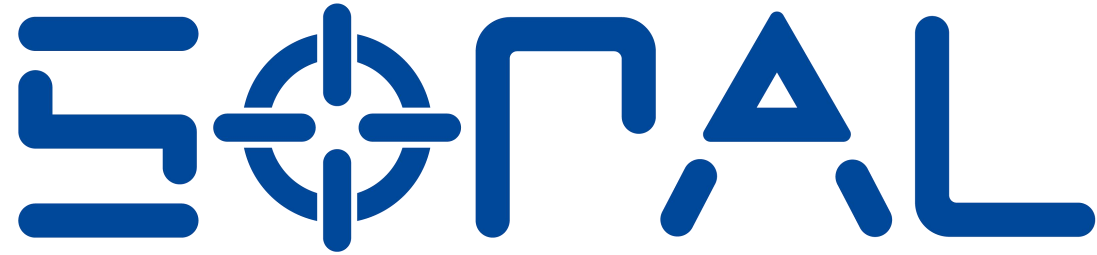




1 Introduction

2 Portfolio

3 Case Sharing



S : Search - Searching for the best solution within the bounds

O : Orientation - Focusing on our developing target

P : Passion - Passion begets perseverance

A : Anchor - Anchoring development with team work

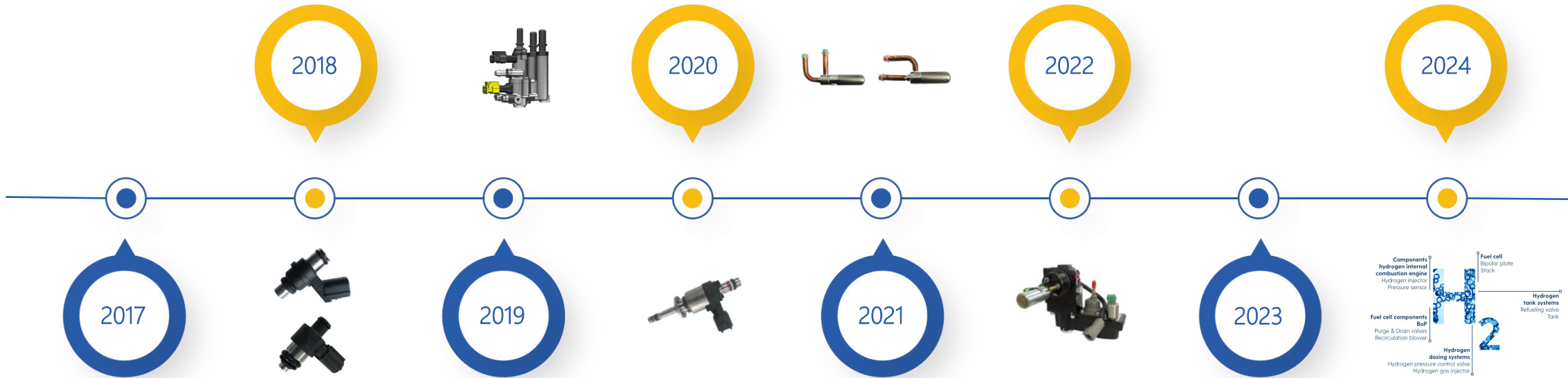
L : Lead - Leading the technology innovation in our industry

- Delivered 2 motorcycle fuel injector assembly lines and several testing special machines.

- 35Mpa GDI special machines R&D.
- 5 patents acquired.

- Delivered 1 LNG fuel injector automatic assembly line, and 1 set of PFI lab. Special machines.
- ISO9001 approval.

- Initial High-speed Solenoid Valves Automatic Production Line Invention Patent in China.
- Partnership with Sonplas.
- Hydrogen and methanol injection special machine R&D.



- Sopal inception.
- Focusing on high-speed solenoid valves special machine.

- High-tech Enterprise Award, 20 patents acquired.
- Delivered 2 fuel injector automatic assembly lines.

- Delivered 2 PFI assembly lines and testing machines.
- Delivered 1 assembly line for HVAC EEV.

- Delivered 2 PFI automatic assembly lines.
- Specialized and New SME Award, Advanced Intellectual Property Award acquired.



