

A close-up photograph of an industrial laser welding process. A robotic arm is positioned over a workpiece, and a bright, intense light from the laser is visible at the point of contact. The background is blurred, showing other industrial equipment and lights.

COMPLETELY INTEGRATED (CI)

How STIWA operates laser technology in their
high performance assembly lines

Markus Forstinger
Karlheinz Loistl
October 29th, 2018

CI - COMPLETELY INTEGRATED

COMPANY OVERVIEW

STIWA Group



1972 FOUNDED
by Walter Sticht

€ 255 MIO.
TURNOVER
FY 2017/2018

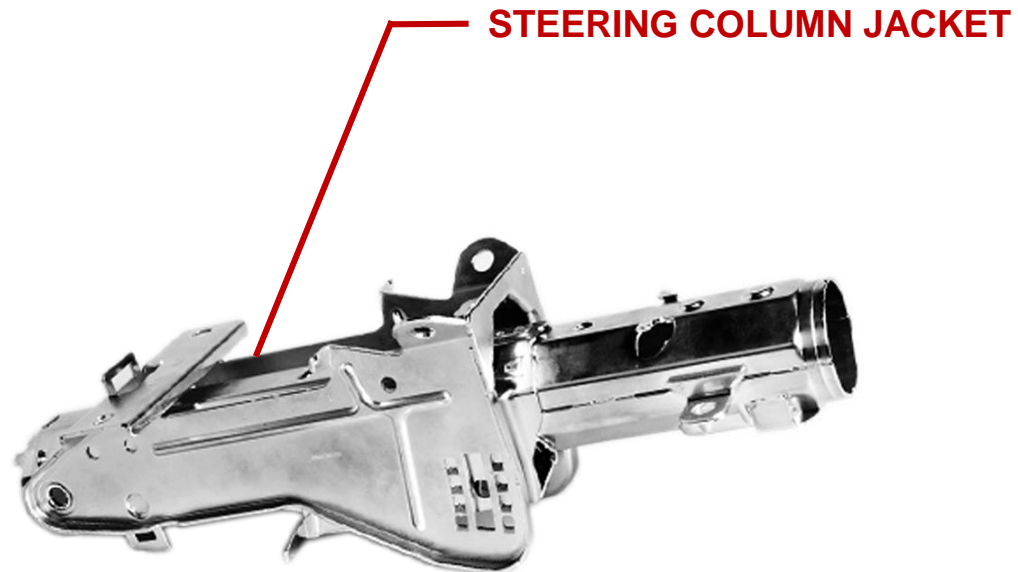


**FAMILY-OWNED
BUSINESS**

1,810
EMPLOYEES
on THREE continents*

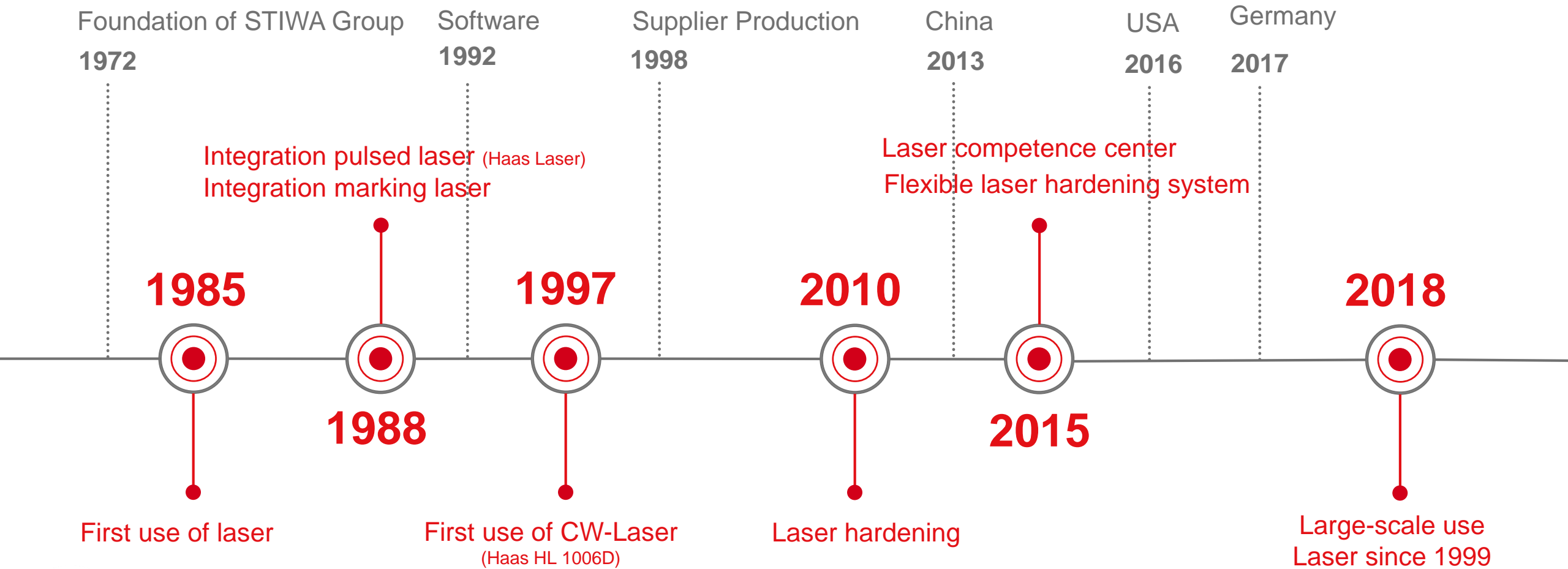


STIWA Group – Leading High Performance Automation



TIMELINE

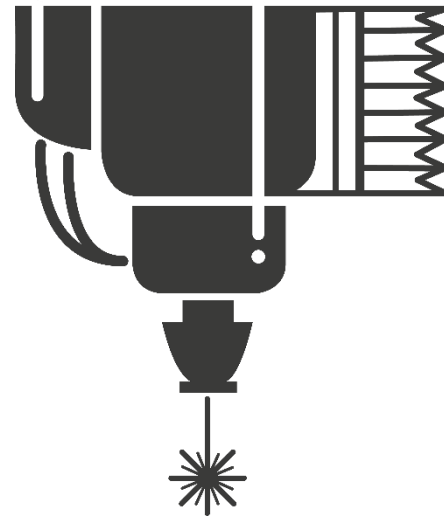
STIWA laser technology



More than 30 years of experience in the use of laser technology

OUR MOTIVATION

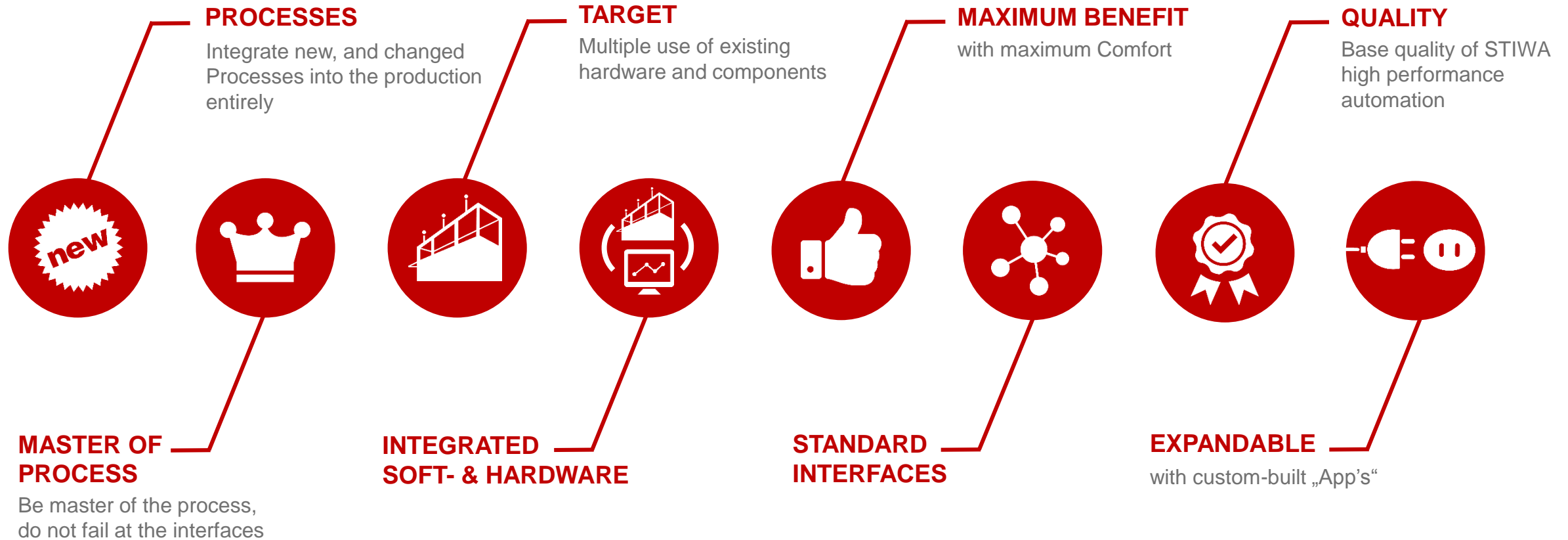
to use laser technology in high performance assembly lines



