THERMAL CUTTING MACHINES

JOINT STOCK CORPORATION
SHIPBUILDING & SHIPREPAIR
TECHNOLOGY CENTER

For more than 50 years JSC SSTC develops and manufactures thermal cutting machines of different types for shipbuilding and other industries. Nowadays JSC SSTC is a leading Russian company in this area.

Thermal cutting machines are purposed for high-productive and high-precision cutting of carbon and corrosion-resistant steel plates, as well as for cutting non-ferrous alloys plates. Machines are equipped with control system based on industrial PC and state-of-art digital drives, providing high accuracy and excellent dynamical characteristics and guarantees reliable and long life cycle in heavy industrial environment.

Modular principle of thermal cutting machines composition allows to manufacture customized machine of any type (gas, plasma, laser and combined cutting machines) as well as set of technological appliances (marking and labeling).

In accordance with customer's request, thermal cutting machines can be supplied as part of complex, including also cutting table and filter installation.

In 2014, the Portal laser complex Ritm – Laser was awarded the title "Laser association's contest winner of the year 2014" as a best domestic development in the field of laser equipment and laser optic technologies. The contest was conducted in frames of exhibition PHOTONICS.

As per results of the contest "Best scientific-technical innovative development of the year", conducted in frames of exhibition Hi-Tech in Saint-Petersburg, the Machine for automated plasma marking (MAPM) was awarded with second degree diploma and silver medal in nomination "Best innovative project in the field of industrial automation".

MODIFICATION OF THERMAL CUTTING MACHINES

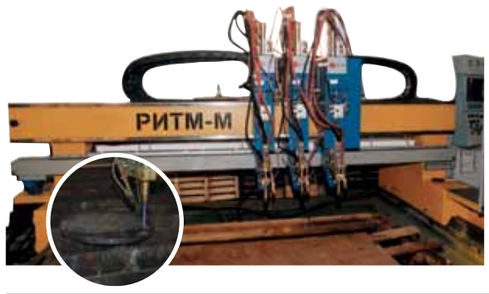
RITM-K-1.5 — jib-type, gas/plasma

RITM-MA — portal, gas/plasma

RITM-M — portal, double-side drive, gas/plasma

RITM-3D — wide portal, combined gas/plasma with rotating plasma module

RITM-M-2.5 — portal, multiple-torch, gas



RITM-M-2.5 3R — wide portal, combined gas/plasma with 3-torch unit

RITM-LASER — portal, laser

RITM-NP — portal laser machine with linear magnetic drive

THERMAL CUTTING MACHINE WITH GAS PLASMA MODULE

Gas/plasma module performs highly effective and precision cutting of plates made from carbon and stainless steel, as well as plates from non-ferrous alloys.

The module is equipped with a system stabilizing tool height above the plate, and with gas ignition device.

Gas/plasma module can be equipped with any plasma source of Russian or foreign origin upon request of the customer.

SPECIFICATION OF CUTTING MACHINE WITH GAS/PLASMA MODULE

Machine accuracy class as per Russian standard GOST 5614-74	1
Accuracy class of cut items as per Russian standard GOST 14792-80	1
Thickness of plates, mm:	
Plasma torch	1–100
Gas torch	5–300
Micro-plasma torch	0.5–16
Plate width, m	from 2.5 to 5
Plate length, m	6 plus
Gas type	propane, acetylene
Basic track length, m	8

THERMAL CUTTING MACHINE WITH LASER MODULE

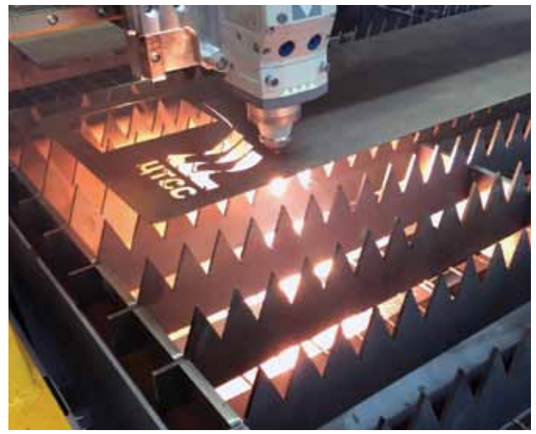
Thermal cutting machine with laser cutting module is intended for cutting a wide range of materials (carbon and stainless steel, aluminium alloys, etc.)
Thermal cutting machine with laser module incorporates both advanced innovative solutions from the fields of laser technologies and positioning systems. The machine can be equipped with laser sources of leading world manufacturers: IPG (IPG IRE-Polus), Trumpf, Raycus, Maxphotonics.