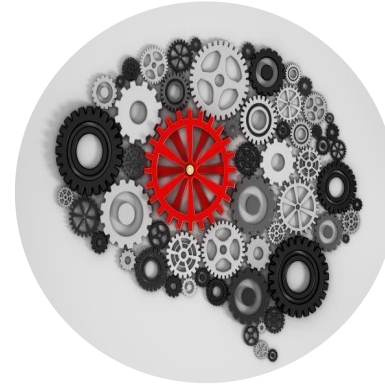
Vision

To be a competitive innovation force of special machine in multi-fuel advanced powertrain system.



Mission

Empowering our partner by cutting-edge technology throughout the entire product life cycle with our independent R&D and innovative integration.



Know-how

30+ Patents on high-speed solenoid metering valves automatic special machine.



Turn-key

Turn-key solution for solenoid valves assembly line and testing special machine.



PFI/GDI Injectors



LNG/CNG Injectors



Methanol Injectors



AADI Injectors



CR Control Valve



ALD Valves



We integrate the complete processes from labeling, assembling, EOL testing and MES in a Turn-key solution for critical parts in fuel injection system, thermal control system, suspension system and has extended to sensors and controllers.



EEV for HVAC and Thermal Control



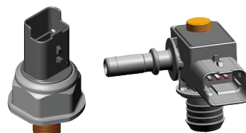
Hydrogen Valves



ECU & MCU



Temp. Sensors



Pressure Sensors



Electromagnetic Valves



Stiffness Valve



Proportional Valves

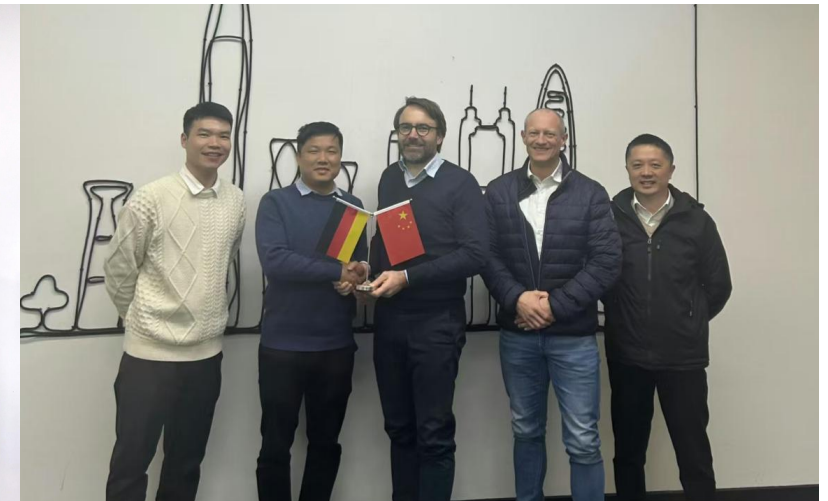


Bullet Valves



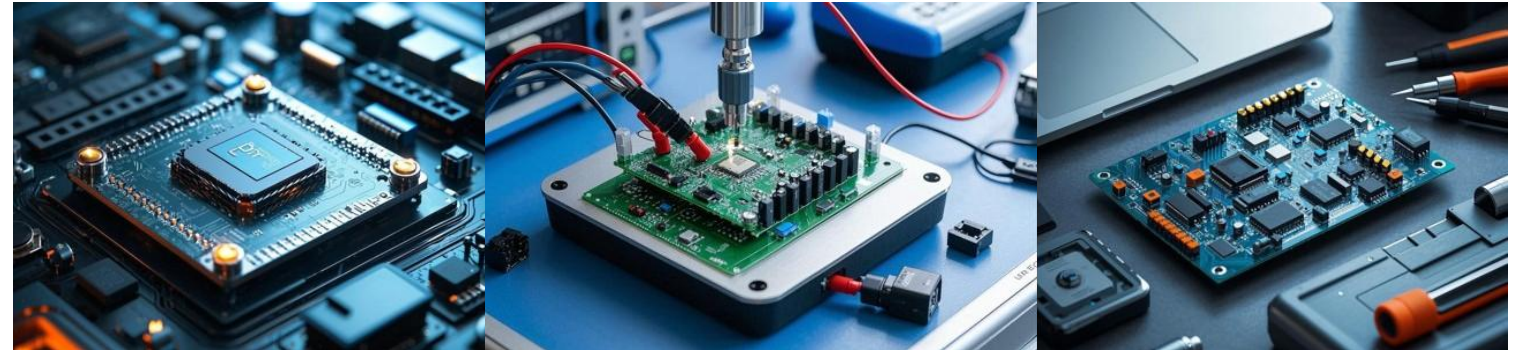
Strategic Partnership Sonplas

Sonplas was found in 1993 in Straubing, Germany, employs more than 390 highly motivated employees. And has delivered more than 1,000 special machines worldwide to renowned customers from OEMs and their suppliers, which is a hidden champion in the fuel injection special machines industry. Through teamwork we can best tackle the challenges of our time, secure new projects and support our customers.