The Pros & Cons of the technology are comparable to those of high volume production

THE UNDERSTANDING OF CI

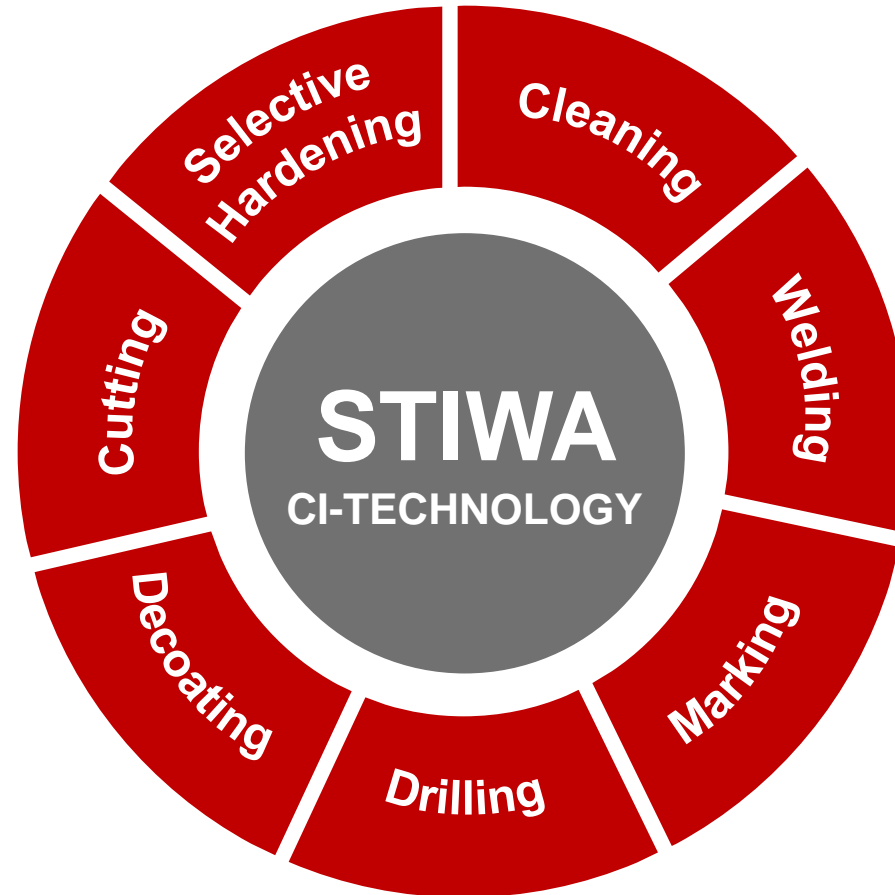
within the STIWA Group



CI – Completely Integrated

