

**LASER 2D CUTTING MARKET CHINA:  
WILL THE US AND EUROPEAN INDUSTRY SUFFER FROM CHINAS  
BUSINESS MODEL FOR LASERS AND WHAT MIGHT BE A WAY OUT?**

2023/10/17 | Klaus Löffler



# STATE OF THE ART LASER CUTTING IN CHINA





# INDUSTRIES BENEFIT FROM HIGH POWER CUTTING

# THE CHINESE LASER MARKET



## INSTALLED BASIS OF LASER CUTTING MACHINES

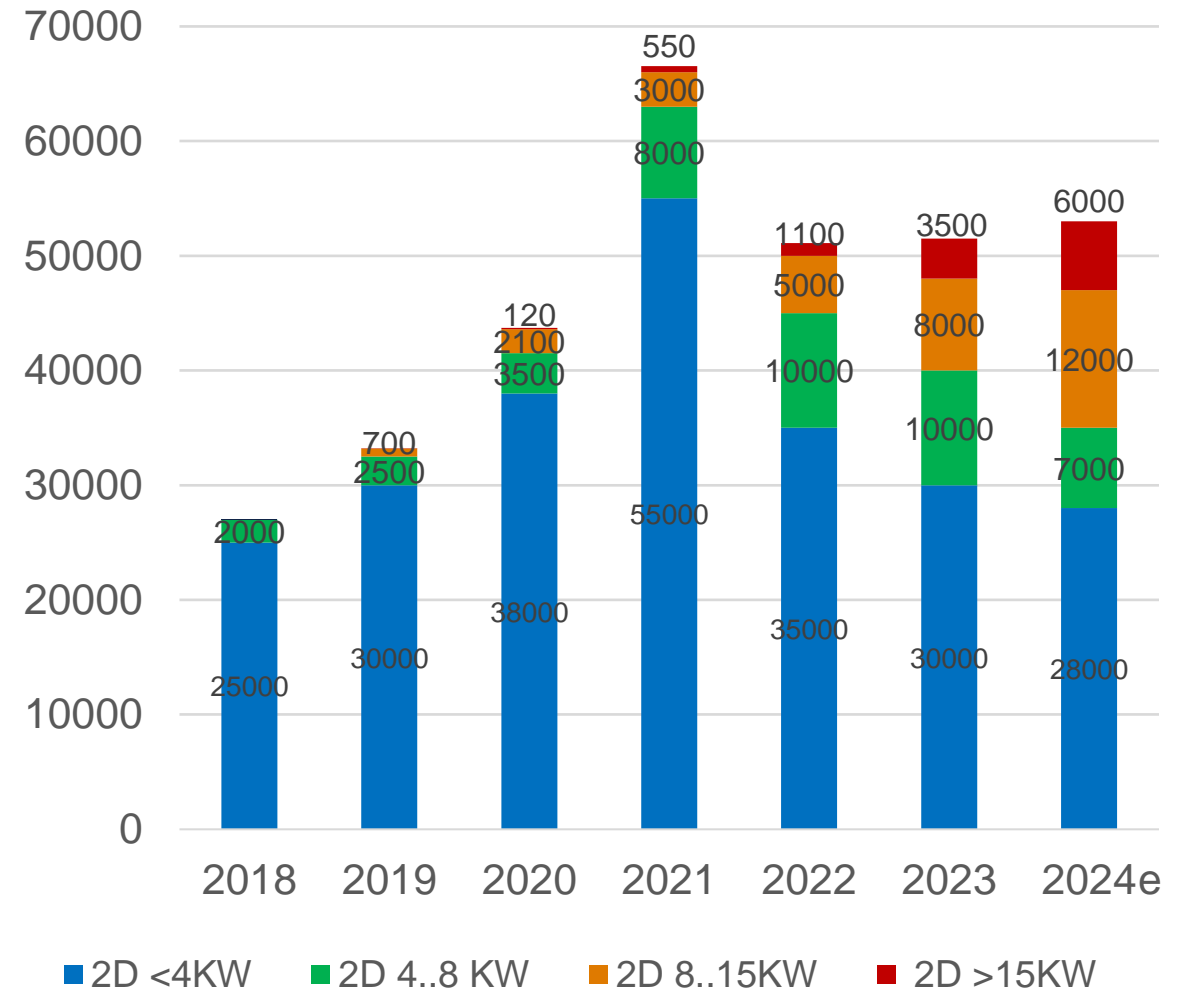
- Chinese laser market increases continuously in numbers
- High power segments grow on costs of lower power segments  
→ 12 kW laser system today cost as much as a 6 kW system last year