System Integration

- Process Definition
- Mechanical Design
- Software Integration
- Commissioning and testing

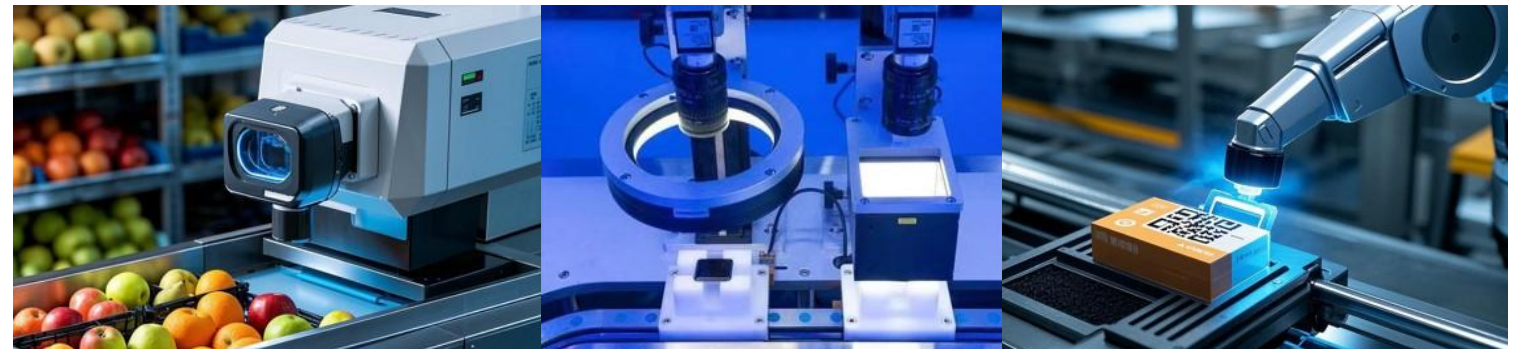


Laser Application

- Non-contact Precise Measurement
- Laser Marking, Welding, Cleaning etc.

Machine Vision

- Visual Sorting
- Defect Detecting
- Puncture Positioning
- Identification and Traceability





Electrical Parameters Testing

- Response Characteristic Testing
- Electromagnetic Force Testing
- Solenoid Coil Characteristic Testing

Fluid Testing

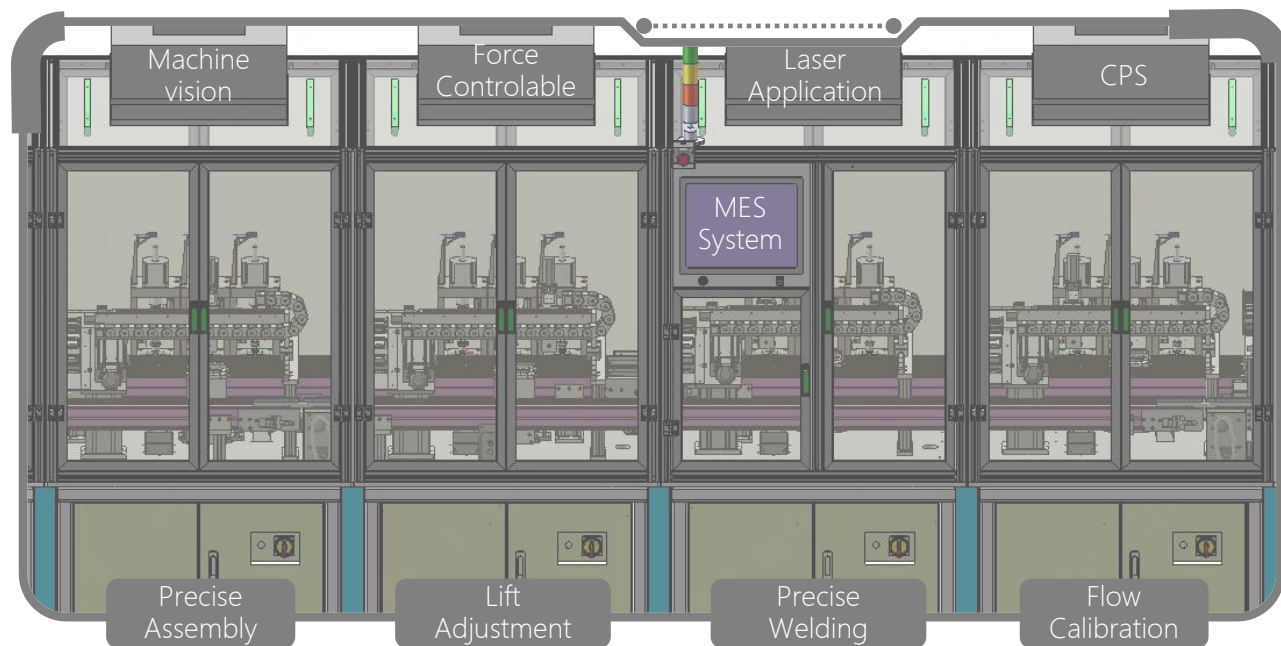
- Flow Characteristics Measurement
- Spray Particle Measurement
- Valve Operation Testing
- Patented Constant Pressure System



