Z-LASER

Intelligent Solutions in Light

LASER PROJECTORS

- » Highly precise projection on user-defined 2D surfaces / 3D objects
- » Optimized for small and very large application scenarios
- » Scalable system, supports multi projector systems
- » Displays a number of CAD-files
- » User-friendly installation and appliance in industrial applications

Automotive
Composites
Textile
Concrete
Wood & Stone
Logistics
Assembly

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With more than 25 years of experience, Z-LASER is THE leading provider of lasers and laser-based systems to a wide variety of industries across the world.

Examples of applications:

Display of assembly position

Positioning of carbon fiber parts

Illustration of cutting outline on textile or leather materials

Support of work preparation for the production of concrete precast elements

Display of vacuum pods of CNC machinery

Display of workflow for consignment

Illustration of pattern

Laser image from construction files of wall units

Visual support for error minimization

etc.

Laser projectors are optical guiding systems. It replaces positioning tools in many production processes, by projecting on the component the position and direction of the material to be installed. Thereby, the employee is visually guided through the manual or semi-automatic manufacturing process.

- *Textile and leather industry*
- *Wooden frames and laminated timber construction*
- *Composite industry*
- *Automotive*

The following advantages are presented to the customer by our products which are “Made in Germany”:

- Material and time savings by optimized operational procedure
- Immediate optical quality control
- Increase of productivity
- Precise projection with high quality

LP-HFD

- Wider fan angle (80° x 80°) enables larger area of operation
- Red or green fiber-coupled laser source
- Multiple projectors combine to create system capable of projecting over large and highly complex projections
- Serial, Ethernet, SPS data transfer

Customised LP

- Unit assembly system
- Faster driver card for almost flicker-free projection
- Tele-optic optional available for a distance of >10m
- Reduction of fan angle to 60° x 60° for higher accuracy
- Stainless steel housing on demand
- Integration of projection unit in OEM solutions

Z3D-Control

- Camera based 3D measuring and laser projection system for industrial use on larger objects (> 1,5m - 10m)
- Alignment followed by projection
- No marker needed on the object
- Accuracy of 1/10,000 of the operating area
- Support of production and process optimization

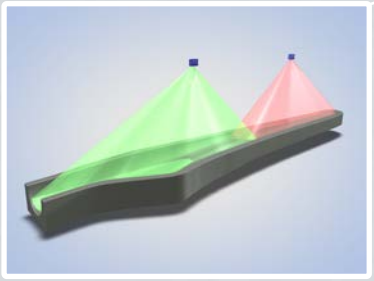
Features

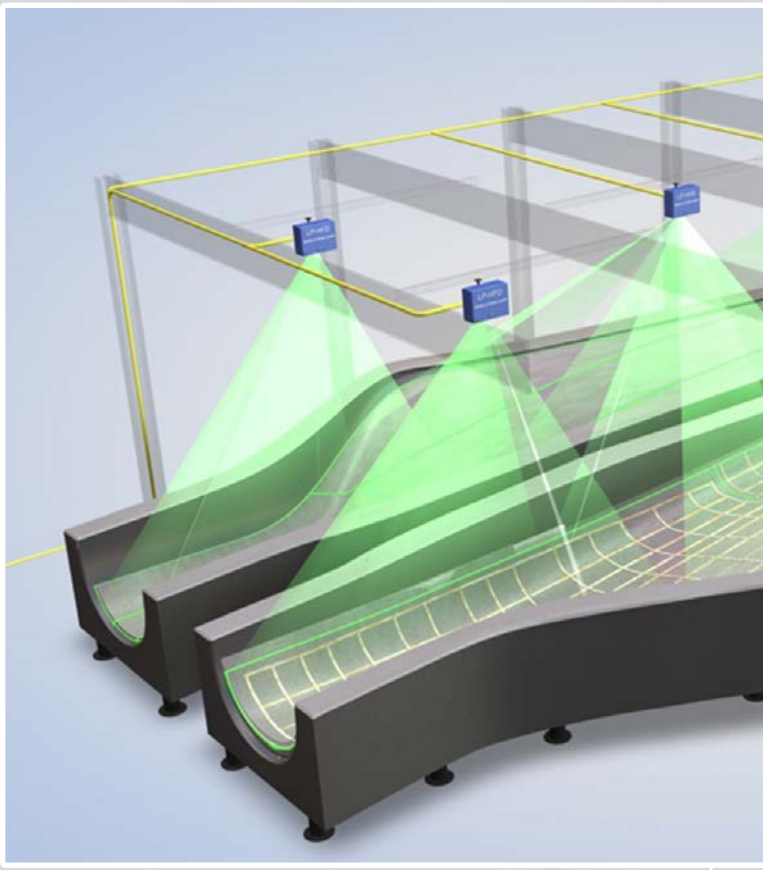
Client-server-structure

This feature enables the user to control several projectors with a single control computer
Your benefit:
Save by purchasing fewer computers!

