

LASER SOLUTIONS YOUR ROAD TO SUCCESS

AGENDA

- Lasers
- E-mobility
- Industry 4.0
- Safety
- Prices
- AI & Graphene

TRUMPF





MARKET



IPG which saw its China laser revenue drop 23.8% from Q2 2018 to Q2 2019



Laser revenue for military, government, and defense was up strongly, over 28%, mainly driven by directed-energy weapon developments in the U.S

RAYCUS



HAN'S



LUMENTUM



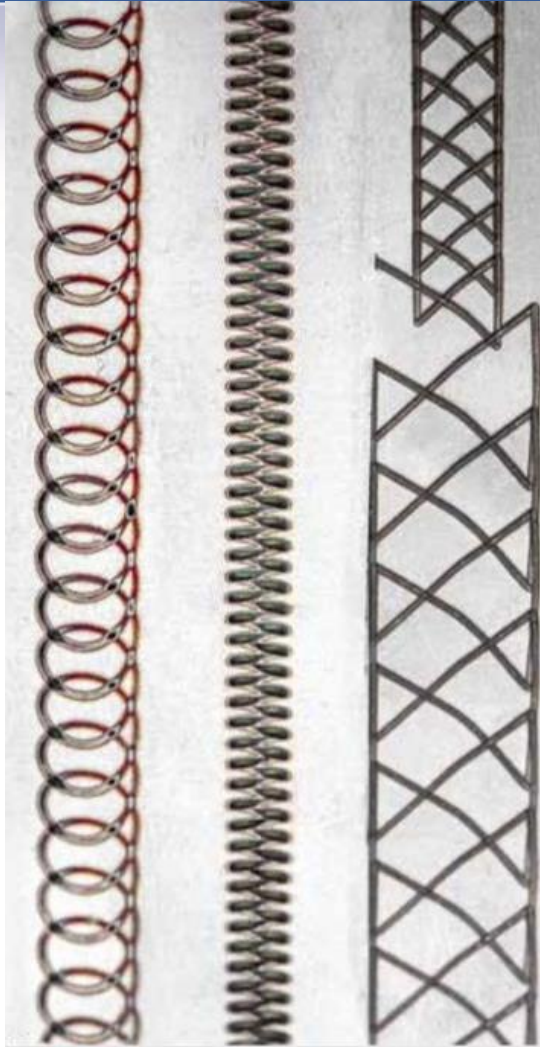
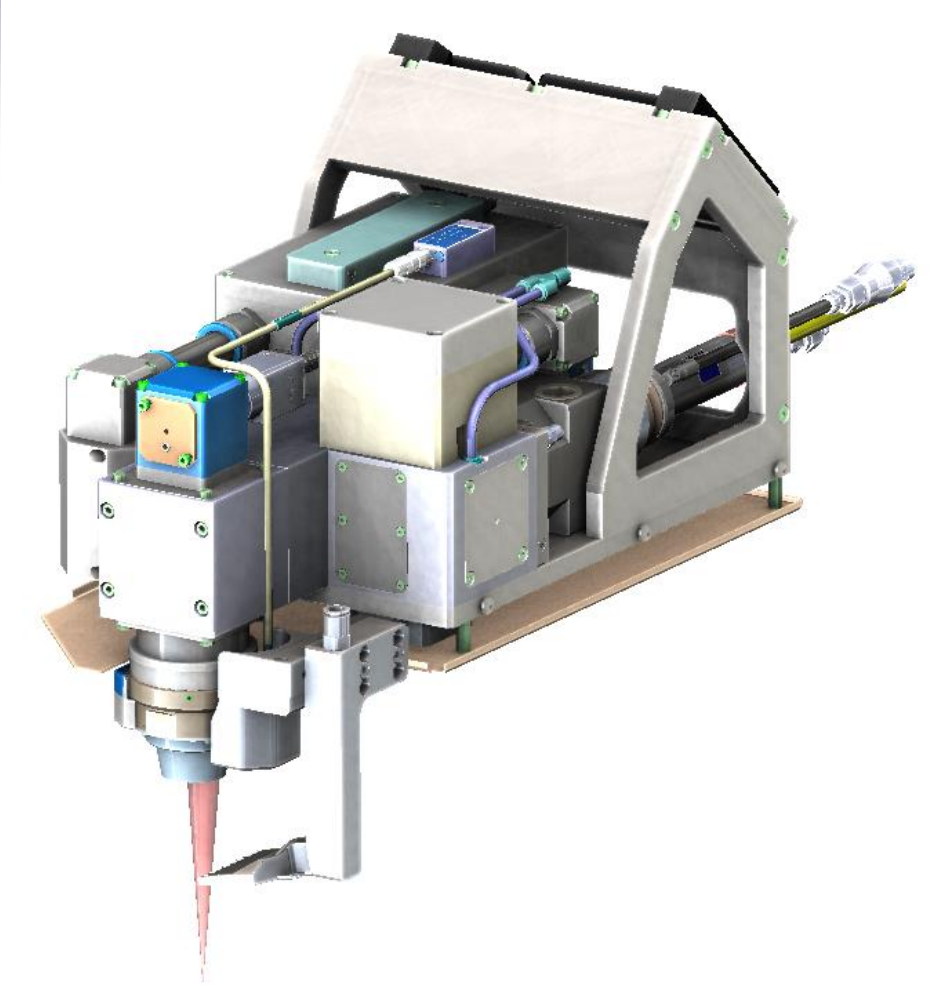
OEM PRICE