Precision Assembly

- 0.1 μ m Distinguishable Control
- 1 μ m Propelling with Servo Control
- Profession Architecture Design
- Patented Control Algorithm

Multi-fuel Advanced Powertain Injector Automatic Production Line



Displacement servo control, propulsion capacity $1\mu\text{m}$



Laser micrometer, resolution $0.1\mu\text{m}$



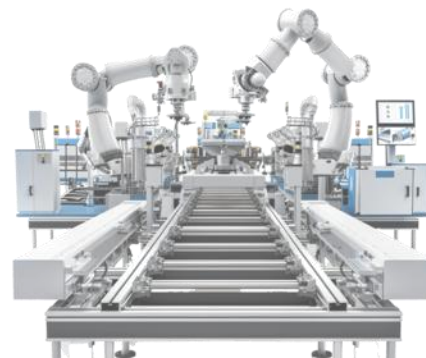
Professional architecture design



※ Patented software control algorithm



※ Patented high-speed solenoid valves assembly line



Automatic Precise Testing Special Machine

With independent R&D and collaborative innovation, we deliver special machine for critical parts of fuel injection system, thermal control system, suspension system and control system to our partners, and consistently support them during the whole product life cycle.



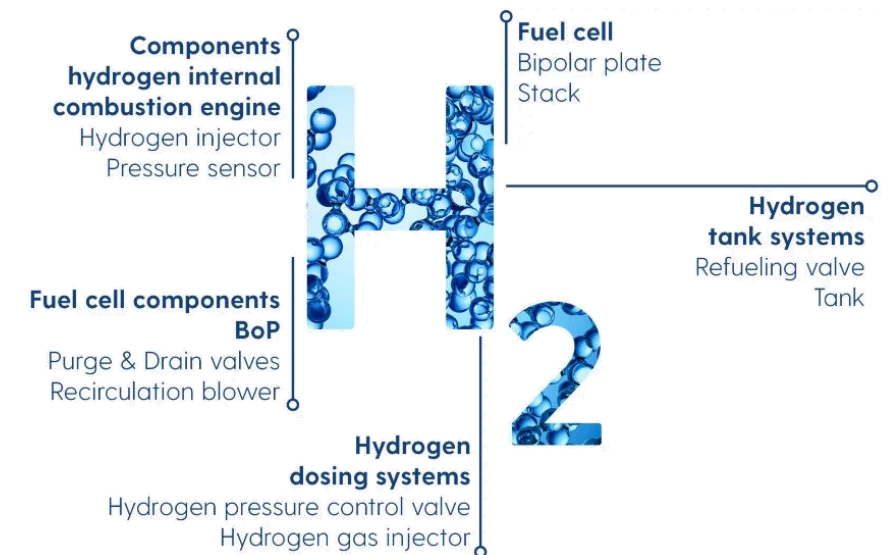
Hydrogen Test Bench

Sonplas

- Modular design, complete solution test bench with isolating container.
- Wide range of functional tests for hydrogen ICE and Fuel Cell BoP components with real fuel (Flow Rate, Flow Characteristics, Function Tests, Leak Test, Pressure Cycling Test, Durability Test).