## INSTALLED BASIS OF PLASMA CUTTING MACHINES

- 90.000 plasma cutting systems installed
- 10.000 units of potential replacements by laser cutting machine

Chinese laser cutting systems by power

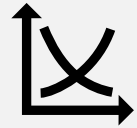


# COMPARISON OF PRODUCTIVITY: PLASMA VS. LASER



## MACHINE HOURLY RATE

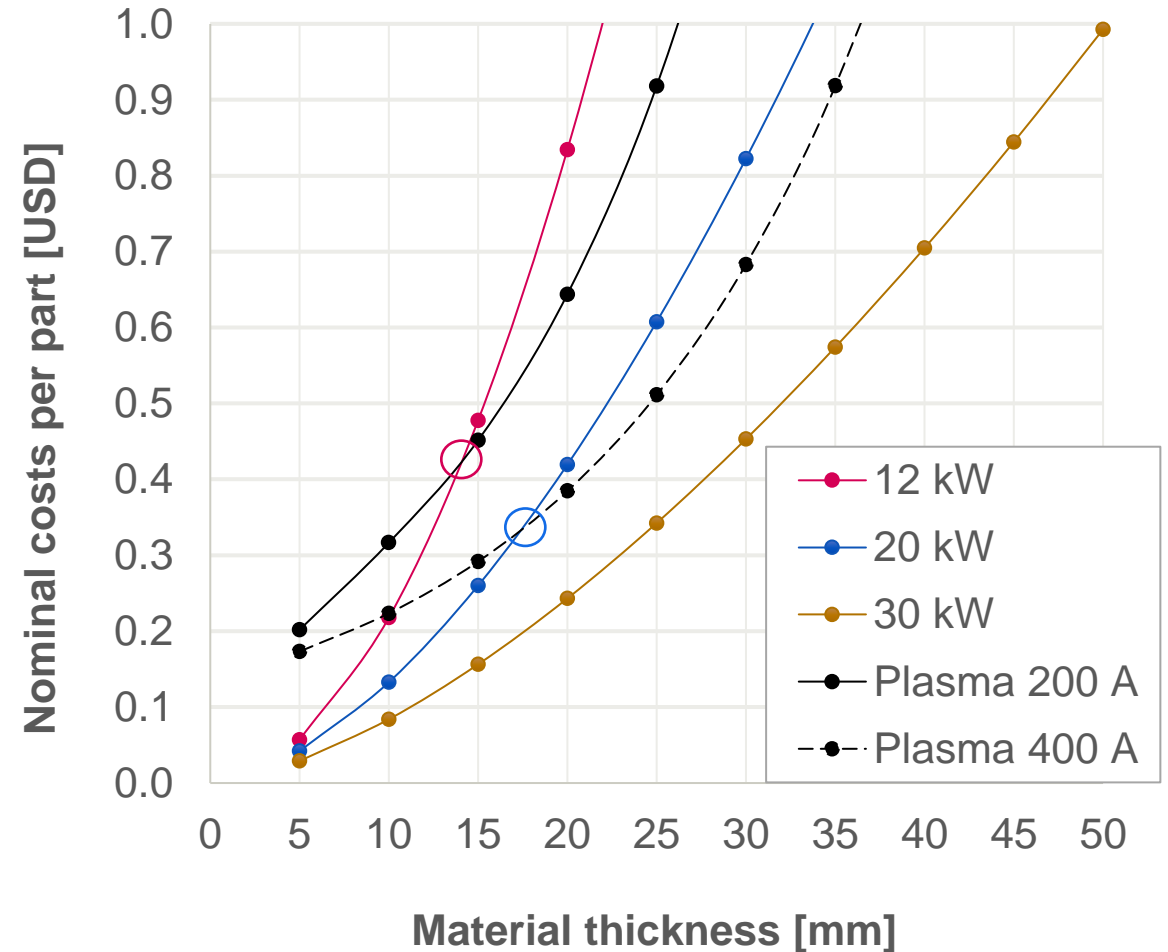
- Calculated based on European machine and Chinese laser beam source prices (incl. overseas mark-up)