” 1 kilowatt fiber laser modules for \$7500, reducing to just \$5000 over two years.”

FIBER SWITCH



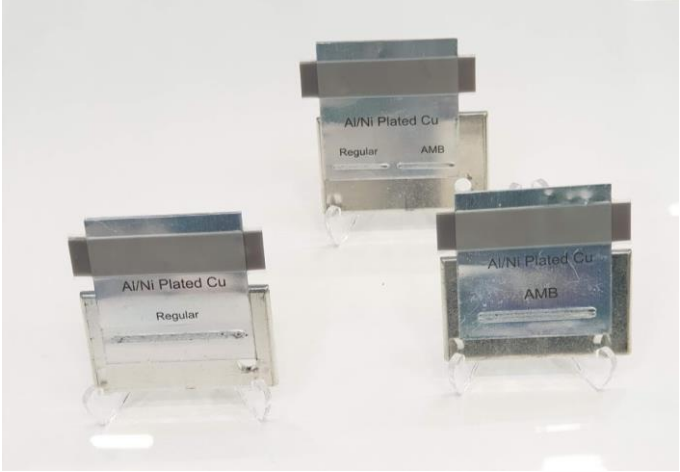
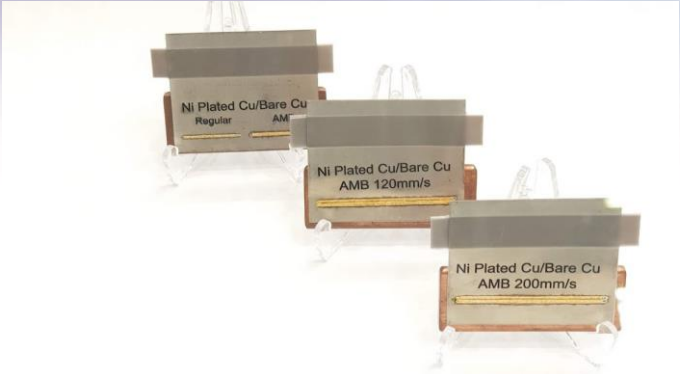
FOCUS CONTROL