ONE TOOL FOR DIFFERENT PURPOSES

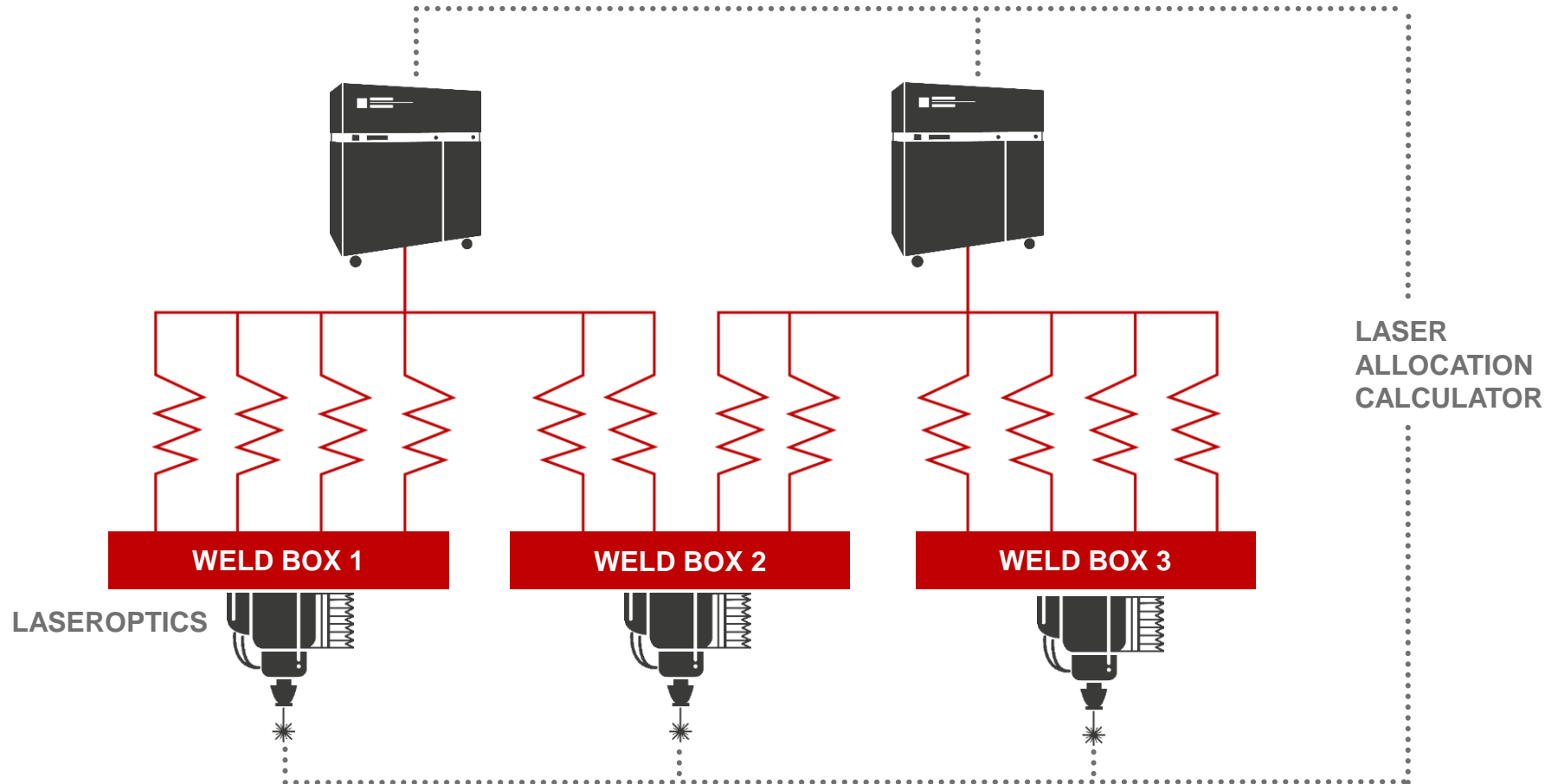
Overview



Only one or two interfaces to develop and to service → reduction of costs and door-to-door time

