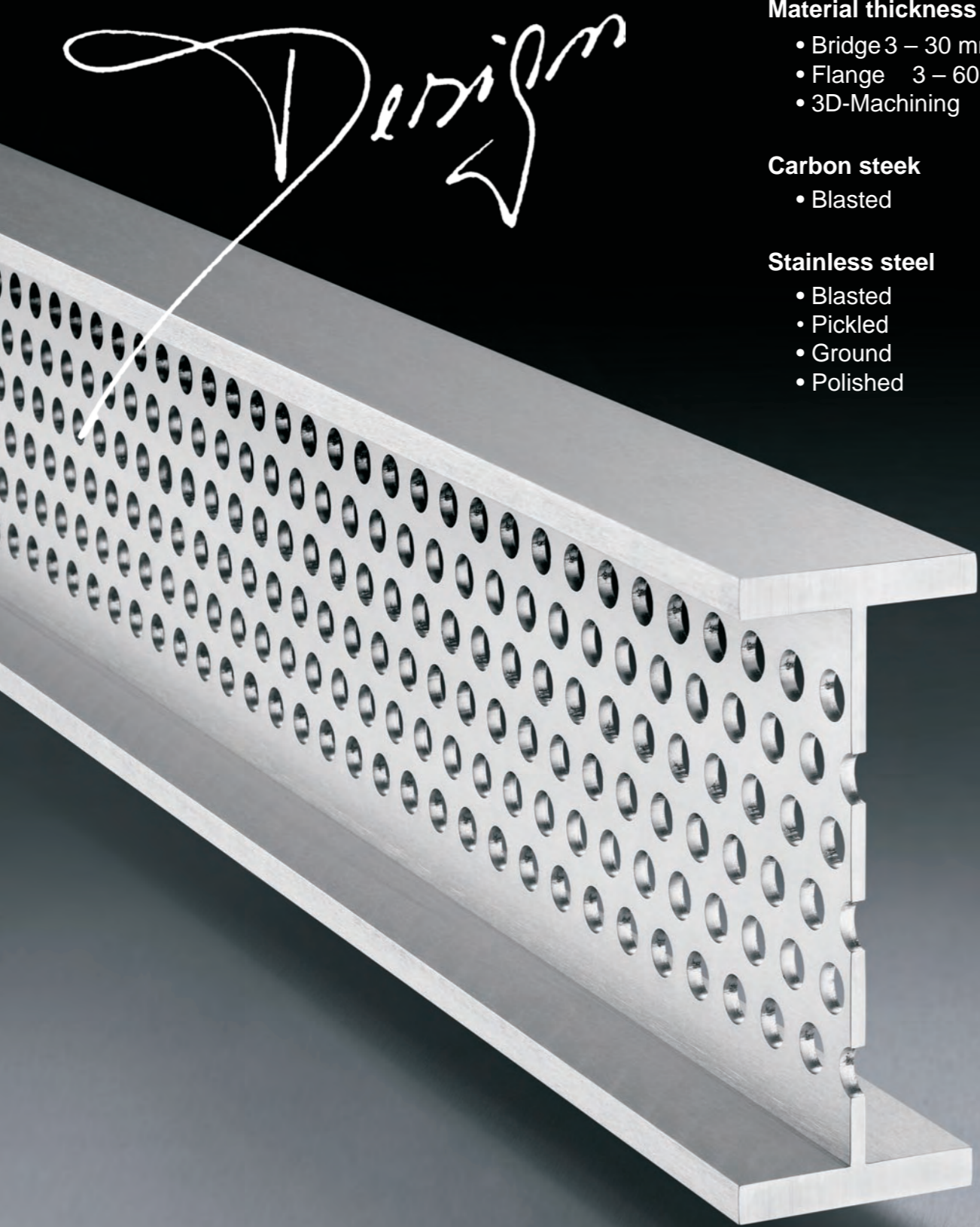


12/2006 - Alle Rechte vorbehalten - Alle Angaben nach bestem Wissen jedoch ohne Gewähr auf Vollständigkeit und Richtigkeit