## BREAK-EVEN-COSTS

- 12 kW vs 200 A: 14 mm
- 20 kW vs 400 A: 17 mm
- 30 kW: laser always more efficient

Cutting of mild steel: laser vs. HD plasma with air assist gas



# WHAT IS COMING NEXT?

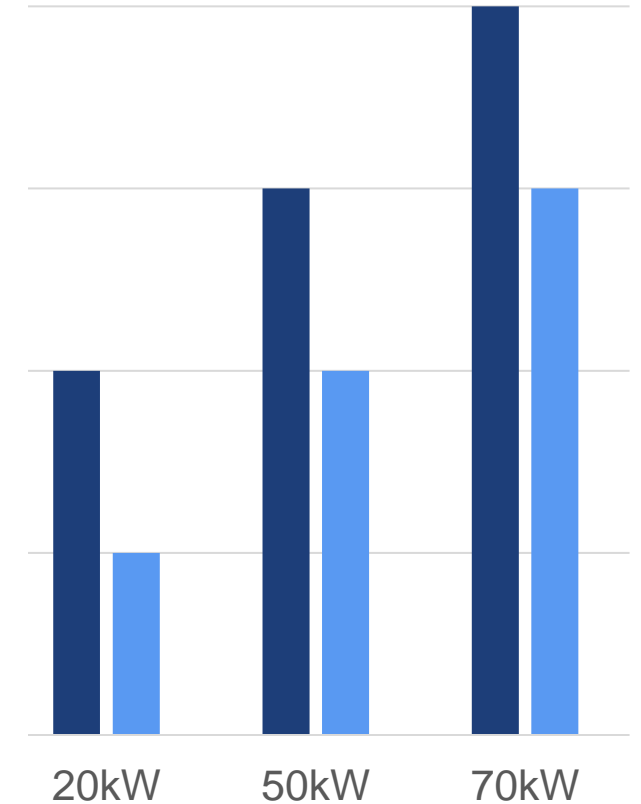


## FIBER LASER ROADMAP OF CHINESE MANUFACTURERS FOR 2024

1. Increase of power level
  2. Reduction of manufacturing costs
  3. Improve of product quality
- Reduction of beam fiber diameter
  - Enhancement of deliver fiber length



every fiber diameter in laser power

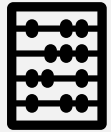


# COMPARISON PRODUCTIVITY: END CUSTOMER



## ANALYSIS

- Calculation of advantage: fictitious part costs (1 m cutting contour) based on hourly machine rate