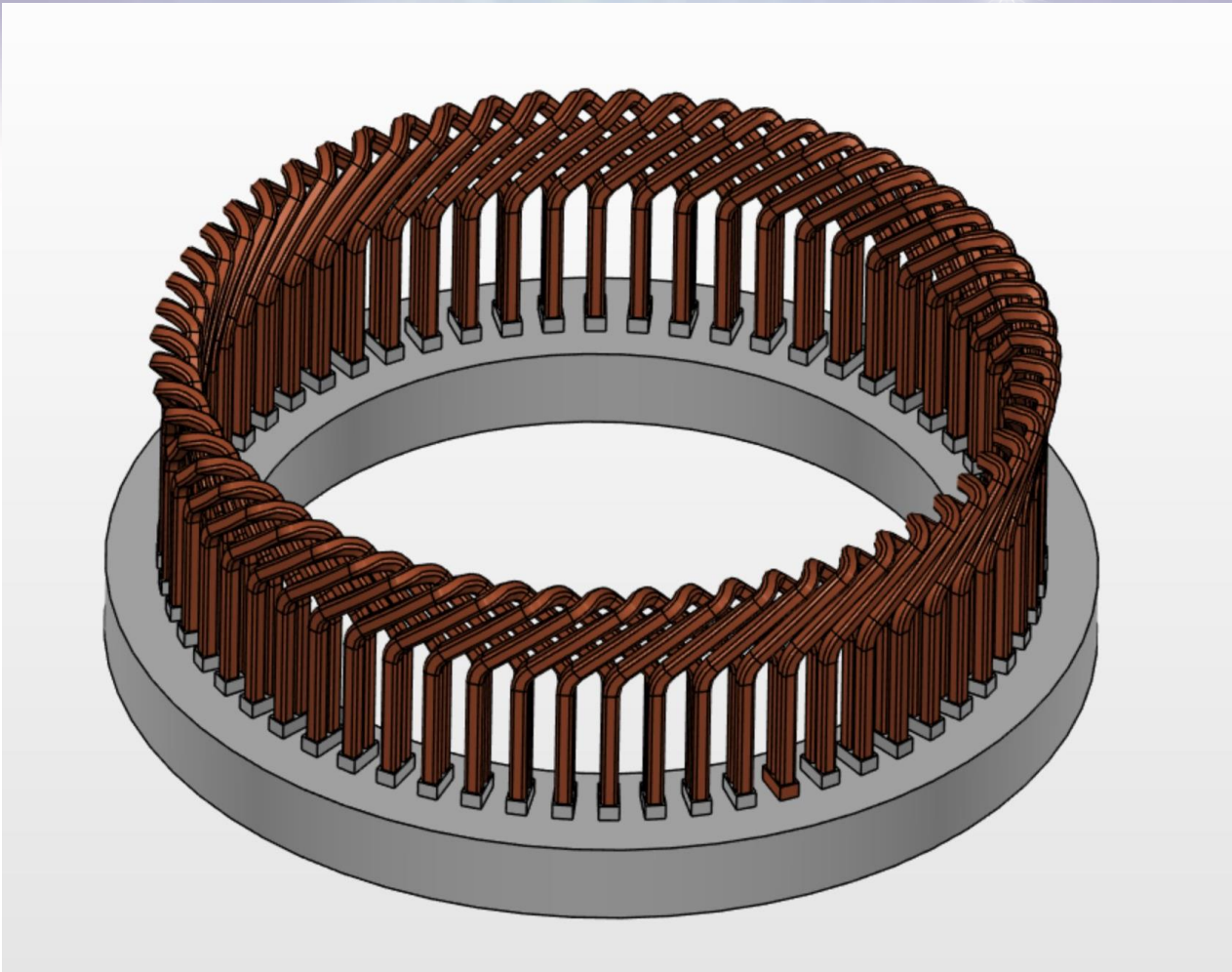
E-MOBILITY



NEW MATERIAL COMBINATIONS



