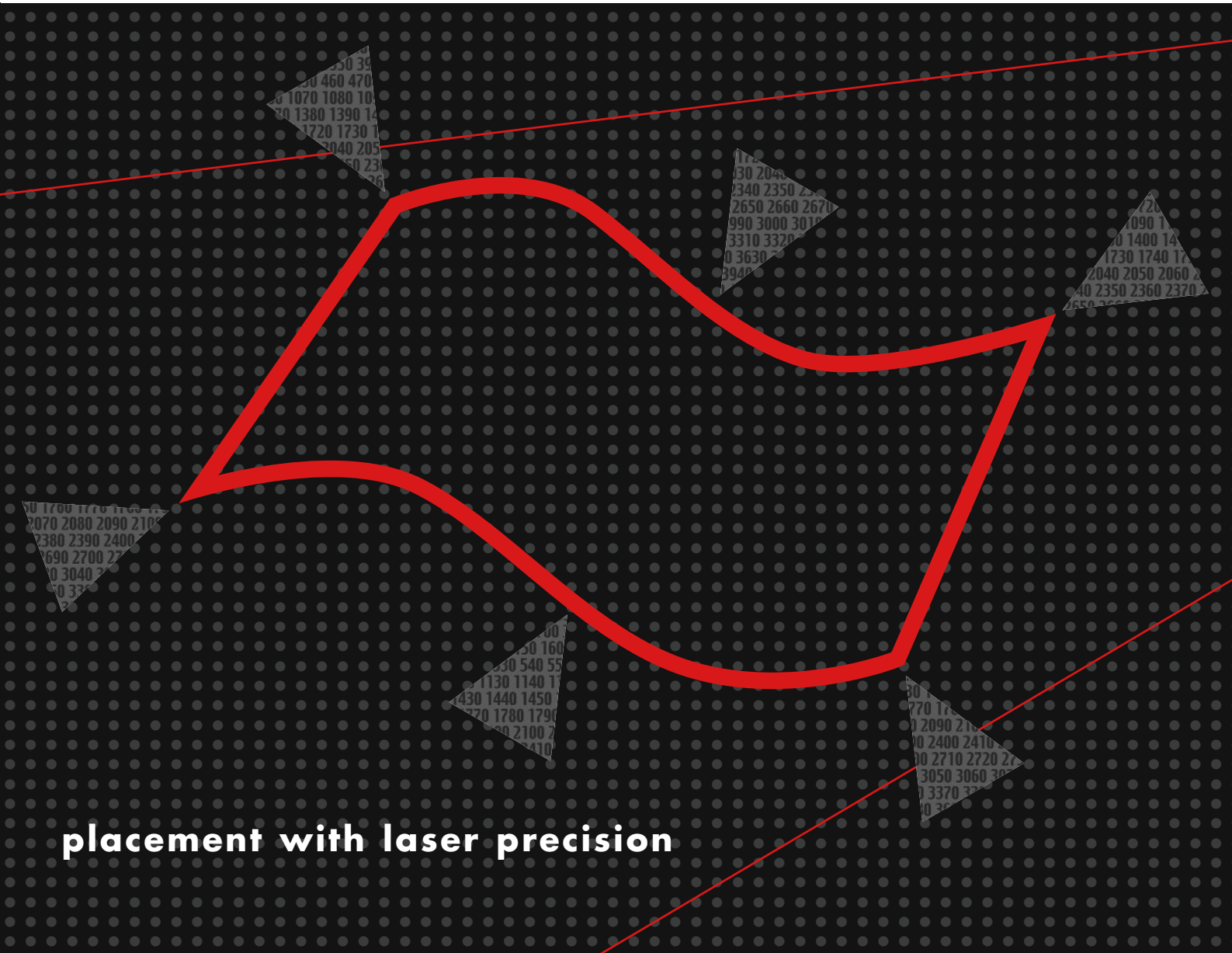
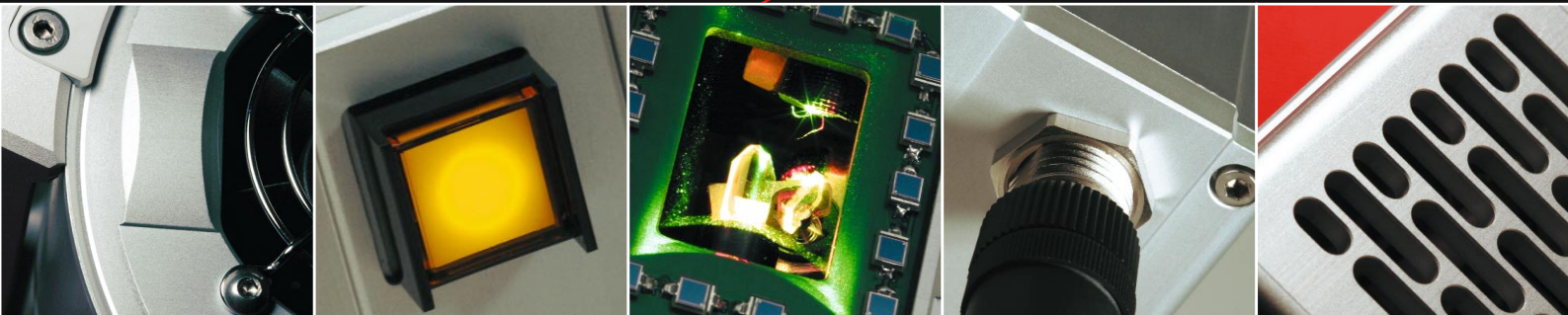