WE NEED FAST PROCESSES WITH SHORT CYCLE TIMES

Laser use and maintenance requirements



2 LASER
12 LASEROPTICS
3 WELD BOXES
72,5%
LASERUSE



Intelligent laser distribution as part of a successful production line

CI - COMPLETELY INTEGRATED

PARTS WHICH ARE READY FOR USE



LITTLE HEAT
INDUCED DISTORTION

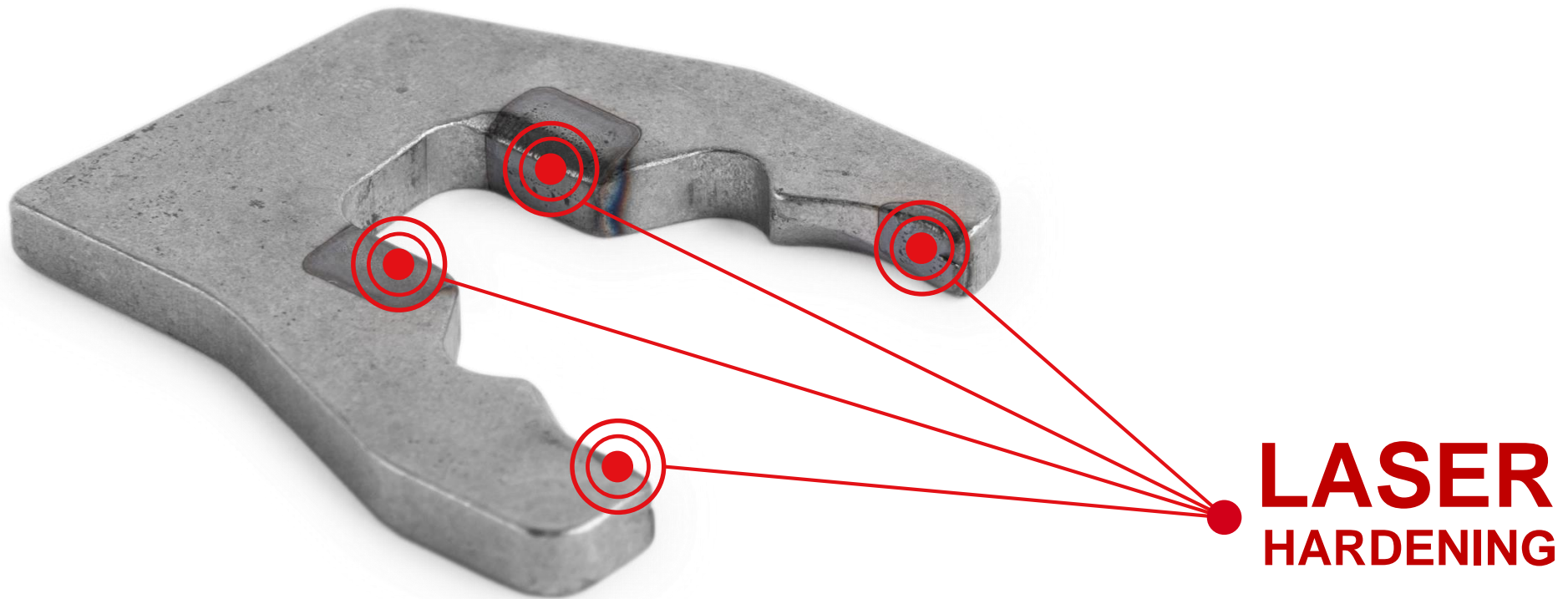
.....
USUALLY NO
CLEANING NEEDED



We can reduce the processing steps to a minimum

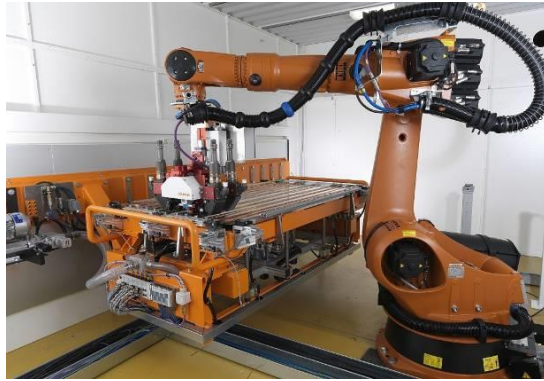
MINIATURISATION OF PRODUCTS LEADS TO TIGHT CROSS-SECTION