Multi projection system

It is possible to combine up to 16 laser projectors on a single line.
Your benefit:
Projection over a very large working surface!





Power

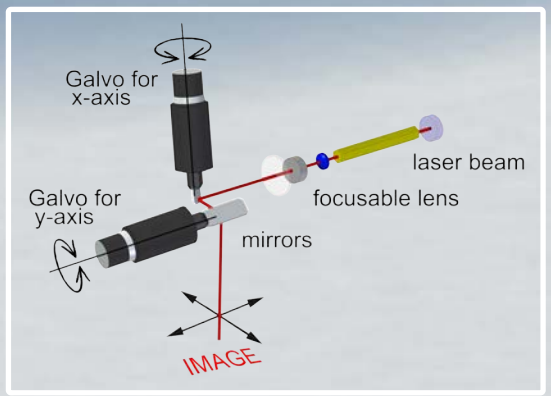
Power range from 1mW to 40mW. Every output power is available in green and red.
Your benefit:
Good visibility despite large projection or bright environment!

Integrated cooling system

Air filter protects the internal components of the projector, against high temperatures above 40°C. We offer optional cooling systems: air hoses, peltier, water cooling.
Your benefit:
Unchanged temperature enables constant projection and longer lifetime!

The core

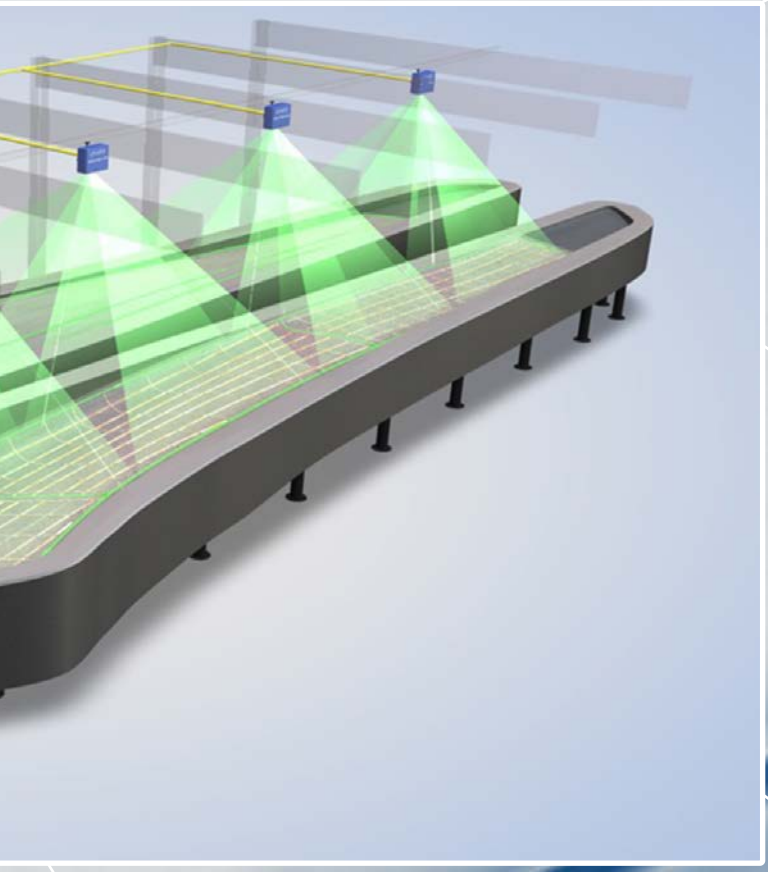
A laser projector is generally composed of a point-shaped laser source and a collimator lens. In addition, the beam of the laser scanner is deflected by movable mirrors to the desired point. This change of position of the mirror happens with the aid of Galvanometer engines, basically moving coils with extremely high accuracy. The motors are driven by a dual axis driver board, which ensures the exceptional speed and precision.



