

# SITEC



**CNC - LASER MACHINES OF THE SERIES LS**

Welding | Cutting | Hardening | Drilling | Structuring

**CROSS-SECTOR COMPETENCE FOR YOUR SUCCESS.  
RIGHT FROM THE BEGINNING.**



Automotive



E-Mobility



Medical engineering



Electrical engineering



Telecommunications



Renewable energies



Mechanical engineering



Contract  
manufacturers and  
series producers



With regard to the efficient use of laser technology in series production, SITEC is a globally valued partner and manufacturer of laser processing machines.

Why is that?

Because for more than 25 years we have been successful as system supplier for customized laser machines as well as integrated laser solutions and always think that decisive step ahead. Or sometimes even outside the box.

With highest flexibility, precision and in certified quality we put our professionalism and experience at our customer's service.

**We are looking forward to your challenging tasks.**

Cerified according to: ISO 9001  
ISO 14001  
IATF 16949

**MECHANICAL ENGINEERING** | SERIES PRODUCTION



# SITEC LS 55P



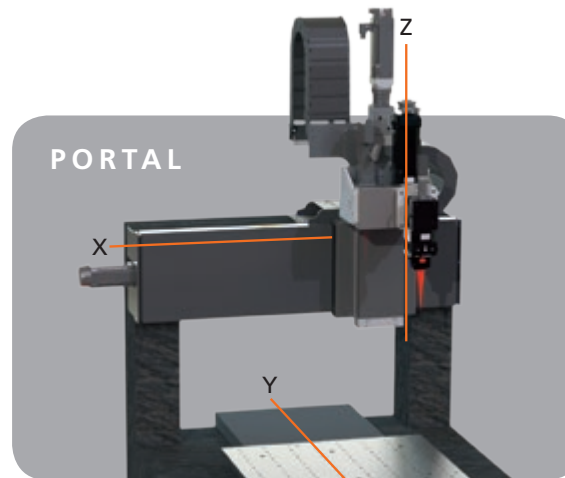
## SERIES LS – COMPACT AND VARIABLE AT THE SAME TIME

Laser machines of the series LS by SITEC are the ideal tool when it comes to the process reliable laser treatment of your products – the LS is adapted perfectly to suit your requirements.

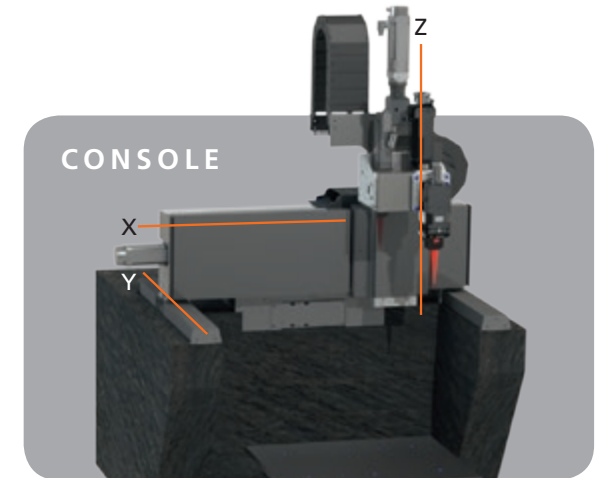
No matter if welding, cutting, hardening, drilling or structuring – if required we choose the **optimal laser source and process optics for you** or integrate your existing laser source. Thanks to the LS your production can be designed **variably from manual to automated**.

The basic version of the LS is available in **two designs as console and portal**. Depending on the dimension of your part to be processed, on the volume of the working area and the axis lengths you can choose from three different sizes.