*Go for Steel!*

**MONTANSTAHL GmbH**  
Grüner Weg 11A  
59302 Oelde  
Germany

TEL: +49 (0) 2522 8383632  
FAX: +49 (0) 2522 9379066  
MAIL: [info@montanstahl.de](mailto:info@montanstahl.de)  
WEB: [www.montanstahl.de](http://www.montanstahl.de)



### H-Profiles

MIN 30 x 50 x 1.000 mm

MAX 400 x 1.000 x 15.000 mm

### Material thickness

- Bridge 3 – 30 mm
- Flange 3 – 60 mm
- 3D-Machining

### Carbon steel

- Blasted

### Stainless steel

- Blasted
- Pickled
- Ground
- Polished

*Fabrication*

### Fabrication:

- Laser pre-cut parts with user-defined hole patterns or with functional cut-outs possible
- Multiple large scale production units with high performance laser heads and with a production length of up to 15 meters
- Short delivery time and reduced minimum order quantities of customized profiles due to production from stocked flats

### Reliability:

- Root fusion possible up to bridge thicknesses of 22mm
- No restrictions in use compared to conventional profiles (e.g. hot rolled profiles)
- Structural treatment as for profiles with monolithic microstructure (correction factor = 1)

*Reliability*

### Quality:

- Continuous 100% control of all weld seams during production
- All control and monitoring systems accredited and approved by the German Welding Institute - SLV
- Continuous inspection of the monitoring systems by the Technical Control Board of Germany (TÜV)