Main advantages:

- No open optical channel is used for power transmission – i.e. laser light is transmitted through flexible optic fiber directly in the working area;
- Significant process economy is reached due to high cutting speeds and low maintenance costs of equipment;
- High accuracy, motions repeatability, module durability and absence of backlashes are ensured by using high-quality rack bars and drives of leading world manufacturers.

SPECIFICATION OF CUTTING MACHINE WITH LASER MODULE

Positioning accuracy, mm	±0.01
Cutting thickness, up to, mm	
- low-carbon steel	25
- stainless steel	18
- aluminum alloys	15
- copper alloys	10
Max travelling speed of optical head along axes, m/min	120
Supply voltage, V	~400, 3 phases
Rated input (3 kW laser source is used), not more than, kW	20
Working area, mm	2000 x 6000



PLASMA MODULE FOR MARKING AND LABELING

The module performs automatic labeling and marking of plate parts prior to cutting. Use of such module in the cutting machine allows to avoid manual labeling operation.

SPECIFICATION

Plasma cutting sources type HiFocus 160i in labeling mode or ArcWriter marker	
Current, A	5–30
Labeling speed, m/min	up to 6
Cutting/labeling	without replacement of plasmatron

VENTILATED CUTTING TABLE

Thermal cutting machine is equipped with patented ventilated cutting table of sectional type. Hazardous emissions are extracted directly from the cutting zone. Polluted air is exhausted with ventilation plant, which purifies the air with a set of replaceable filters and returns it back to the workshop, thus saving thermal balance inside the room.

The air duct shutter in the working area is opened by pressing shutter roller with a special trap, secured on the machine.

Advantages:

- Simple design, easy to repair at any enterprise;
- Absence of pneumatic cylinders and valves, thus no requirements in power supply;
- Easy assembly, adjustment and service;
- Low repair and maintenance costs.

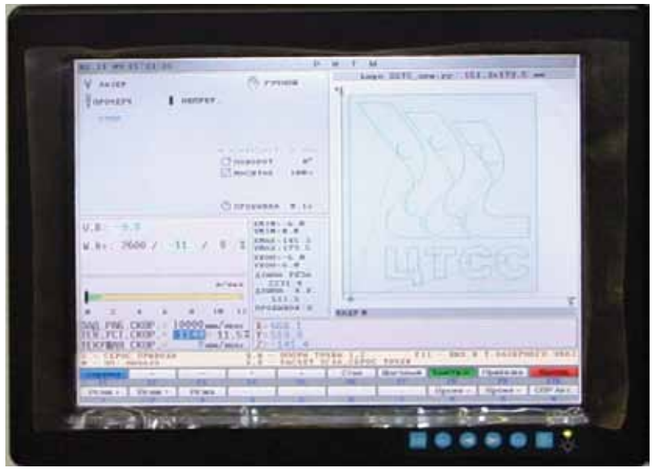
CONTROL PROGRAM FOR THERMAL CUTTING MACHINES

All thermal cutting machines are equipped with control console with embedded software, optimized to provide high performance. Recovery disks with software are included in scope of supply for rapid operability recovery in unlikely case of failure.

For automatic preparation of control programs with office-grade computer and for ensuring optimal cutting layout on a plate one can use software Ritm-Sudno by SSTC, TechTran by NIP-Informatika and software from other companies.

Control program may be modified directly from the console by editing geometrical parameters – such as scale of part, rotational travel relatively to cutting table, etc.

In control systems of thermal cutting machines reliable Russian and foreign components and assemblies are utilized: complete electric drives manufactured by Bosch-Rexroth (Germany), components for industrial PCs by Advantech (Taiwan), wirings by Lovato (Italy) and Phoenix Contact (Germany, Russia), sensors by SPC Teko (Russia), connectors by Kaskad (Russia), cables by Lapp Kabel (Germany).



JSC SSTC

- Designs thermal cutting systems and develops full set of working design documentation and operational documentation by specialized design division
- Possesses technical specialists on thermal cutting and development of cutting technologies
- Manufactures thermal cutting machines on the base of approved production facility
- Provides training of Customer's specialists upon delivery of the machines

The structure of machines is modular, thus allowing to manufacture any modification of machine in accordance with Customer's requirements and to perform its subsequent modernization.

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