We will gladly support you with **the technology development for your products**. Target-oriented and competently our experienced application engineers develop solutions for you that are ready for series production. From the initial idea to the process-reliable technology.



an intelligent combination featuring highly dynamic precision engineering



for easy-to-use automation

Technology development

Prototyping

Fixture construction

Mechanical engineering LS

Service

## STANDARD EQUIPMENT OF THE SERIES LS



### Dynamics and Precision

- Mechanical basic structure made of granite ensures a vibration-damped and precise mounting of the rotation and linear axes

### Universal and Efficient

- Design of the basic machine for laser material processing with fiber-guided systems, optionally for direct beam systems
- Welding base frame made of steel for easy transport
- Interface for workpiece fixtures as intermediate plate with bore grid and dowel pins
- CNC machine control Siemens **SINUMERIK 840D**

### Safety

- Machine cover made of steel plate according to laser protection class 1 (passive, optionally active)
- Lockable front sliding door with laser protection window
- Mechanical preparation for extraction

## COMPACT DESIGN



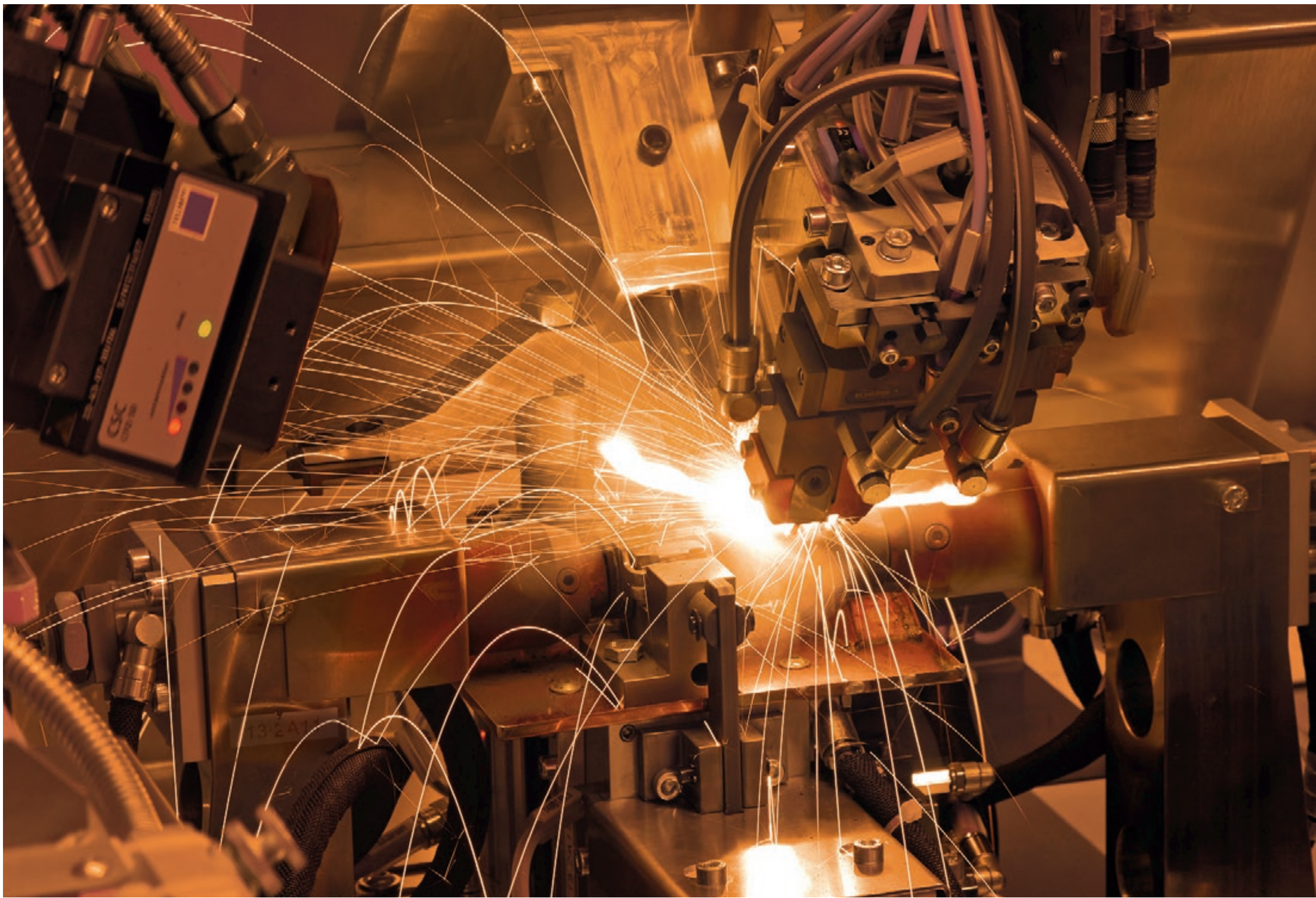
Standardized compact design of LS machine with integrated control cabinet and operating panel for automation modules connectable on one side.