*Quality*



*Radius max. 0,5mm!*



**Hollow Sections**

MIN 30 x 50 x 1.000 mm  
 MAX 200 x 1.000 x 15.000 mm

**Material thickness**

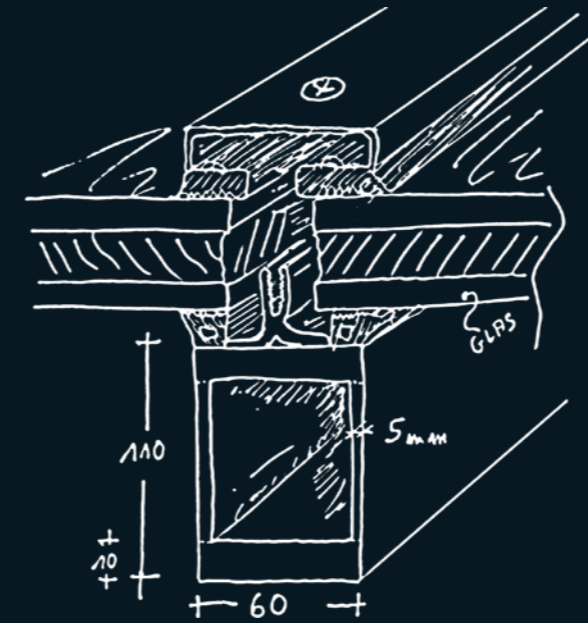
- 3 – 30 mm
- 3D-Machining

**Carbon steel**

- Blasted

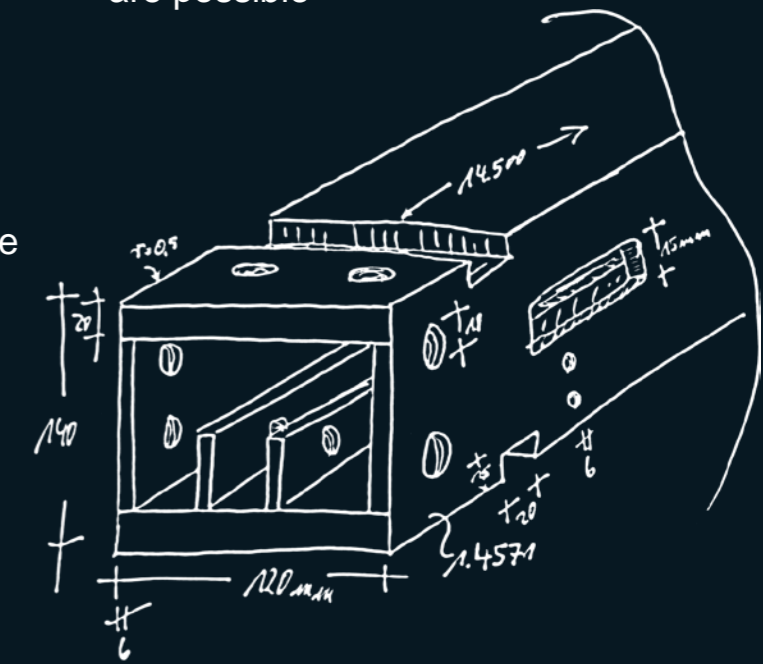
**Stainless steel**

- Blasted
- Pickled
- Ground
- Polished



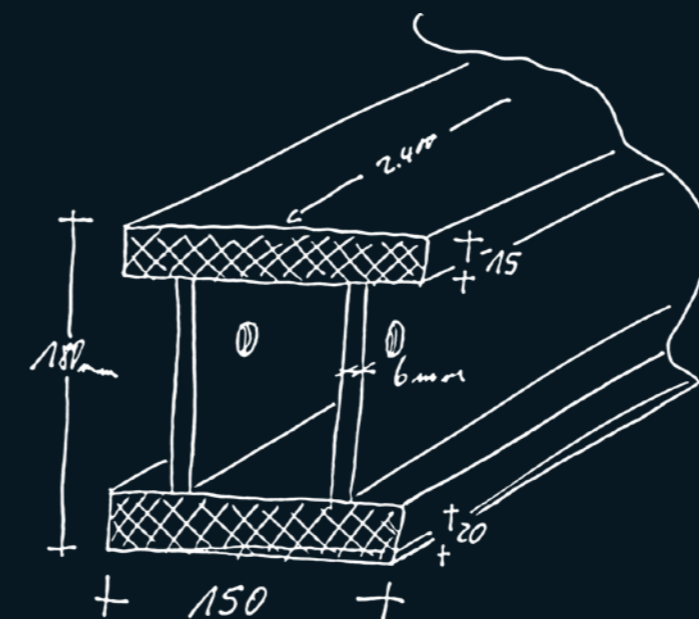
**Metal- and machine constructions:**

- Functional elements like holes or cut-outs are feasible by cost-effective 2D-machining before welding
- Complex structural parts can be realised which substantially reduce extra-and follow-on work
- Little energy- and heat-insertion into the profiles allows for narrow tolerances