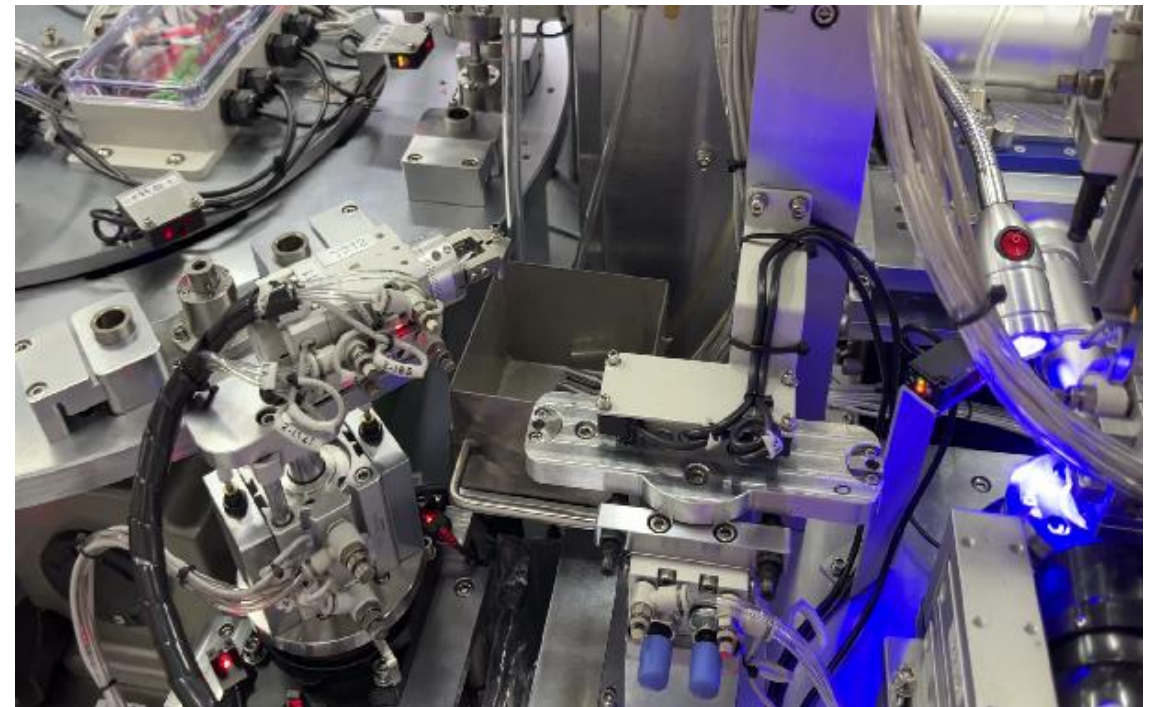


- 1 Testing range: 0.3 ~ 30000mg/stroke
- 2 Max. pressure: 300bar
- 3 Max. hydrogen flow rate: 2g/s
- 4 Max. Injection per stroke: 14 times



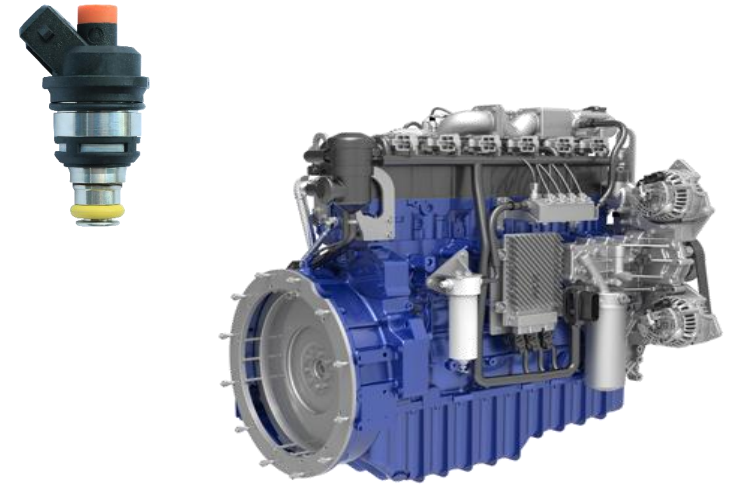
PFI Injector Automatic Production line

- Patented automatic production line functioned with precision assembling, welding, calibrating and testing for PFI injectors, integrated with MES for full process traceability and analysis.
- Cycle time: 7s
- Project designed for OEM and injectors have been supplied to Russia market.