## INTEGRATION DESIGN



The slender design with separate control cabinet is particularly suited for connecting automated line systems on both sides. All control functionalities are available via a mobile operating panel.







## VARIABLE IN DESIGN AND PROCESS

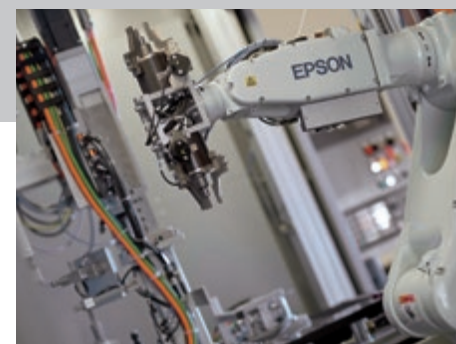
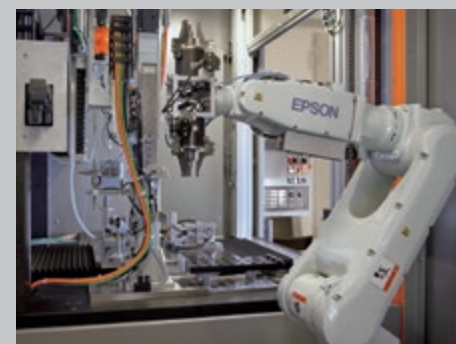
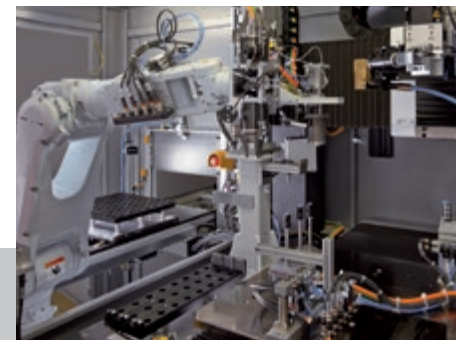


The version with a rotary indexing table enables the processing at parallel cycle times with simultaneous loading and unloading.

Console version with height-adjustable clamping table and rotary axis.

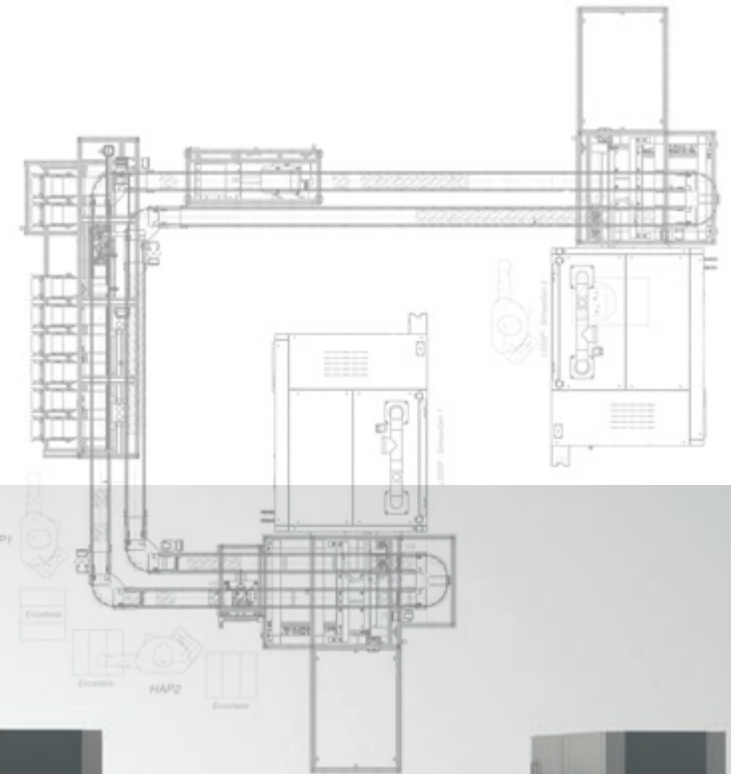
Portal version with cutting table.