Example Laser Hardening

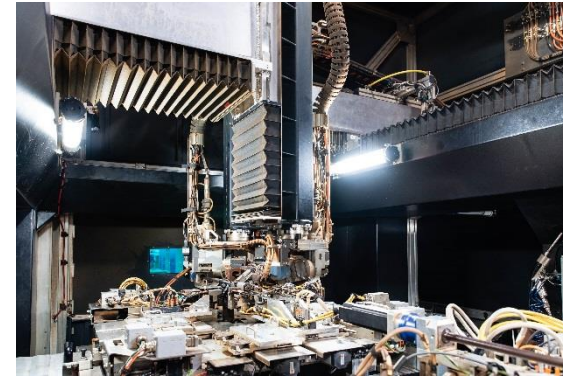


No wear and tear, contact-free procedure

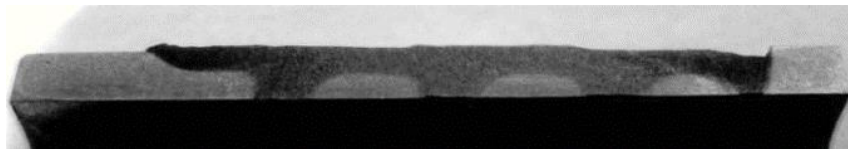
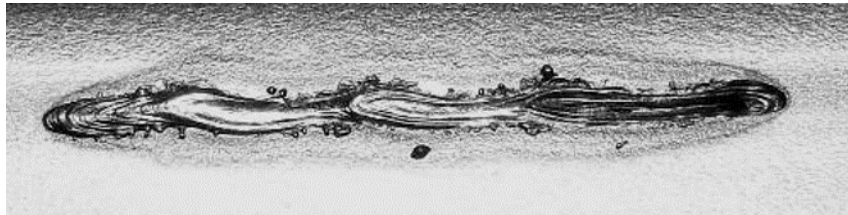
HANDLE THE SUBJECT WELDING DEPTH – PART I



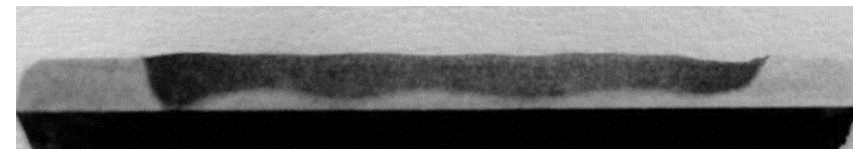
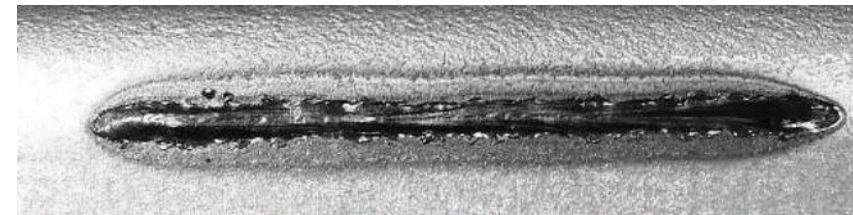
ROBOT WELDING