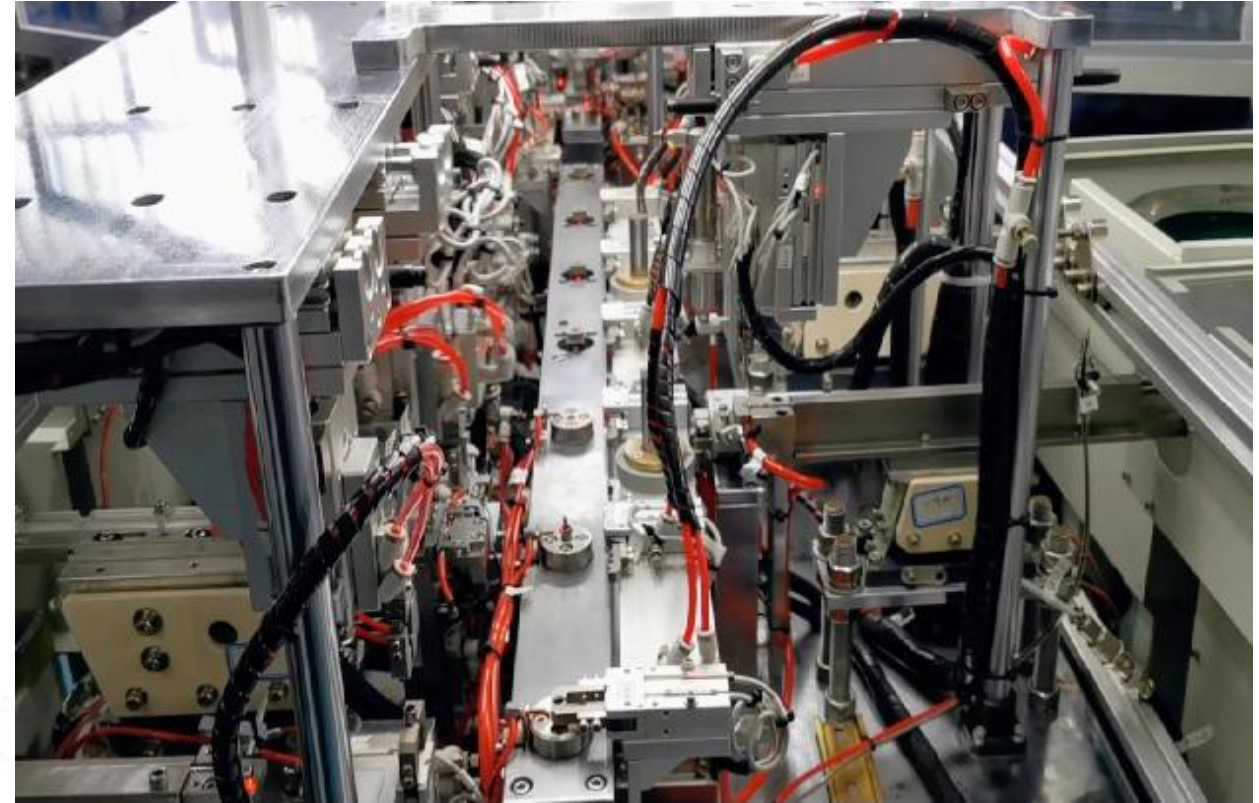
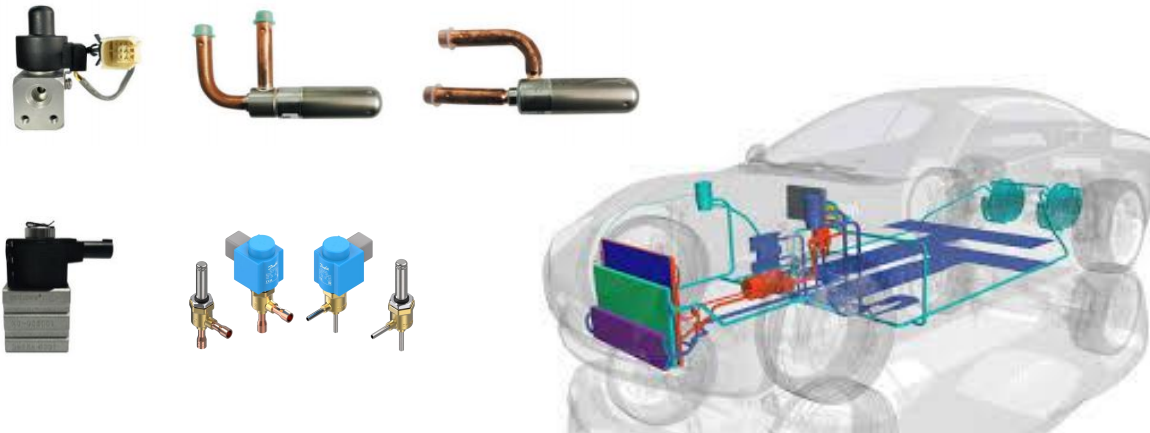
LNG/CNG/H2 Injector Production Line

