LASER LINE FOR FLAT SECTIONS PRODUCTION

JOINT STOCK CORPORATION
SHIPBUILDING & SHIPREPAIR
TECHNOLOGY CENTER

The set of equipment is designed for manufacture of flat sections with dimensions up to 12×12 m with use of laser technologies, and performs following operations:

- Laser cutting and preparation of plates edges for further welding;
- Single pass hybrid laser-arc butt welding of plates (panel assembly);
- Automated positioning of main web on assembled panel;
- Double-sided hybrid laser-arc welding of web to the panel.

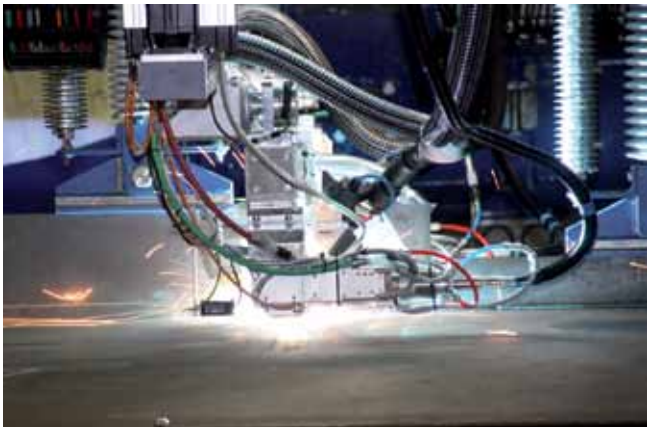
The flat section line provides fine automated processing (cutting and welding) of sheet parts with dimensions up to 3.2×12 m and single pass welding of plates with thickness up to 20 mm.

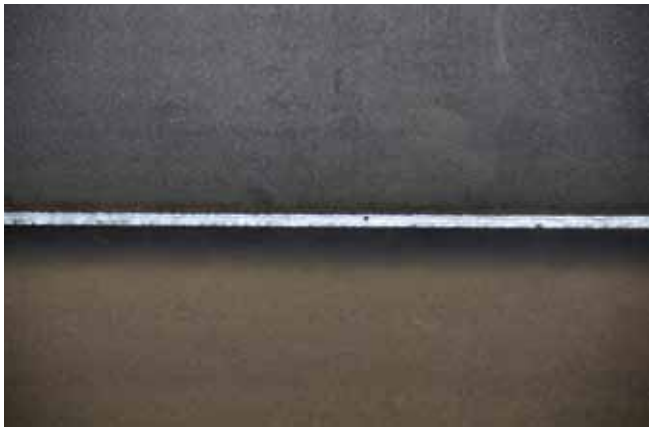
In manufacture of flat sections use of laser technologies, in comparison with conventional ones, provides following advantages:

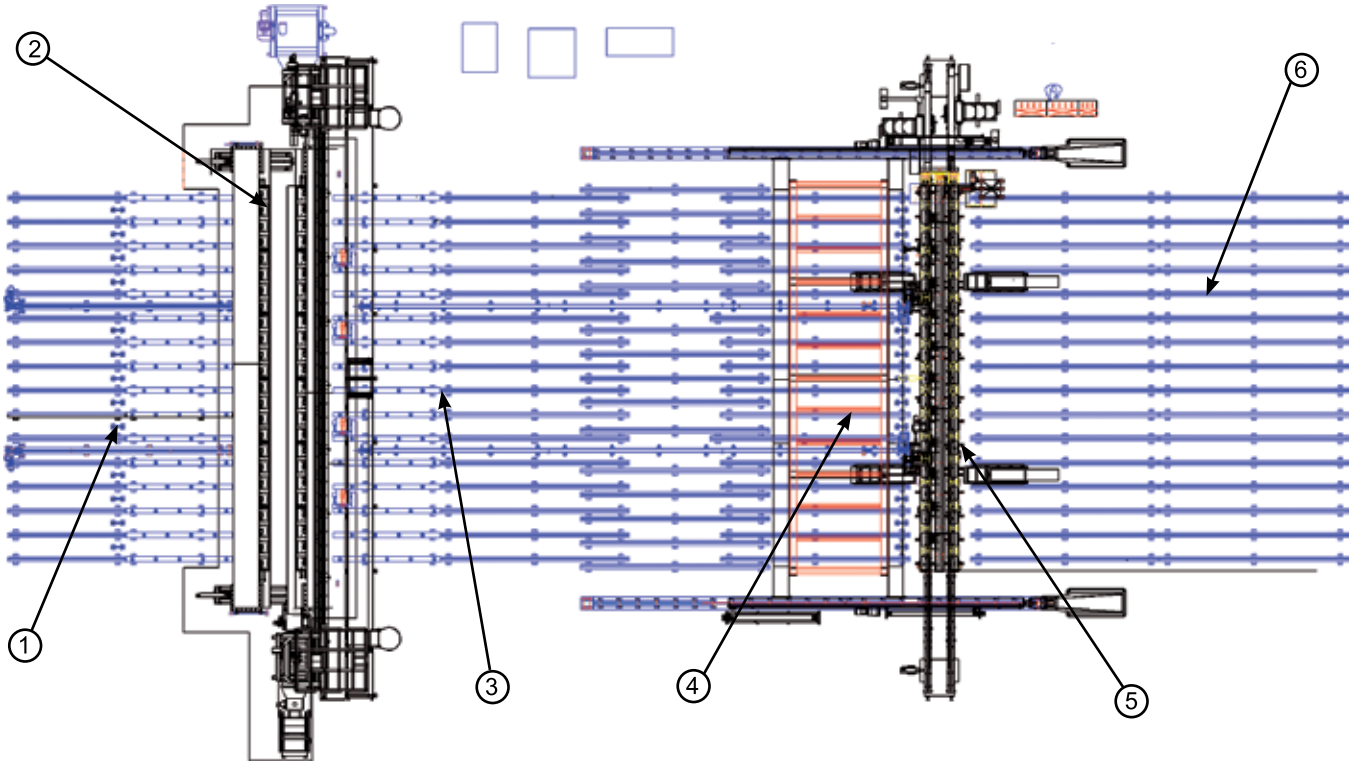
- Significantly higher production performance (1.5–3.0 times);
- Lower materials and power consumption (20–40%);
- Minimum residual welding stress and deformations of welded structures.

16 kW fiber laser of Russian origin with four-way optical switch is used as laser source.

Set of equipment is composed in single processing line, which is used for flow position manufacture of flat sections.







Set of equipment consists of following positions:

1. Sheets feeding unit;
2. Unit for cutting, assembly and welding of panels;
3. Unit for transportation of assembled panel;
4. Unit for web feeding and positioning;
5. Unit for clamping, pre-bending and welding of web;
6. Unit for extraction of ready section with welded web.

By results of competition “Best technical solution in shipbuilding and civil maritime equipment“, being a part of International forum “Russian Shipbuilding“ (May 23 to 25, 2012) this project was awarded with diploma and gold medal in category “New technologies in shipbuilding and repair of ship machinery“.

By results of competition “Best innovative project and best R&D of the year“, being a part of exhibition “Saint-Petersburg Technical Fair“ (March 15 to 17, 2011) this project was awarded with II degree diploma and silver medal in category “Development of new high-tech equipment and high-end technologies“.

Approval of Russian Maritime Register of Shipping for used technological process was obtained.

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