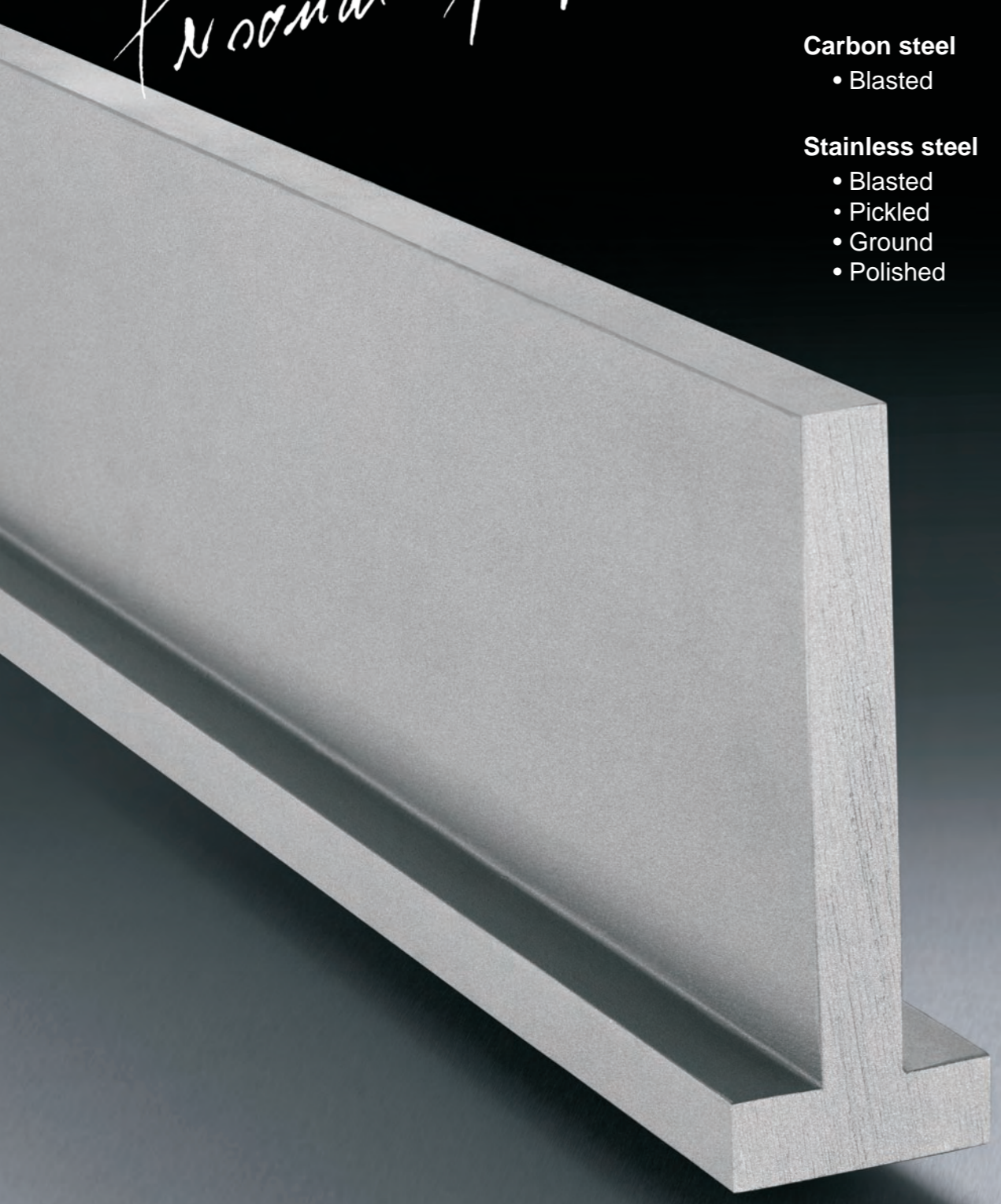


**Project- and contract developments:**

- The laserwelding of carbon- and stainless steel (hybrid) reduces the use of expensive primary material
- Sharp edges all along the profile bear unprecedented technical possibilities for projects requiring industrial scale production
- Availability of customized profiles creates reliability in project development and fosters new ideas