- The production line for LNG/CNG/H2 injectors equipped with advanced servo press-fit system, precise flow meters and laser machines to assemble, weld and calibrate the injectors in semi-automation, and with MES to supervise the production process and to analyze the data for production upgrading.
- Project designed for aftermarket esp. for commercial LNG engines.



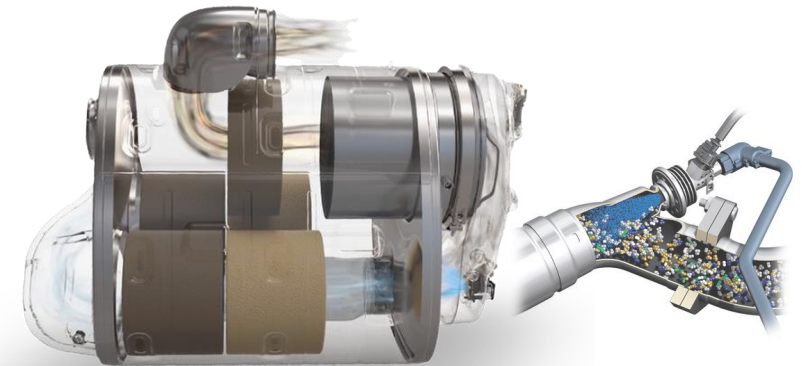
EEV Production Line

- Turn-key solution including product design, process design and manufacturing and quality control system for EEV in HVAC and thermal control system.
- Cycle time: $\leq 15\text{s/piece}$ (semi-automation)
- Annual Production Capacity: 600,000 ~ 1,200,000pcs