# INTEGRATED AUTOMATION WITH ROBOT



## EFFICIENCY INCREASE THANKS TO AUTOMATION

In line with manual loading, the LS series offers you a variety of automation variants. Autarkic runtimes, reduced worker deployment and significantly shorter cycle times can thus be achieved. As a matter of course, the entire system complies with the demands made on laser safety classes.



- Integration of:
- robot-transfer systems
  - tube and coil feeding systems
  - standard palletising systems
  - pick-and-place-systems



## YOUR SPECIAL SOLUTION IN THE EQUIPMENT PACKAGE

### Welding

- speed dependent frequency and pulse-width-modulation
- speed dependent laser performance control<sup>1</sup>
- process gas (manual/automatic)
- machine integrated pressed air preparation, incl. valve to control cross jet
- welding monitoring systems
- CLEAN WELDING station

### Cutting

- capacitive distance control<sup>2</sup>
- speed dependent laser performance control
- cutting table
- cutting gas (manual/automatic)

### Hardening

- temperature controlled laser performance control<sup>3</sup>
- pyrometer

### Dynamics

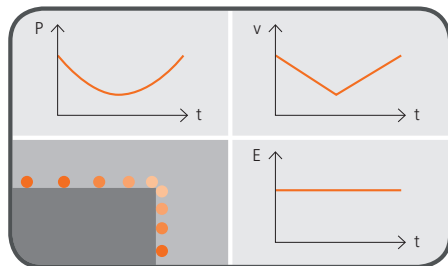
- for forward feed speeds of up to 120m/min
- linear direct drive
  - linear measuring system

### Precision

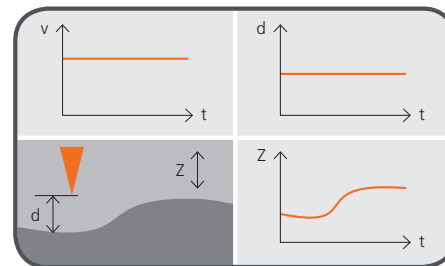
- for a perfect repeating accuracy of +/- 2 $\mu$ m
- precision measuring system
  - interferometric axis measurement

### Customized modification

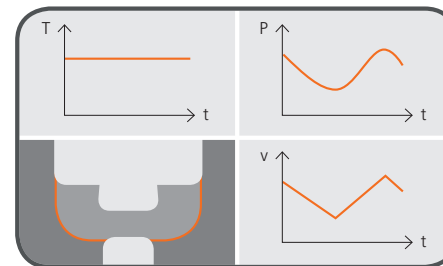
- clamping device
- part feeding and transport



1



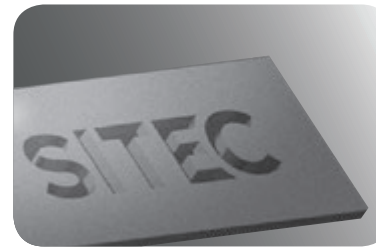
2



3

## LASER PROCESSING HEAD MBO 45

- motor-driven processing optics MBO\_45 (45 beam diameter inside the head (aperture))
- 0,01° repeat accuracy of the angle adjustment
- adaption of different laser sources (direct beam or fiber-coupled)
- adaptable process observation and monitoring or control systems (CCD-camera, pyrometer etc.)
- different beam geometries due to adaption of adjusted homogenizer module
- different processing distances
- high mechanical stability with modular construction
- optical components and periphery components by well-known manufacturers
- expandability for welding, laser powder deposition, welding with additional material