## DATA BASIS

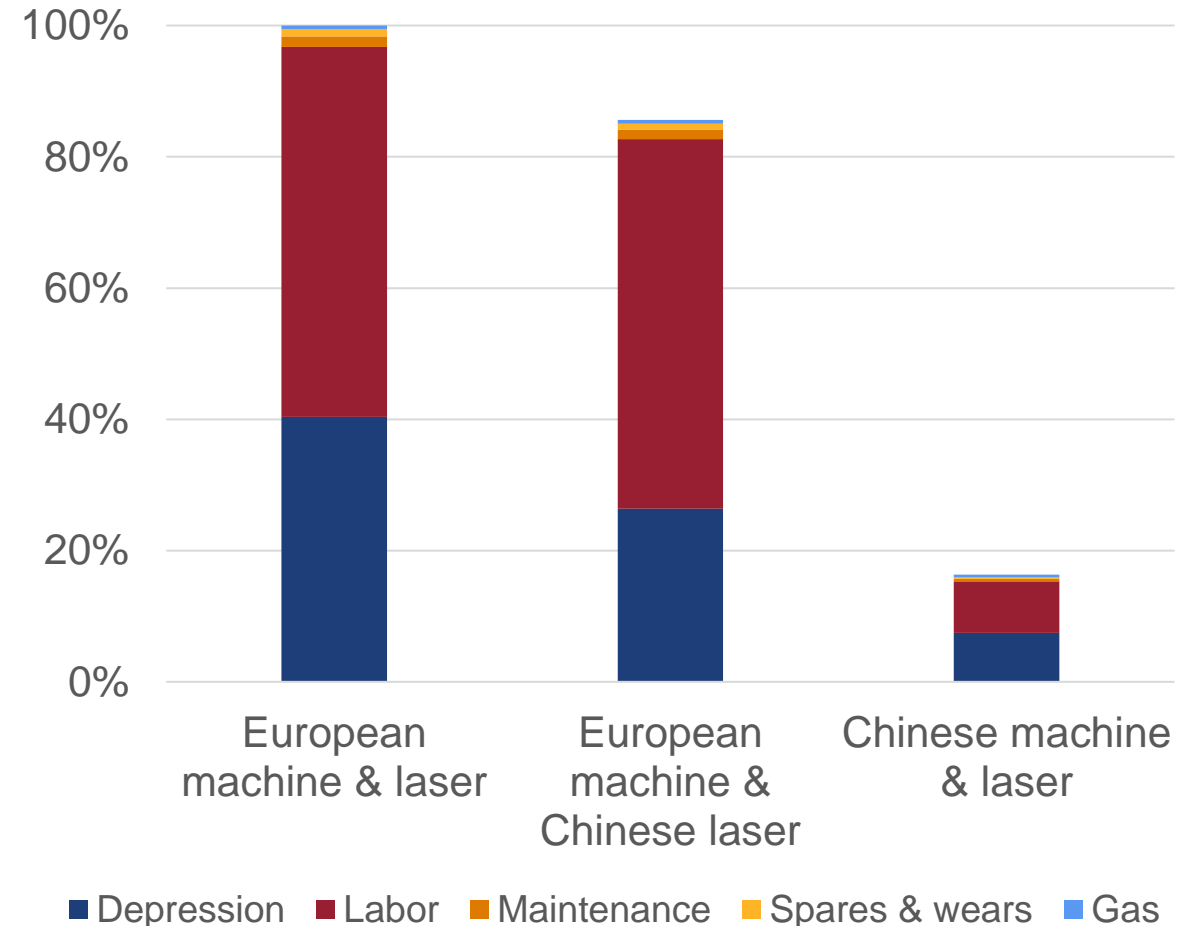
- Part: 1 m contour, w/o (de)acceleration
- Depression, labor and other contributors considered
- 2023 sales prices for laser and machine
- Chinese laser manufacturers take mark-up for oversea sales



## IMPACT: JOBS AT RISK

- Chinese laser and machine manufacturers as well as their end customers have significant advantage

Nominated machine hourly rate (mild steel cutting with air assist)