COMPARISON STIWA-SYSTEM



Longitudinal grinding

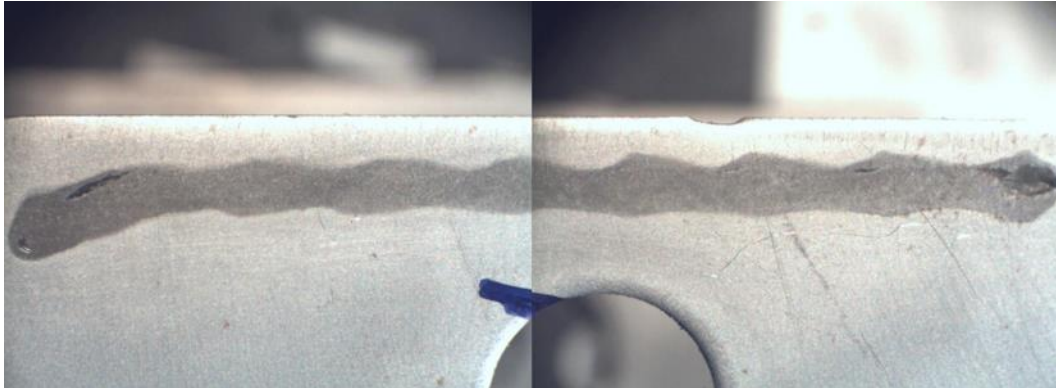


Longitudinal grinding

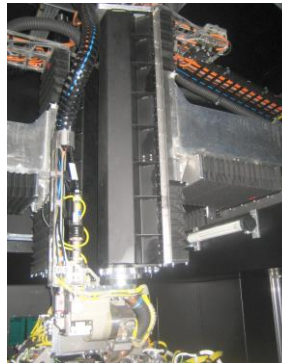


Robots are not suitable for high dynamics and high accuracy

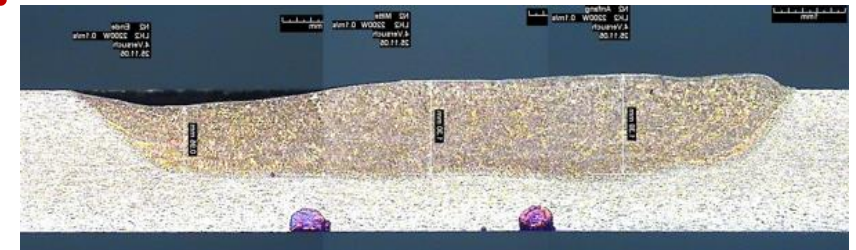
HIGH WELDING SPEEDS LEAD TO WAVES DUE TO VIBRATIONS