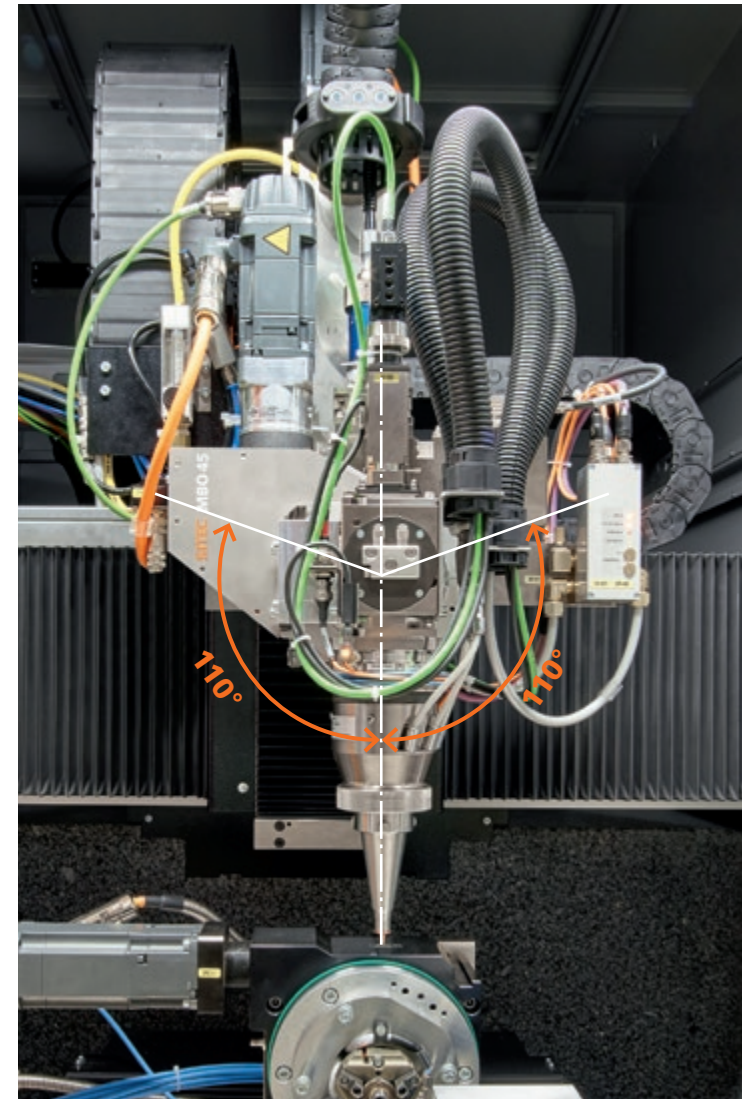
2D-Laser machining



2,5D-Laser machining



3D-Laser machining

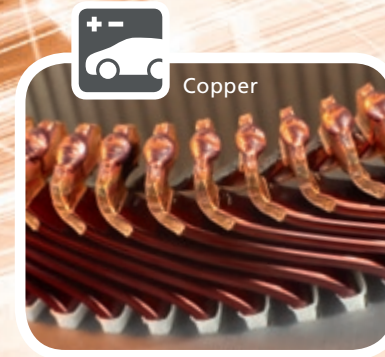




# MATERIAL PROCESSING FROM MICRO TO MACRO

The variable integration of laser beam sources and optics into the LS machine allows the processing of diverse materials.