*Parallel Profiles!*



**T-profiles**

MIN 30 x 30 x 1.000 mm  
 MAX 400 x 1.000 x 15.000 mm

**Material thickness**

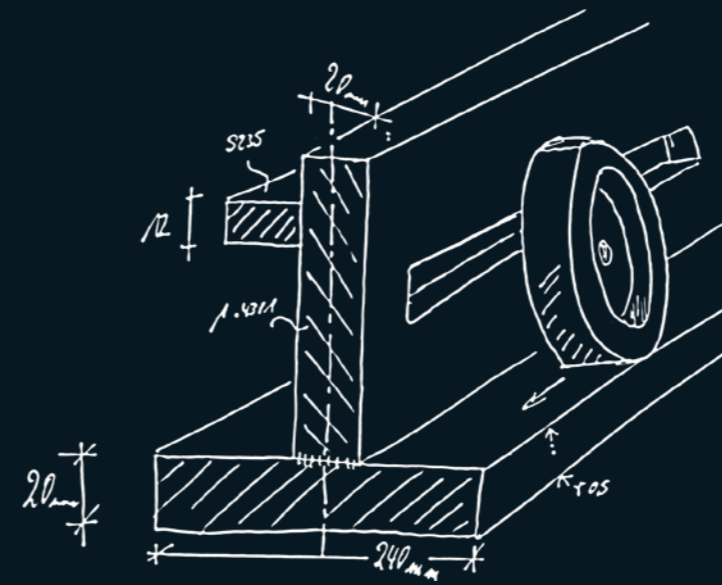
- 3 – 30 mm
- 3D-Machining

**Carbon steel**

- Blasted

**Stainless steel**

- Blasted
- Pickled
- Ground
- Polished

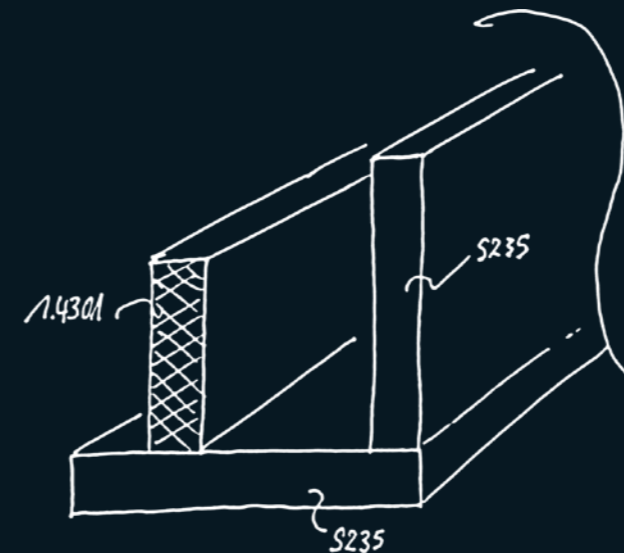
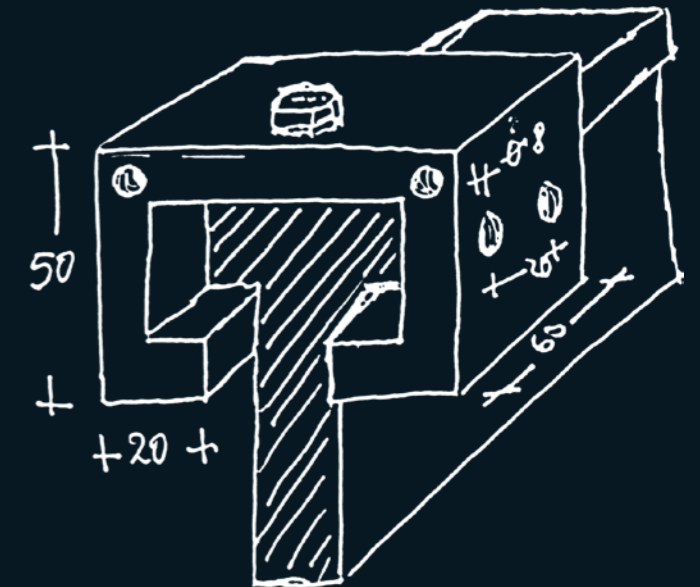


**Application I**

- Coplanar faces for crane guard rails were demanded
- Realization of parallelism was obtained without rework of the surfaces and at tolerances substantially below standard
- All measures of the profile were unrestricted to allow scalability for different applications