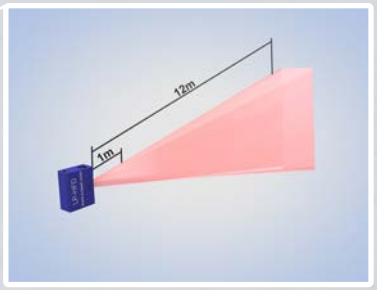
"The Art of Tuning"

The two galvanometers are triggered via a PID controller. The optimal balance of these control units to the corresponding galvanometer motor is called "tuning".
A square wave signal is applied to the input of the controller cards and the position signal of the galvanometers is measured. Based on this signal, the potentiometer on the controller can be adjusted corresponding to the position signal of the desired image.

"Applied to a distance of one kilometer the maximum deviation would be 8 millimeters."

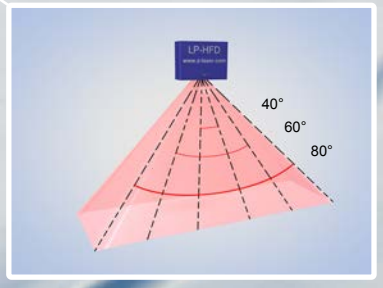


Tele-optic



Laser projectors are able to project over longer distances with high precision using a Tele-optic.
Your benefit:
Accurate projection over further distances!

Fan angle

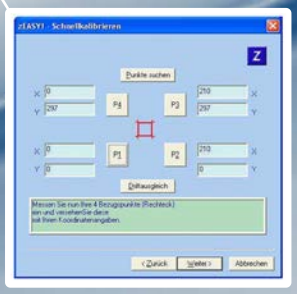


The projectors can be specified with fan angles up to 80°.
Your benefit:
Variable fan angle;
60° for high accuracy,
80° for larger projections!

Fiber-coupled laser sources

Optimized laser projectors use optical fibers for considerably better laser projections.
Your benefit:
Enhanced quality, greater durability and a permanently constant beam quality!

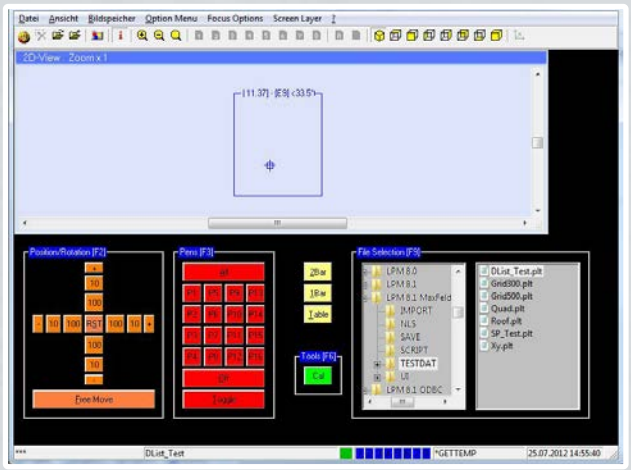
Installation of the projectors



The LP is still set up by using 4 known points on a single height level. Our 3D setup algorithm allows you alternatively to adjust the projector by using 6 known X,Y and Z coordinates.
Your benefit:
Material and sequence of the working steps is displayed to the employee. Additional information can be projected as text.

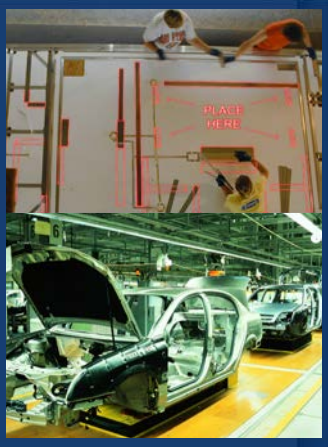
Software LPM

The powerful software LPM has the task to prepare all graphical data for the projection through various import filters and transmits these to the laser projector. It visualises the interaction of position, projection height and rotation of the object. The objects can be moved and rotated in all axes. All changes to the projection are displayed both graphically on the screen and in real-time on the material to be processed.



Automotive

In the commercial vehicle industry, laser projectors are used for the positioning of construction elements such as anchors, bracings and electronic wiring.
Without laser projectors, it usually takes many repetitions for the worker to remember the position of elements on the automobile frame.
By visually guiding the employee through the production process, the training period for the worker and the time required for the positioning of the elements is greatly reduced.