- conventional weldable steels
- Titanium and alloys
- Aluminium and alloys
- Copper and alloys
- Plastic
- Glass

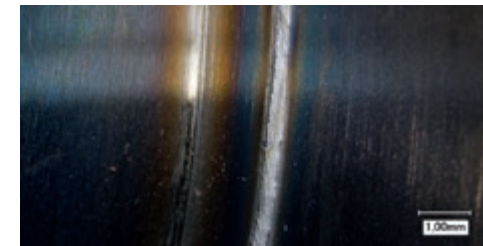
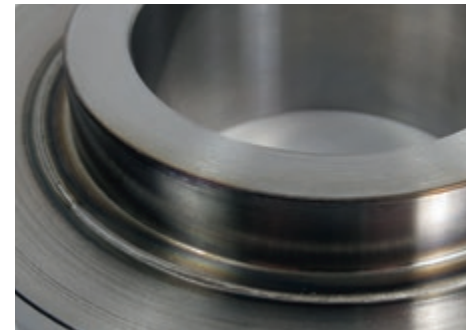






With **CLEAN WELDING** we can achieve unique advantages compared to conventional welding processes.

- no spatter
- no pores
- smooth and shiny seams
- higher welding penetration depths with lower laser power
- higher welding speeds with equal welding penetration depths
- very efficient due to reduced laser power
- ideal for rotationally symmetrical components



Conventional laser welding

CLEAN WELDING

## OVERVIEW OF TECHNICAL DATA AND OPTIONS

	LS 55P	LS 85P	LS 85C	LS 108P
<b>Travel (mm)</b>				
X axis	500	800	800	1,000
Y axis	500	500	500	800
Z axis	300 (400) <sup>10</sup>	300 (400) <sup>10</sup>	300 (400) <sup>10</sup>	400
<b>Performance specifications</b>				
positioning accuracy (µm) <sup>1</sup>	± 30 (± 10 <sup>-2</sup> )	± 30 (± 10 <sup>-2</sup> )	± 30 (± 10 <sup>-2</sup> )	± 30 (± 20 <sup>-2</sup> )
repeating accuracy (µm) <sup>1</sup>	± 15 (± 2 <sup>-2</sup> )	± 15 (± 2 <sup>-2</sup> )	± 15 (± 2 <sup>-2</sup> )	± 15 (± 2 <sup>-2</sup> )
max. forward feed (m/min)	30 (50 <sup>3,5</sup> )	30 (50 <sup>3,5</sup> )	30 (50 <sup>3,5</sup> )	30 (120 <sup>3,5</sup> )
acceleration (m/s <sup>2</sup> )	5 (10 <sup>3,5</sup> )	5 (10 <sup>3,5</sup> )	5 (10 <sup>3,5</sup> )	5 (10 <sup>3,5</sup> )
ultimate load (kg) <sup>8</sup>	150	150	300 (150) <sup>12</sup>	150
<b>Dimensions (mm)<sup>9</sup></b>				
width <sup>11</sup>	1,900	2,200	2,400	2,400
depth	1,500	1,500	2,200	1,800
height <sup>6</sup>	2,600	2,600	2,600	2,600
<b>Installation data (without laser)</b>				
supply voltage	3 AC 400V	3 AC 400V	3 AC 400V	3 AC 400V
	+PE +N	+PE +N	+PE +N	+PE +N
power frequency (Hz)	50/60	50/60	50/60	50/60
fusing (A) <sup>9</sup>	16	16	16	16



(...) optional

- <sup>1</sup> per axis X, Y at 300 mm length, up to
- <sup>2</sup> with Equipment Package Precision
- <sup>3</sup> with Equipment Package Dynamic up to
- <sup>4</sup> for axis arrangement Console
- <sup>5</sup> for Siemens controls
- <sup>6</sup> transport-size reduction to 2 m possible
- <sup>7</sup> only in association with appropriate process-specific optics
- <sup>8</sup> all setups on work-holding table
- <sup>9</sup> basic machine, variations possible depending on outfit
- <sup>10</sup> optional extended Z-travel
- <sup>11</sup> for integration design – 500mm
- <sup>12</sup> for single option – vertically adjustable worktable reduced to 150kg

Subject to technical changes

# CONFIGURE YOUR INDIVIDUAL LASER MACHINE

Use our **ONLINE configurator** under [http://www.sitec-technology.de/Laser\\_machining\\_centre.html](http://www.sitec-technology.de/Laser_machining_centre.html)  
or send your selection via e-mail to [sitec@sitec-technology.de](mailto:sitec@sitec-technology.de).