# REPLACEMENT OF CONVENTIONAL TECHNIQUES

- Conventional arc welder



- Laser welder





# REPLACEMENT OF CONVENTIONAL TECHNIQUES



## DISRUPTIVE EFFECT BASED ON EXCAMPLE OF HAND-HELD WELDER

	Arc welding	Laser welding
Cost	100-5.000 \$	10.000-20.000 \$
Spot size	0.1-4.5 mm	0.2-0.5 mm
Welding gap		1-3 mm
HAZ	large	<b>Small</b>
Safety	only on metal	<b>weld everything</b>
Flexibility	in any direction	easier in wire feeding direction
Speed	slow	<b>fast (3-5x)</b>
Strength	wider kerf	Alu, SS
Polishing afterwards	mostly required	<b>not necessary</b>
Pre-/post-cleaning Training required	Additional Month	included (pulsed) <b>Hours</b>



IPG-LIGHTWELDTM1500 XC



MAX X1-MFSC-1500W



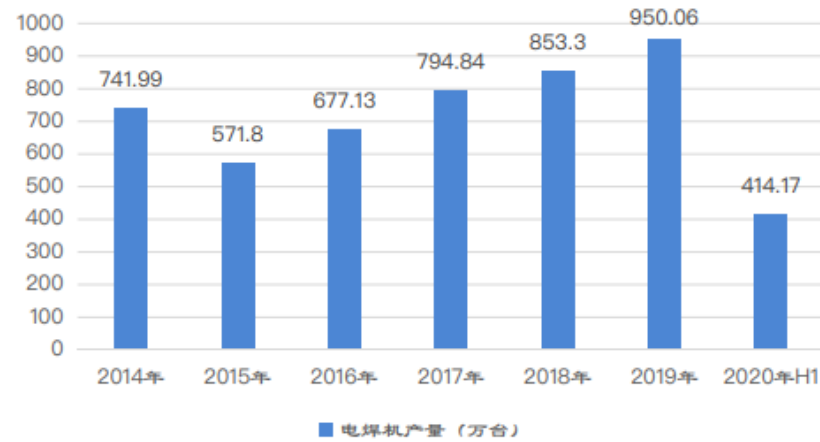
RECI FCA1500W



GW A1500W

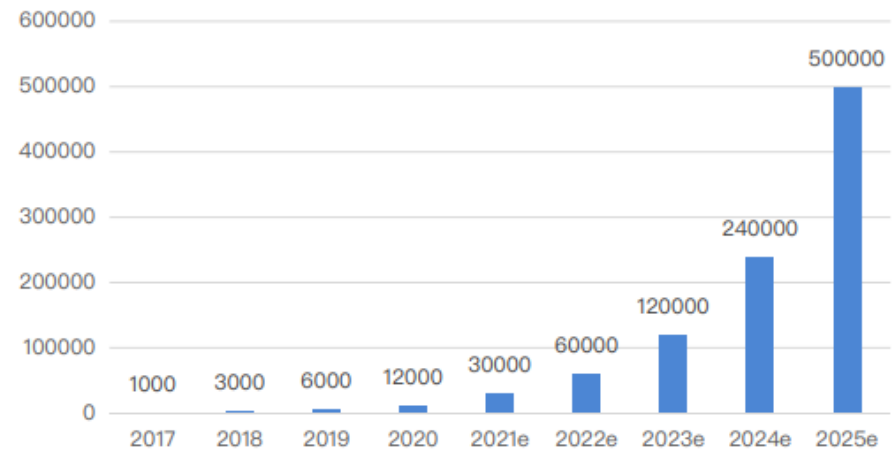
# REPLACEMENT OF CONVENTIONAL TECHNIQUES

Arc welder market in China, 2014-2020 (in Millions)\*



- 600+ arc welder manufacturers in China
- ~10M arc welders sold in China

GW's prediction in 2021 on portable laser welder market trend



- Since 2017, YoY growth over 100%.
- Estimated sales in China between 100k to 200k units in 2023
- 500+ laser welder manufacturers in China
- By now, all major Chinese manufacturers have got into portable laser welder business in some degree

\* data from Chinese Welding Association



# WHAT DO WE NEED TO DO?



Do nothing  
And wait

Use Chinese Lasers in  
European Machine Tools

Buy Chinese  
Machines

Use Chinese Laser  
Modules and build  
advanced Lasers

Support Chinese  
Manufactures to take over  
the market in Europe

Stay ahead of the  
Industry 4.0: Zero  
Defects / 100% Quality

Stay ahead by  
development of advanced  
laser processes

Stay ahead by  
selective cooperation  
with Chinese Mfg.