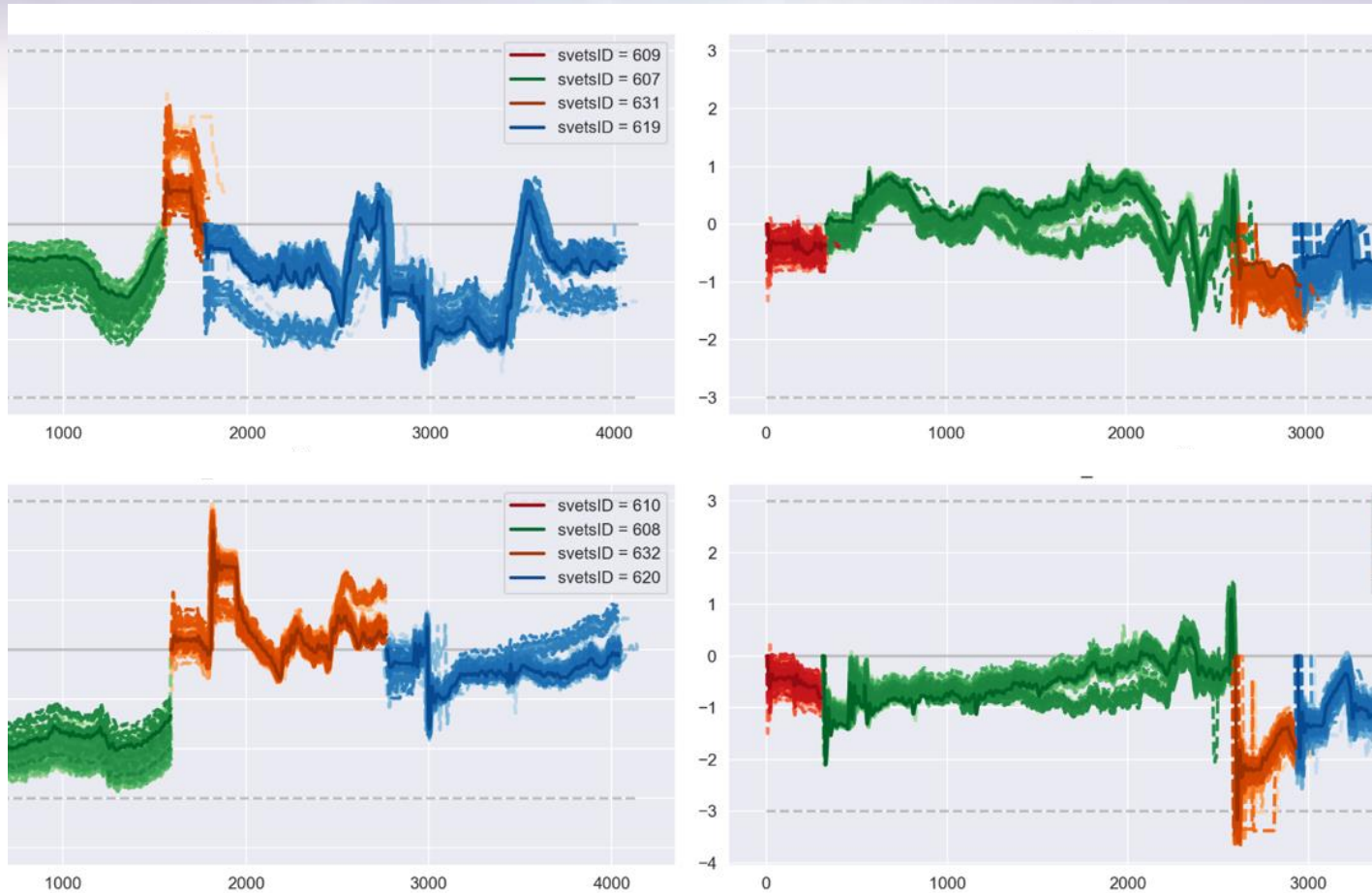
HAIR PINS



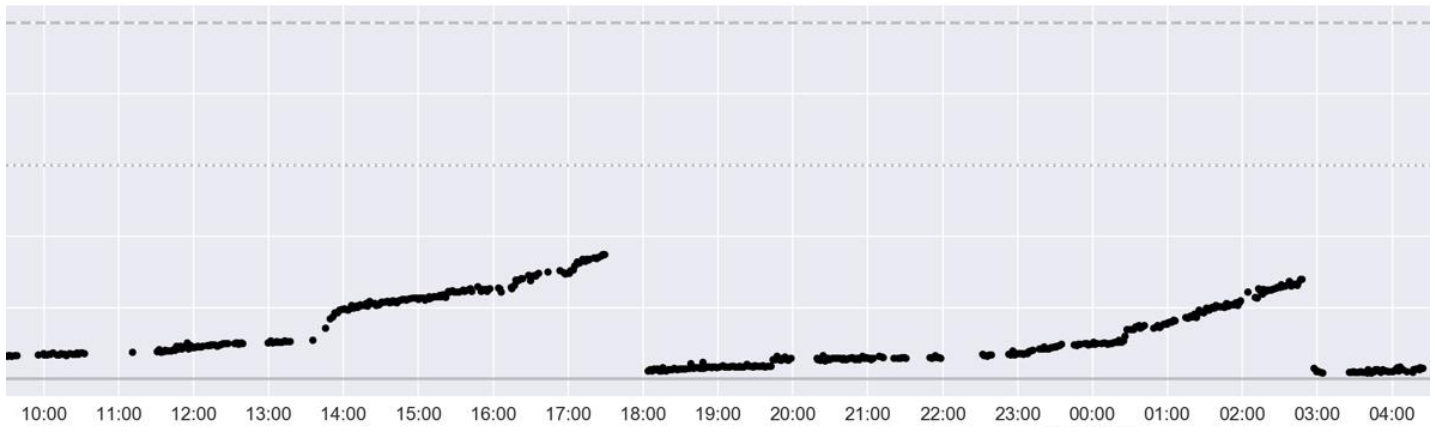