Do you have questions regarding the selection? Just call us – we would be pleased to assist you under +49 (0) 371.4708.241



## Basic laser machine version

- LS 55P       LS 85P       LS 85C       LS 108P

## Laser Beam Source and Process Optics

- selection of the optimal laser beam source (YAG, fibre, disc, CO<sub>2</sub>, diode...)
- favored laser beam source \_\_\_\_\_
- Integration of your existing laser beam source \_\_\_\_\_
- process optics
  - cutting optics
  - welding optics
  - drilling optics
  - scanners
  - mirrors
- optical fibre
- manual/automatic beam switch
- collision protection system

## Special Equipment Automation

- tube feeding systems
- coil feeding systems
- palletising systems
- robot / handling module

Your other requests

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## Equipment Package – Efficiency

- Dynamics**<sup>5</sup>
  - linear direct drive
  - linear measuring system
- Precision**
  - precision measuring system
  - interferometric axis measurement
- Automation**<sup>4</sup>
  - integration and equipment of the VARIOMODUL® - modular system

## Fixtures

- Development and integration of part specific clamping fixtures
- Integration of customer fixture

Company Name \_\_\_\_\_

Contact \_\_\_\_\_

## Maschine design

- Compact design       Integration design

## Machine-specific Individual Options

- swiveling door<sup>4</sup>
- height-adjustable working table<sup>4</sup>
- active protection cabin
- hand wheel
- T-slot clamping plate
- NC rotational axis with worm drive
- NC rotational axis with torque motor
- NC rotating swivelling unit
- three-jaw chuck
- mechanical or automatic swivelling unit for laser head
- cutting table
- extraction
- air knife
- scavenging air for steel pipe
- compressed air conditioning (fixture)
- reduced transport dimensions
- extended Z-travel from 300 mm to 400 mm
- additional cooling (fixture)
- camera monitoring workspace
- Replacing standard machine bench with rotary indexing table<sup>4</sup>
- special painting

Phone \_\_\_\_\_

e-mail \_\_\_\_\_

## Process-specific

- speed dependent frequency and pulse-width-modulation
- speed dependent laser performance control<sup>7</sup>
- welding monitoring system<sup>7</sup>
- temperature dependent laser performance control<sup>7</sup>
- image processing for automatic seam-position detection<sup>7</sup>
- pyrometer
- capacitive distance control<sup>7</sup>
- process gas (cutting/welding), manually adjustable
- automatic, NC programmable flow control
- automatic, NC programmable pressure control – Process gas

## Control-specific

- Siemens controls
- Beckhoff controls
- 16 additional M commands
- cross hairs generator with camera
- MDE/BDE systems, Traceability
- remote service
- manual control unit / enabling switch
- integrated DMC scanner

## 3D Machining

- CAM systems
- 5-axis coordinates transformation



**SERVICE PARTNERS  
WORLDWIDE.  
FAST AND COMPETENT.**

Also after commissioning of your machines we offer you comprehensive service and support.

You can reach our SITEC service around the clock and will receive immediate support. Our service employees and partners worldwide in Europe, Asia and America guarantee a fast and competent service on the spot.



Maintenance



Optimization



Spare parts



Training



Support

Due to continuous maintenance and servicing we assure you a high availability of your machine.



# SITEC

SITEC Industrietechnologie GmbH

Bornaer Straße 192

D - 09114 Chemnitz

Phone: +49 (0) 371.4708.241

Fax: +49 (0) 371.4708.240

e-mail: [sitec@sitec-technology.de](mailto:sitec@sitec-technology.de)

Internet: [www.sitec-technology.de](http://www.sitec-technology.de)

## MECHANICAL ENGINEERING

- Automated assembly lines
- Laser-machining centres
- ECM-lines

## SERIES PRODUCTION

- Laser-machining
- Electrochemical machining
- Mechanical machining
- Supplier management