INCREASE GUIDE LENGTH



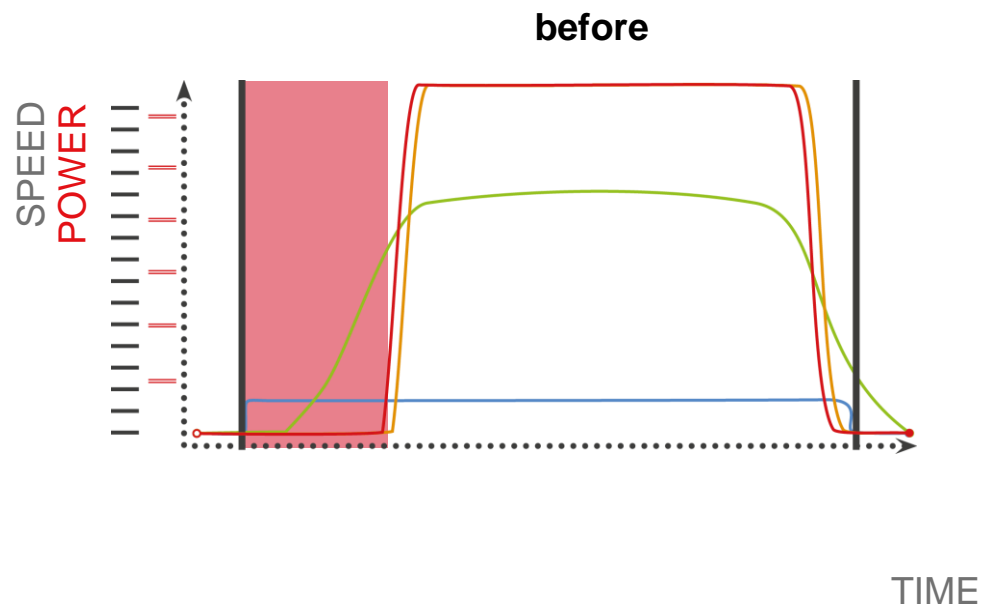
INCREASE STIFFNESS



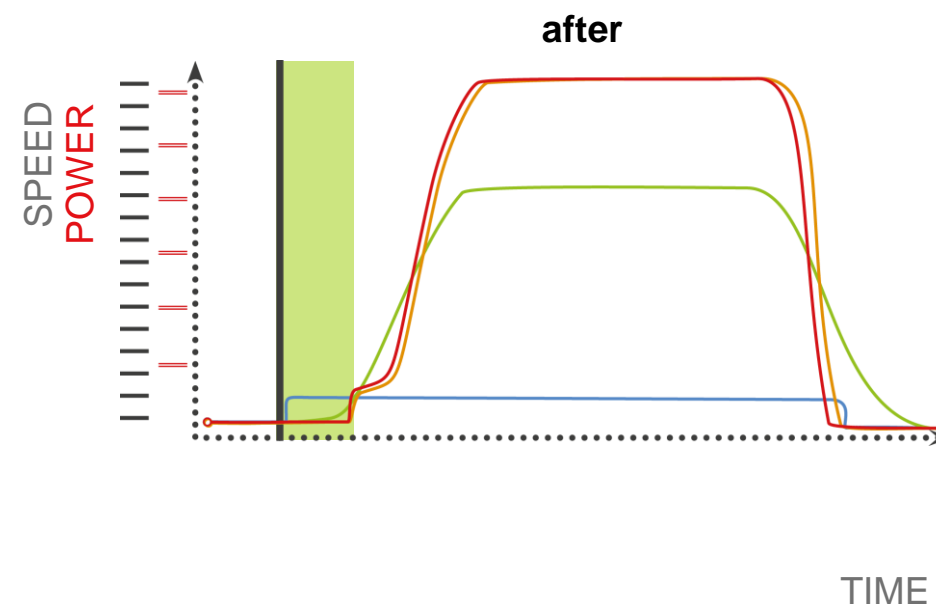
STIWA developments secure highest productivity

CONTROLLING THE ENERGY INPUT IN RELATION TO THE AXIS MOVEMENT

Constant energy → constant axis movement: time loss, insecurity,...
Control the applied energy in accordance to the real velocity of the axis



Bulge Welding direction → End crater

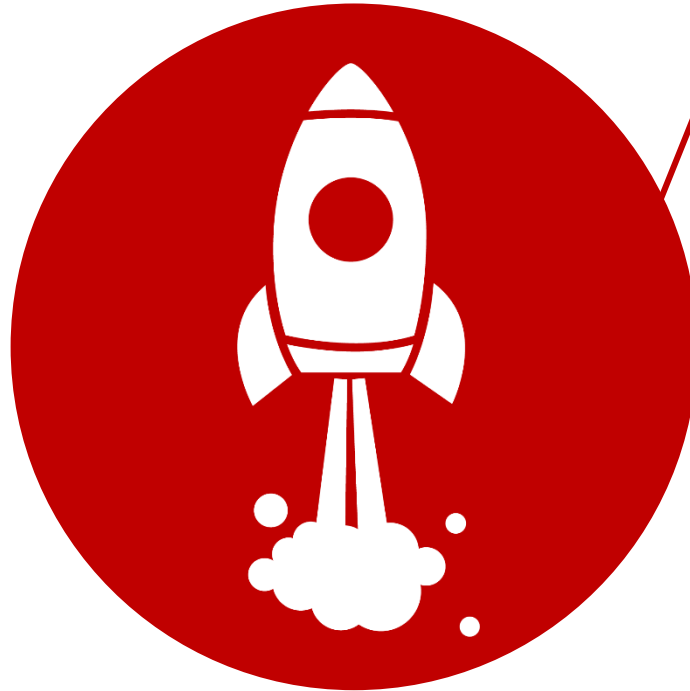


Bulge Welding direction → End crater



Improving quality and speed

CHALLENGES
FOR THE FUTURE



STIWA: Your partner for global production excellence

TECHNOLOGIES

Complex mechatronic products demand increasingly complex and difficult to be controlled technologies in automation (e-mobility)



MANUFACTURABILITY

The manufacturability of these products with a view of their competitiveness in Europe only possible with “low-cost” production, f.e. high performance automation



PRODUCTION PROCESSES

Production processes and proceedings must be developed accordingly to the products even faster. Product and process development and partly the procurement of the MAE (machines and equipment) take place at the same time → agile development



GLOBALIZATION

Globalization means worldwide standards and their monitoring = challenge (STIWA TPD)



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