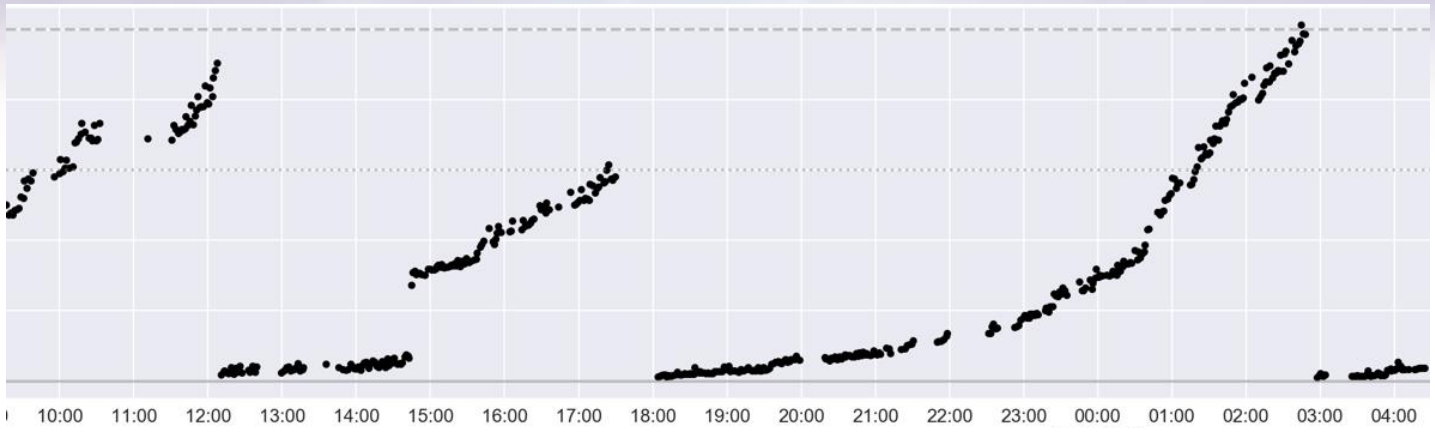
INDUSTRY 4.0 - QUALITY