# CAD-PRO 3D

 **LASER PROJECTORS**  
for contoured surfaces



placement with laser precision



# CAD-PRO 3D LASER PROJECTORS.



## HIGHLIGHTS.

- multicolor projection (green, red, yellow)
- easy-to-handle multiple projector solutions
- highest precision
- fast auto-calibration
- compact housing and lowest weight
- sealed housing area for projection components

## PRECISE, MULTICOLOR PROJECTION.

CAD-PRO 3D laser projectors display outlines generated from CAD data on 3D surfaces. Based on calibration at reference points, scaling is 1:1.

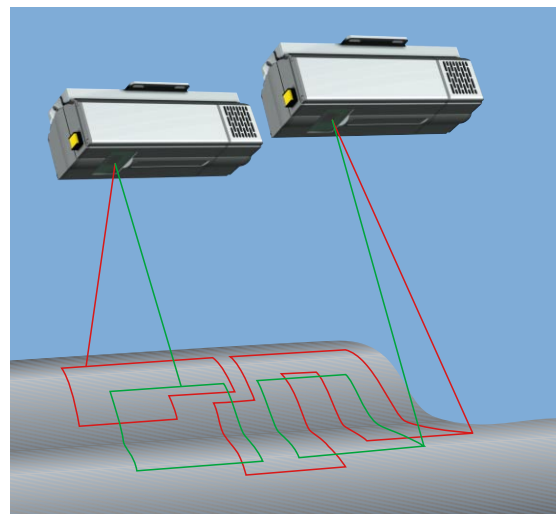
CAD-PRO 3D can be equipped with one or two laser sources. You may choose green, red or both sources for multicolored projection.

## FLEXIBLE, INTELLIGENT, SIMPLE.

Large area projection is reached by connecting projectors. They can be placed facing each other or side by side. Distribution of data and load balancing works automated.

In day to day use, automatic functions allow fast and easy calibration. Operating errors are avoided to get highest precision and repeatability.

Easy handling and installation is guaranteed by the compact housing, low weight and an integrated swivel mount.

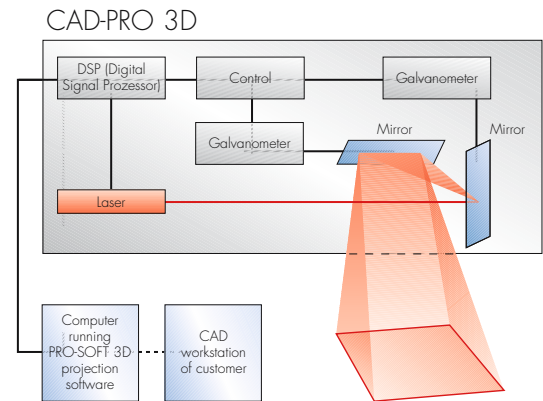


# SOLUTIONS FOR YOUR COMPANY.

## THE OPERATING PRINCIPLE.

A laser beam deflected in x- and y-direction by two oscillating mirrors continuously traces the shape defined by the CAD data. The mirror drives (Galvanometers) are optimized for highest speed, accuracy and dynamic. Their movement is controlled by a digital trajectory processor. If the outline is traced more than approximately 20 times per second, it appears solid to the eye.

To achieve a projection exacting to scale, the projector software auto-calibrates by scanning the position of target marks at measured coordinates or machined reference points that are relative to the work piece. This extremely fast, automatic procedure can be repeated any time without noticeable interruption of the work flow, allowing compliance with even the tightest dimensional tolerance and quality assurance standards.



## SYSTEM DESIGN.

A typical laser templating solution consists of one or multiple laser projectors, a computer workstation, a mechanical support for the projector, the customer's tool(s), and the related tool information in an electronic format.