Make low cost  
systems available  
for „Good enough“

Develop advanced system: Adaptive,  
Self-operating, easy to manage, light-  
out shifts, down-time free

## WHAT ARE OUR OPTIONS?



**M PRECITEC**

## **WORKFORCE DEVELOPMENT – WHAT DOES THE INDUSTRY NEED**

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# WORKFORCE DEVELOPMENT – WHAT DOES THE INDUSTRY NEED?

1. We need great scientists: Photons are the future  
Noble Price Winners should inspire our vision
2. We need more than just knowledge about lasers  
Energy storage, Artificial Intelligence, Intelligent use of Photons Beam Shaping, Sensorsystems
3. Waiting until an applicant calls is too late

Example:

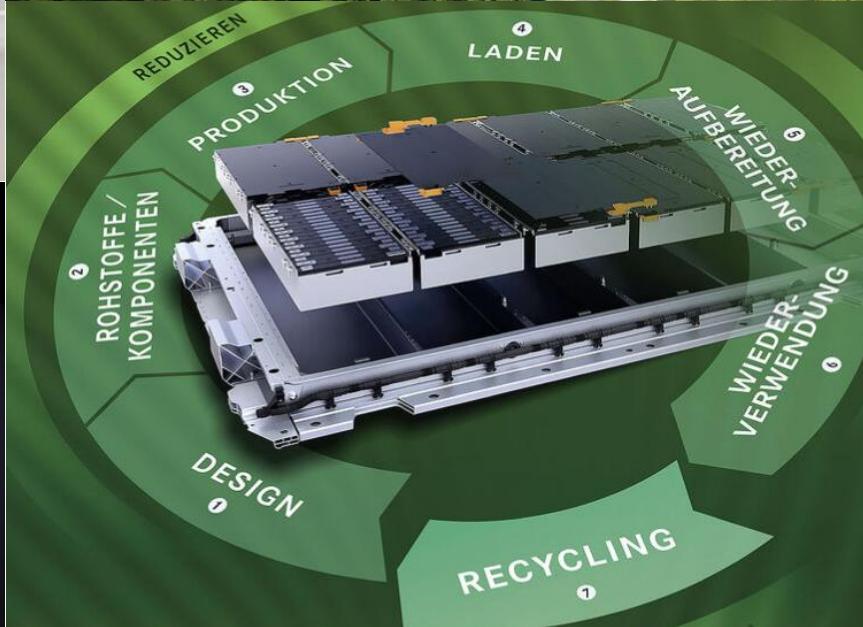
Synenergy Valley

Team approach, Competition is old school, joint motivation and attracting the kids











# LOOKING FOR SOFTWARE ENGINEERS?





## Young Innovators:

Home Base: Unimog Museum => Excitement

- Driving experience to the extreme
- Autobody shop of Unimog
- All labs and machine shops of our partners