- Car roof
 - 60% OK
- Trunklid
 - Design
- Gears
- E-mobility
 - 100%

INCOMING MATERIAL



MAINTENANCE



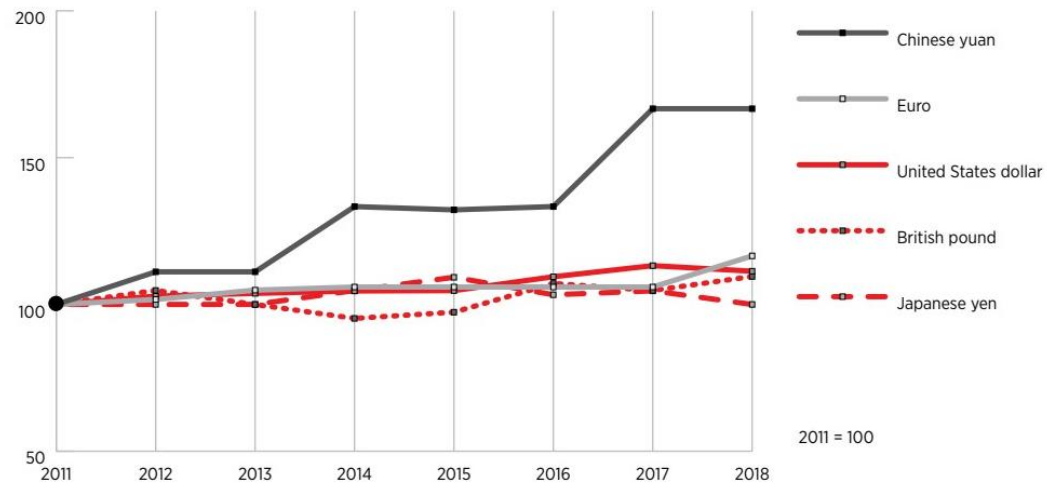
STANDARD



OPC UA™

SPIES SALARY REPORT

Change in Median Salaries, 2011–2018, Main Currency Groups



Growth in Median Salaries, 2011–2018, Main Currency Groups

	2011 Median Salary	2017 Median Salary	2018 Median Salary	Growth 2017-2018	Growth 2011-2018
Chinese yuan	¥90,000	¥150,000	¥150,000	0%	67%
Euro	€ 47,200	€ 50,000	€ 55,000	10%	17%
United States dollar	\$106,000	\$120,000	\$118,000	-2%	11%
British pound	£42,000	£44,000	£46,000	5%	10%
Japanese yen	¥8,000,000	¥8,370,000	¥8,000,000	-4%	0%

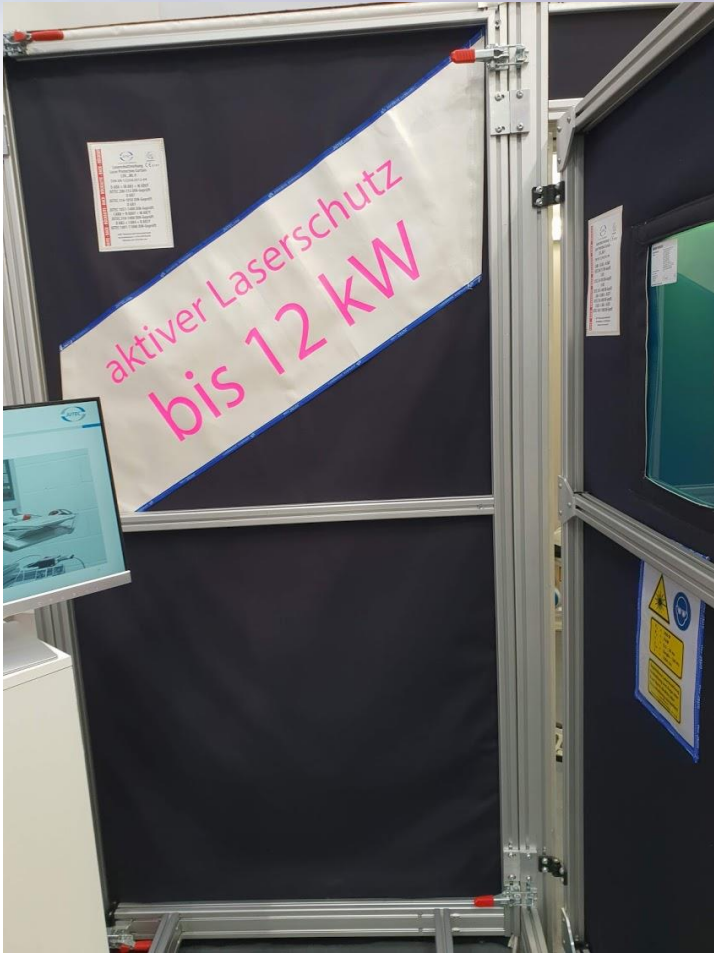
SAFETY



SAFETY



ACTIVE SAFETY



LASER SPY



SUMMARY

- Cost
 - CAPEX closing in on MIG/MAG/TIG
 - OPEX lower vs MIG/MAG/TIG
 - TCO better for laser
- New materials
- Industry 4.0
 - Crash
 - Preventive
 - Predictable
- Market
 - Local production



PERMANOVA

Lasersystem ab