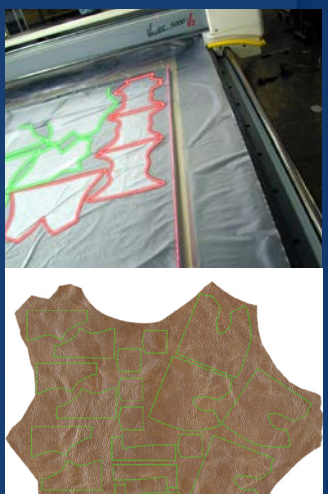


Composites

2D and 3D laser projections are used in all manufacturing processes where fiber composite materials are processed. Some examples include the shipbuilding, automotive, aviation and aerospace industries, including rotor blades for wind turbines and helicopters. These are all applications where the exact positioning of composite material plies and the correct order of their lay-up by the laser projector brings great benefits to the production process and improves product quality.

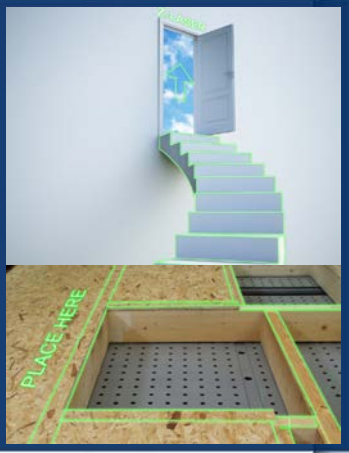
Textile

When cutting pattern pieces from leather hides with a cutter it cannot be - unlike textiles - nested automatically because leather, as a natural material, has natural defects. The patterns are shown with multiple laser projectors. If a defect is found on a pattern piece, the projection can moved to an error-free zone. The new coordinates are then transmitted to the cutter.



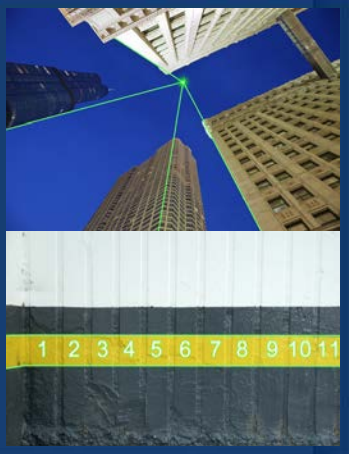
Wood & Stone

The laser projector generates a laser image to scale from a wall-element design file and then projects it on the work surface. By displaying only what is required for each step in the manufacturing process, the process becomes understandable and transparent. This guarantees the execution of each work step with all specified mounting cutouts for windows or installations. When plates are set, the laser shows the position of the sub-structure and the placement of the nails.



Concrete

In the production of precast concrete walls and ceilings, projection over a large area is required. In this case, 2 or more projectors are combined to create a projection system capable of projecting over large areas. The system is integrated via specially designed software in the computer controlled processes of the production system. Additionally, the system can always be manually controlled by a remote control.
You benefit from reduced setup times and a quick and accurate display of cutouts and shell elements.



Logistics & Assembly

Even for assembly, laser projections are a great help. For example, it is possible to display the number of the corresponding screws which are to be placed into the next material container. For the commissioner or engineer, it can display not only the parts which should be removed from a tray but it can also display the number of parts to be removed.
The laser projector LP-CUBE ensures that the correct parts and the right amount are removed and it is the flexible approach for minimizing errors in assembly, packing and picking. It increases the picking output thereby decreasing the picking times. The visualizing support also allows a high flexibility in staff deployment.

Made in Germany

Z-LASER

Intelligent Solutions in Light

We are available for you around the world. You will find our international representatives online at:
www.z-laser.com

Z-LASER sets industry standards. By continually investing in the corporate infrastructure, ***Z-LASER*** has cultivated a leading market position in various industries for over 30 years.

Z-LASER has been certified to ISO 9001 since 1997. Quality audits of important industrial quantity buyers are fulfilled regularly. To ensure we earn the high quality label “Made in Germany“, each laser is subjected to stringent controls.

“The fascination of the perfect light inspired me 35 years ago to make the laser my passion.

In the beginning, simple wood positioning applications in sawmills were realised with He-Ne gas lasers, which were initially built in my living room. Today, I take pride in watching the 6 axis optical machines in our clean room that produce eye-safe high-end laser modules e.g. for the automotive industry.

From the early years on, all team members support the idea not to supply the arms industry.”

Kurt-M. Zimmermann
Founder and owner ***Z-LASER***

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