**Application II**

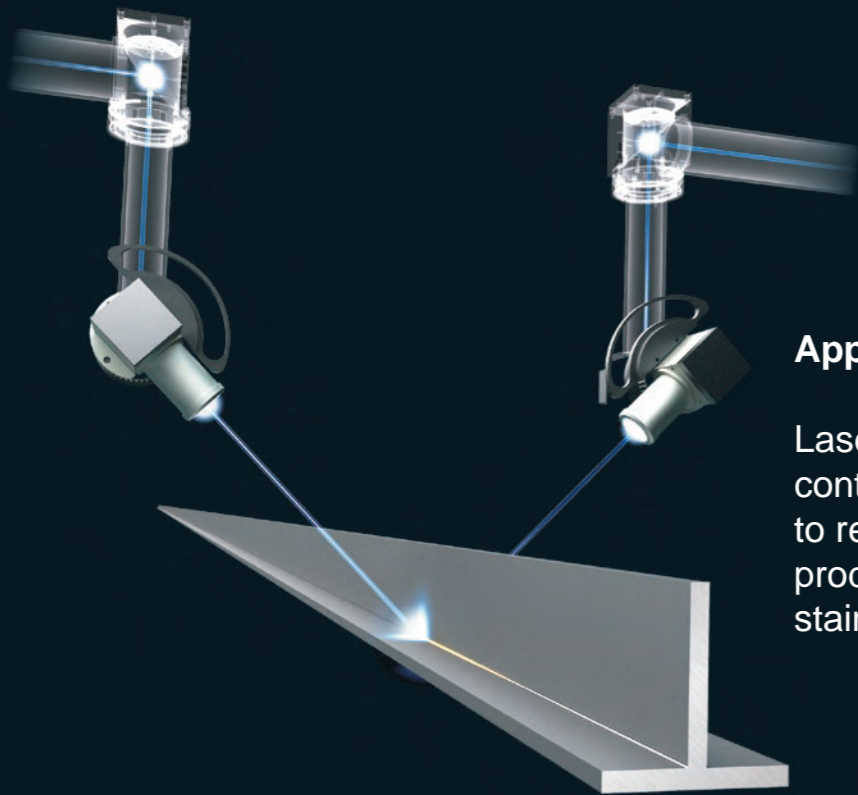
- T-profile with very narrowly toleranced flange was demanded for a shoe application
- Large quantity of the profile was realized cost-effectively, without extra milling, in a length >10.000mm
- Profiles with demanded tolerances substantially below standard can be realized in a single production step



**Application III**

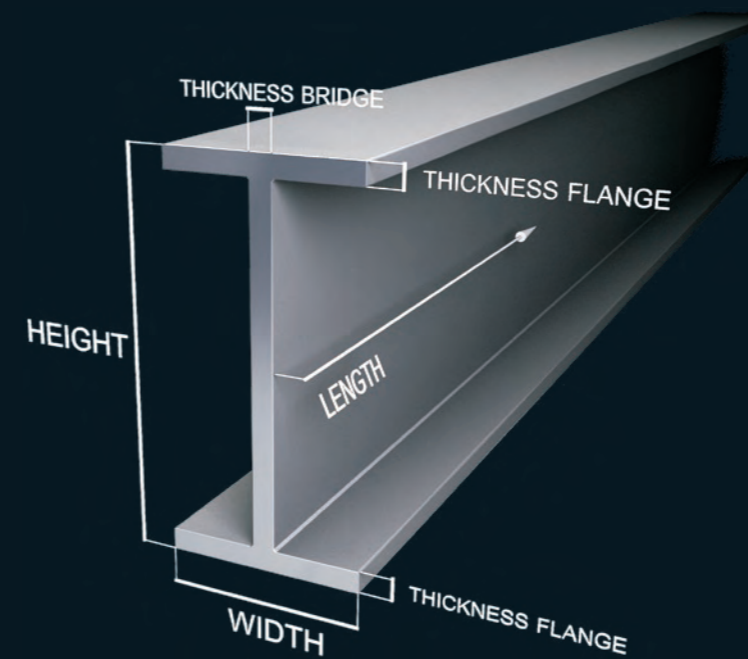
- Hybrid facade profile was demanded to reduce material cost by using stainless steel only for the visible parts of the profile
- Hybrids were realized where profiles are partially exposed to corrosive agents
- Weld seams for special profiles can be realized i) hardly visible, ii) without adding extra material and iii) in small lots





### Approval

Laser-welding and a suitable process control were advanced by Montanstahl to receive a comprehensive approval for producing long products in carbon- and in stainless steel.