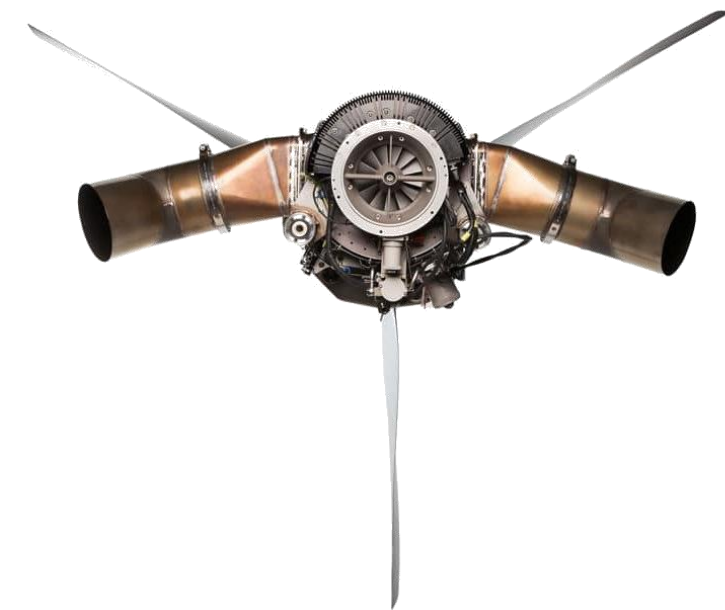
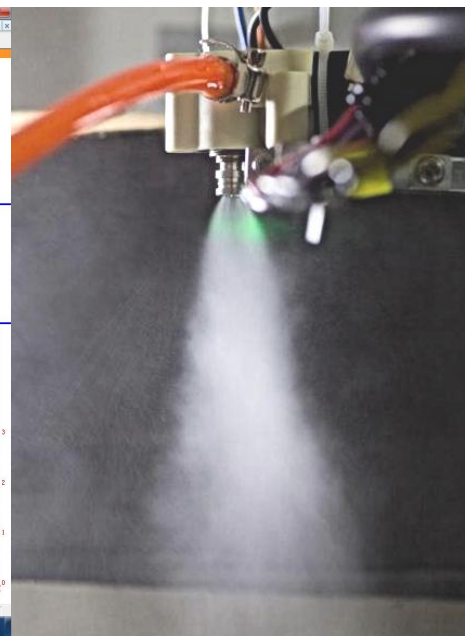
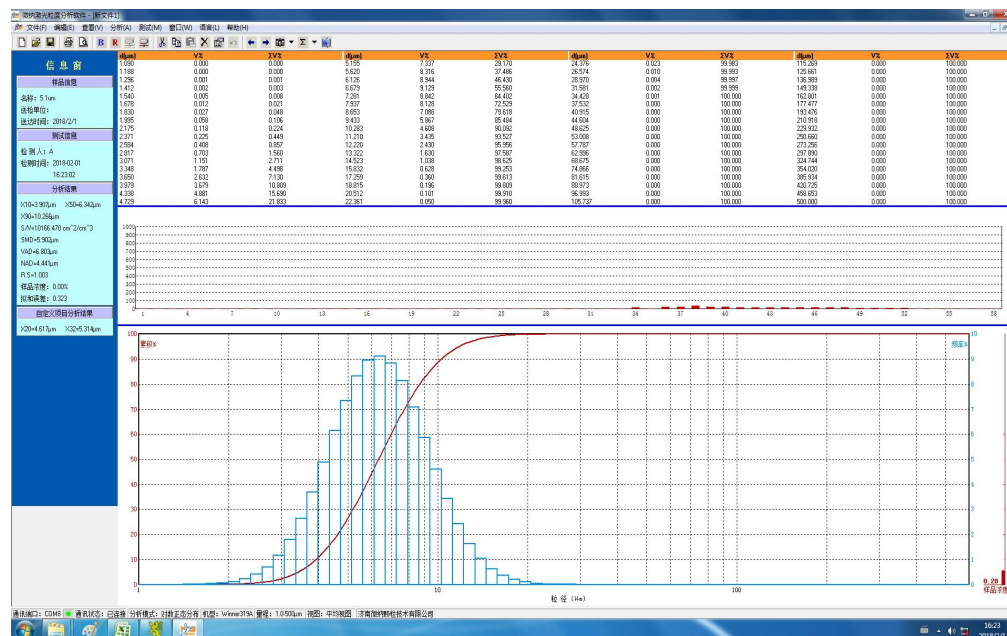
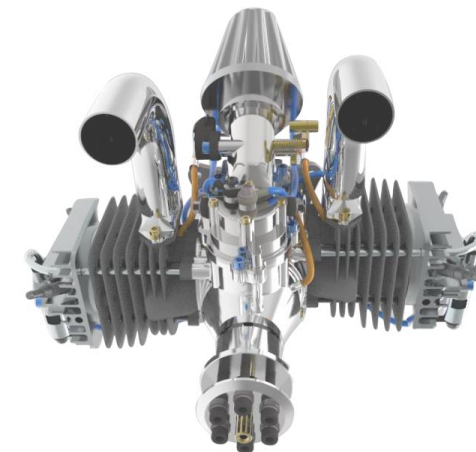
SCR Injection Sytem

- Semi-automatic production and testing machine for SCR urea injector of commercial vehicle aftertreatment, applying to Euro V, VI and Euro VII is under R&D.
- Project designed for OEM and SCR injectors have been suppling to Yuchai Machinery.



Air Asistant Direct Injection Sytem

- Innovative AADI injector with unique Rafar tunnel design to atomize the diesel or heavy oil and directly inject into two-stroke chamber for effective combustion, applying to small civilian UAV.
- Project under engineering testing process.



Automatic Potato Sorting Station

- With the application of machine vision and X-ray detection, we integrate an automatic sorting station to sort out and grade into requested classifications after clearing process.
- 5 Ton/Hour
- Applicable to other agriculture sphere.

