

MOVAC New Vision for Waterjet Technology

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Most Valuable Concept

Nov. 29th 2022

MOVAC LTD / FE-MOVAC NAGOSHI

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Established 2007

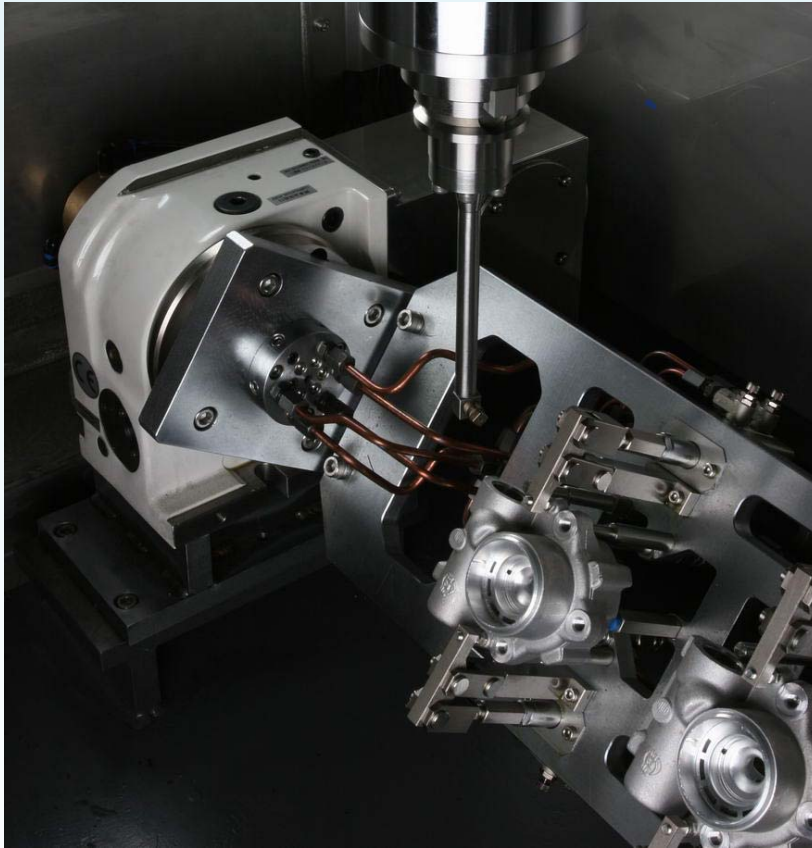


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5-Axies CNC Deburring and Washing Center



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Fixturing with Precision
Servo Positioning



ATC Tool changer

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7,000 PSI Pumping Sysem with Multistage
Filtration System



FANUC Oi Mate MD
CNC Control

Highly Innovative Technology

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CNC type Water Jet machine is born in 1995, but....

7

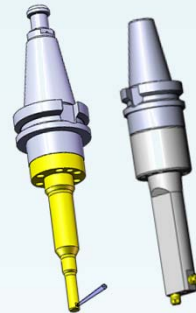
We pride ourselves in new innovations in
water technology

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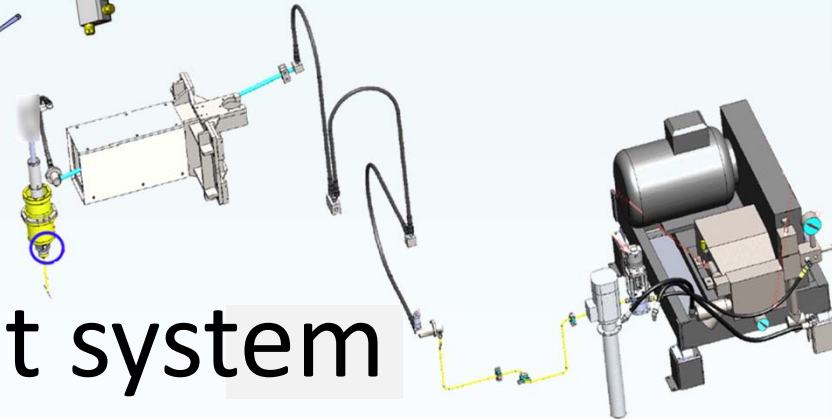
We pay attention to the critical technologies relating
to waterjet efficiencies