**Wanted**



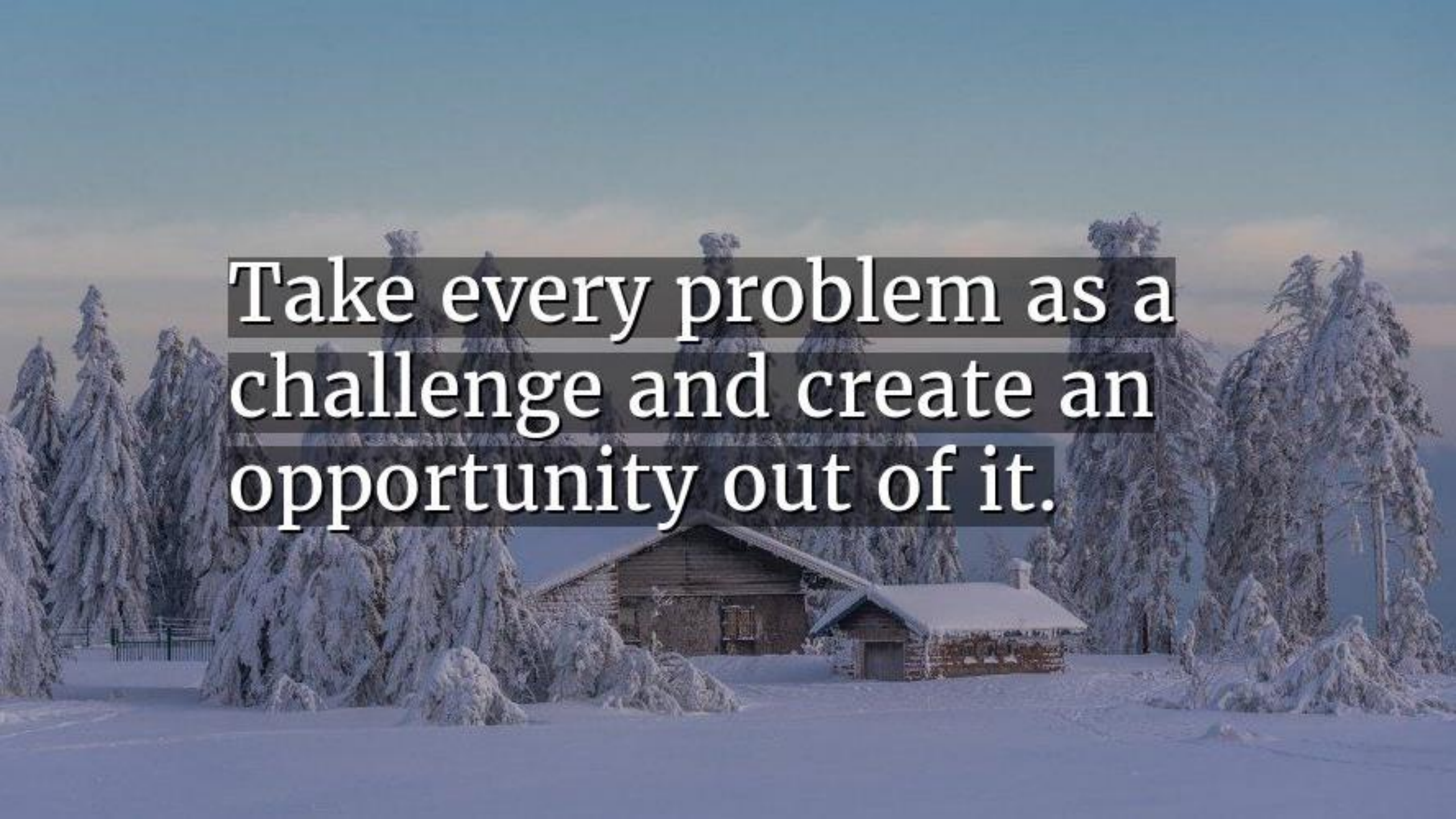
# SYNERGY VALLEY

Young Innovators: Kids with a Dream



What do we offer:  
Robo-Cup Team  
IT-Teams  
Electronic Team



A serene winter scene featuring a rustic wooden cabin with a snow-laden roof, nestled among tall evergreen trees heavily coated in snow. The ground is a smooth, white expanse, and the sky is a pale, clear blue. The overall atmosphere is peaceful and quiet.

Take every problem as a  
challenge and create an  
opportunity out of it.





Ready for a new challenge?

Great Global Team,  
Working with Lasers, AI, Additive, ..

Development, Productmanagement,  
Technical Consultants, Sales,..

Talk to us: [k.loeffler@precitec.de](mailto:k.loeffler@precitec.de)