### Maximum dimensions

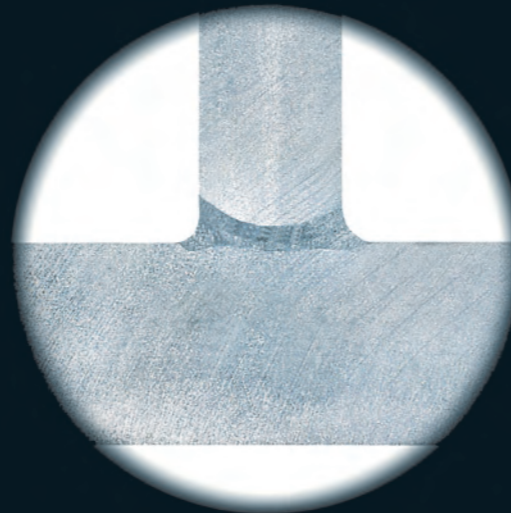
- Width: 400 mm
- Height: 1.000 mm
- Length: 15.000 mm
- Thickness: 30 mm (bridge)
- Thickness: 30 mm (flange)

### Materials

- Carbon steel
- Stainless steel
- and combinations (Hybrids)

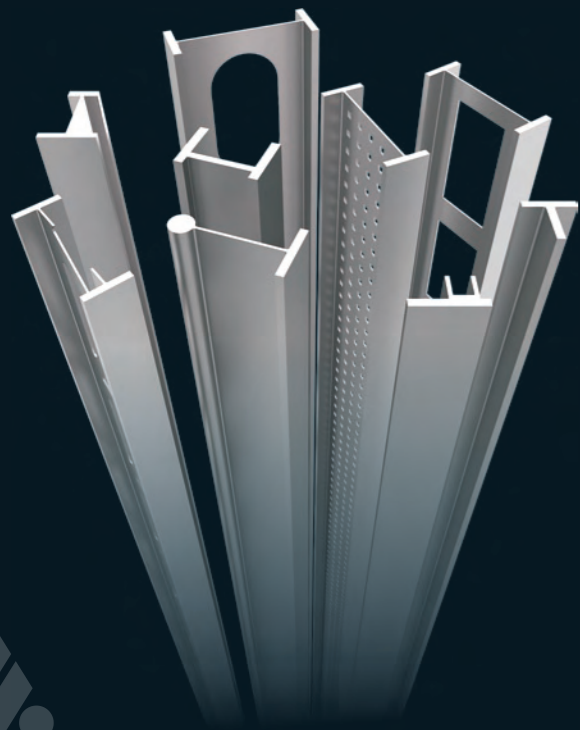
### Material join

Up to material thicknesses of 22mm it is possible to realize a penetrated steel joint. Such welded profiles can be dimensioned like monolithic profiles (e.g. hot rolled profiles). Welding happens without extra material so that inhomogeneities are avoided. Additionally this makes a seam possible that is hardly visible any more and which is not comparable with the fillet welds of conventional welding seams.



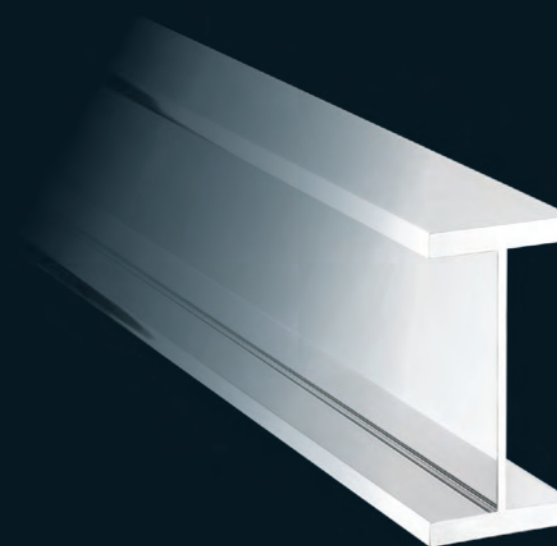
### 3D-Machining

The vertical integration of Montanstahl allows 3D-machining. Possibilities include functional holes, design hole patterns, contour cuts, mitre cuts and undercuts.