Typically, the projectors are located centrally above the tool, mounted to a roof truss or a stable support structure. Since the projectors must have a line-of-sight to a work surface, complex or large tool surfaces may require multiple projectors, splitting their respective projection fields adjacent to, or partly or fully overlapping as needed.



CAD-PRO projectors are controlled by a computer running PRO-SOFT 3D, the associated 3D projection software. The computer can be networked with the customer's CAD workstation. The PRO SOFT 3D software structures the complete working process: Reading of CAD data, processing of the contained templates in proper sequence, and controlling the projector(s) accordingly.

The basic interface hardware configuration consists of a PC cabinet with IPC, LCD screen, keyboard, mouse or trackball, uninterruptible power supply, interfaces, and any optional electronic components specified, including a big display showing the name of the actually projected template and a barcode reader for identification of work pieces before and/or after they are placed.

# OPTIMIZING YOUR PRODUCTION.

## WORKING WITH LASER PROJECTORS.

To calibrate the projector to a new workpiece, minimally 4 reference targets must be applied to the workpiece. After placing the customer's tool with reference targets in the working range of the projectors, the respective calibration target coordinates (calibration data) are loaded into the software.

Once calibrated, the projector is ready for use with the tool. The corresponding data file is loaded and the template for the first step in the production sequence is displayed. After its completion, the second template is activated; the corresponding operation executed, and so forth, until all production steps are completed.

Changeover between templates can be done quickly by the supplied IR remote control or the computer keyboard. After finishing an item, the next item can be started or the tool can be changed. It is possible to halt and resume the process at any time.

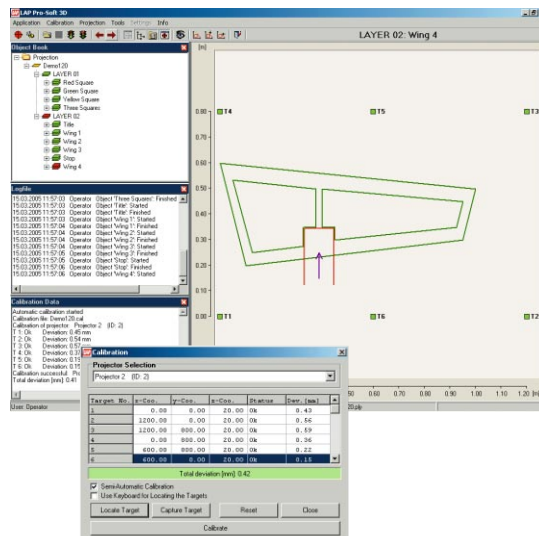
## SOFTWARE.

The PRO-SOFT 3D software provides user privilege administration, flexible system configuration and calibration. Common CAD data can be used directly at the customer's site.

The system calibration can be performed manually, semiautomatic or automatic.

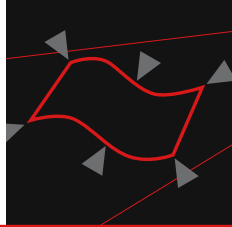
The desktop displays templates graphically as well as in a structured list. Structured data (e.g. layer/sequence, groups, and plies) provide for a step by step working schedule.

An integrated editor offers special projection functions like display of signal and warning icons, selection of projection color and integration of barcode information.



Sensors, Line Lasers, Projectors  
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# TECHNICAL DATA.



## GENERAL DATA.

Laser type, wavelength	red: diode, 635 nm green: DPSS (solid state), 532 nm yellow: combined projection of red and green
Accuracy	± 0,5 mm up to distance of 4 m*
Line width	< 1 mm up to distance of 4 m*
Max. projection angle	80°
Laser power	5 mW
Laser class	2M
Enclosure rating	IP 54
Ambient conditions	0 - 40°C, 35% - 85% rel. humidity, non-condensing
Power supply	24 VDC, max. 1 A
Connection	RS 485, Ethernet by interface
Dimensions (LxWxH)	300 x 110 x 110 mm
Weight	ca. 3 kg

\*within a projection angle of 60° (±30° to projector normal line), assuming correct calibration and focussing in projection color, surface perpendicular to laser beam



## STANDARD SCOPE OF SUPPLY.



- Remote control
- Installation material
- Bracket with swivel mount
- Reference Targets (one version for all angles)

## ACCESSORIES AND OPTIONS.

- Cabinet equipped with industrial PC, monitor, UPS, Trackball
- Mounting structure and floor stands
- Big displays
- Software plug ins: Barcode integration, log files, ...

LAP has a great deal of experience with customer-specific solutions.  
Please inquire!



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