### Flexibility

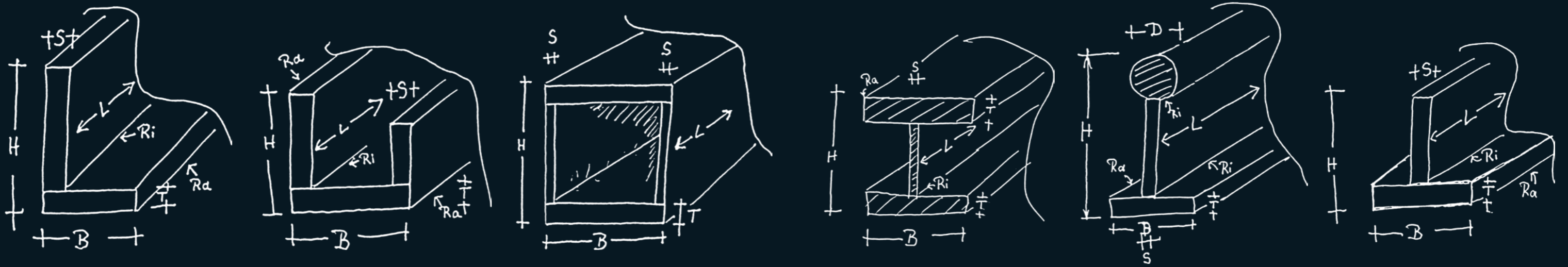
The technology is optimized for perpendicular material joints. The current production allows virtually all profiles with cross sections up to 400mm x 1.000mm. On demand additional dimensions can be discussed and the technical feasibility can be verified by prototyping (e.g. profiles with variable cross sections lengthwise).



### Design & Surface quality

Fine weld seams are the basis for obtaining and conserving surfaces of highest quality in an economic manner. Montanstahl can realize surfaces for special profiles that range from blasted via anodized to mirror finish.





All measures in approx. mm						All measures in approx. mm						
Profile-type	B -min.	B -max.	H -min.	H -max.	Length -max.	S -min.	S -max.	T -min.	T -max.	seam width	Ra	D
<b>L - profile</b>	40	200	40	1000	15.000	3	30	3	30	2	0.5	-
<b>U - profile</b>	40	200	40	1000	15.000	3	30	3	30	2	0.5	-
<b>Hollow section</b>	30	200	50	1000	15.000	3	30	3	30	2	0.5	-
<b>H - profile</b>	30	400	50	1000	15.000	3	30	3	30	2	0.5	-
<b>TR - profile</b>	30	400	60	1000	15.000	3	30	3	30	2	0.5	25/40
<b>T - profile</b>	30	400	30	1000	15.000	3	30	3	30	2	0.5	-

Qualification of producer according to DIN 18800-7 combined with assessment according to DIN EN ISO 13919-1	
Profile-type	relevant produkt standard*
<b>L - profile</b>	DIN EN 10056-1 & 2
<b>U - profile</b>	DIN EN 10279
<b>Hollow section</b>	DIN EN 10219
<b>H - profile</b>	DIN EN 1025
<b>TR - profile</b>	DIN EN 10055
<b>T - profile</b>	DIN EN 10055

\*narrower tolerances possible on demand

Regularly processed qualities:	
Carbon steel	Stainless steel
<ul style="list-style-type: none"> <li>• S235 JRG2</li> <li>• S275 J2G3</li> <li>• S355 J2G3</li> </ul>	<ul style="list-style-type: none"> <li>• 1.4301 / 1.4307</li> <li>• 1.4401 / 1.4404</li> <li>• 1.4571</li> <li>• 1.4462</li> <li>• 1.4539</li> <li>• 1.4828</li> <li>• 1.4841</li> </ul>

Realized steel hybrids:
<ul style="list-style-type: none"> <li>• Austenite with austenite</li> <li>• Ferrite with ferrite</li> <li>• Austenite with ferrite</li> <li>• Martensite with austenite</li> </ul>

Regularly processed surface qualities:
<ul style="list-style-type: none"> <li>• Blasted</li> <li>• Pickled</li> <li>• Ground</li> <li>• Polished</li> <li>• Coated</li> </ul>