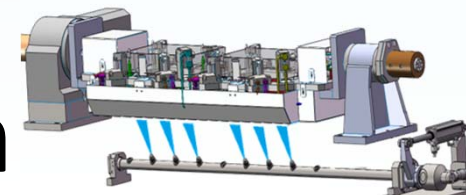
Nozzle



Waterjet system

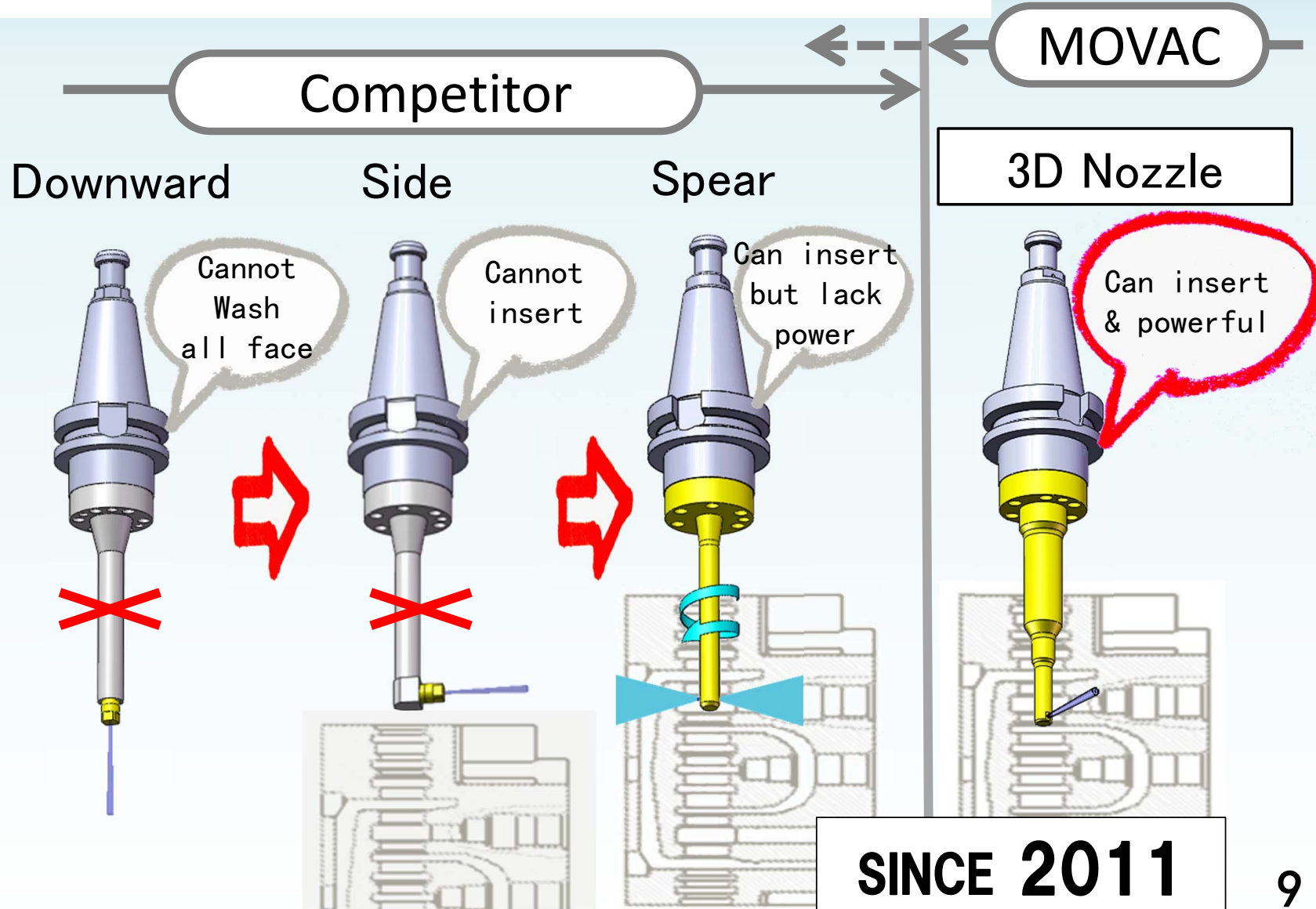


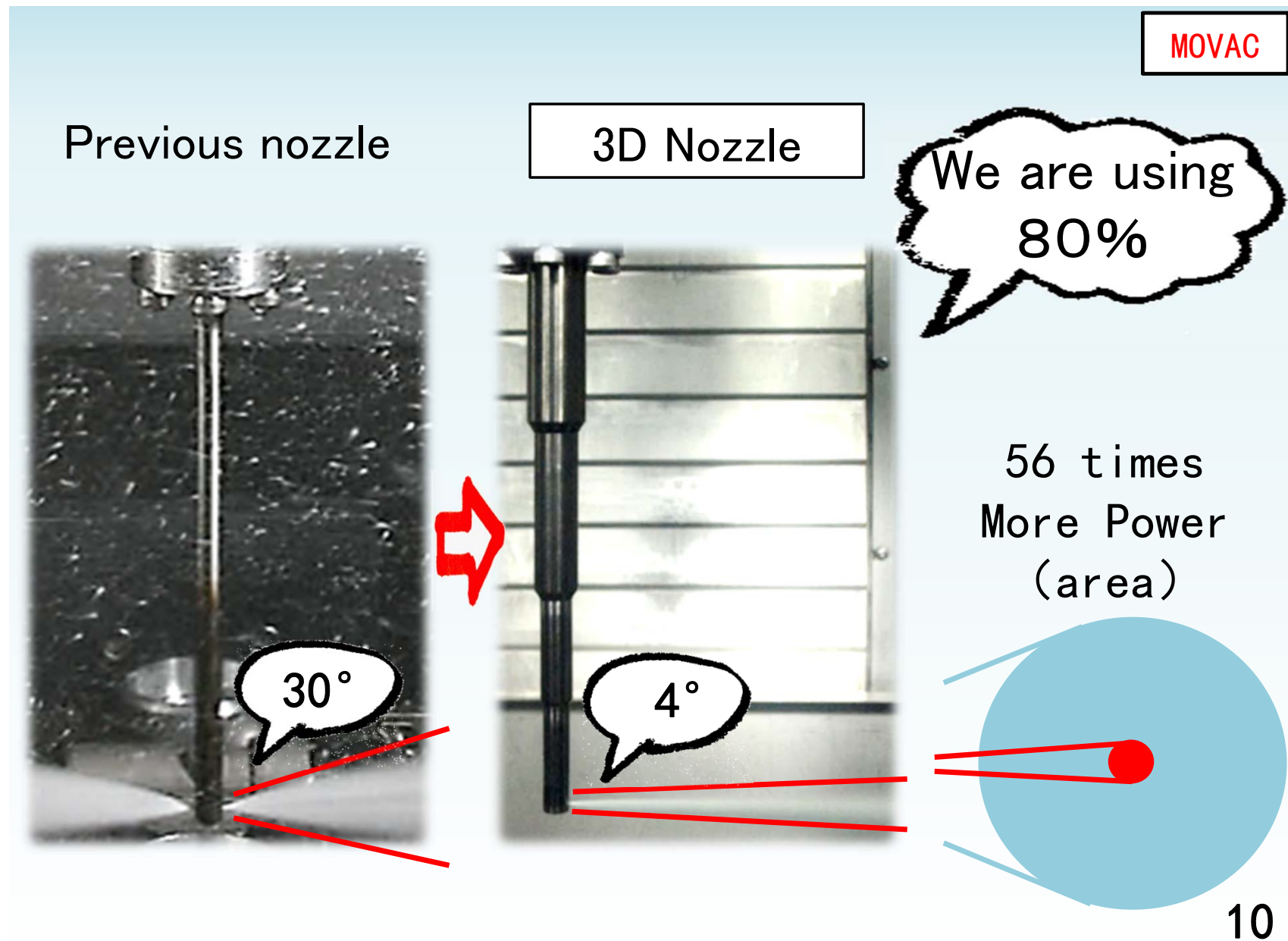
How to wash



8

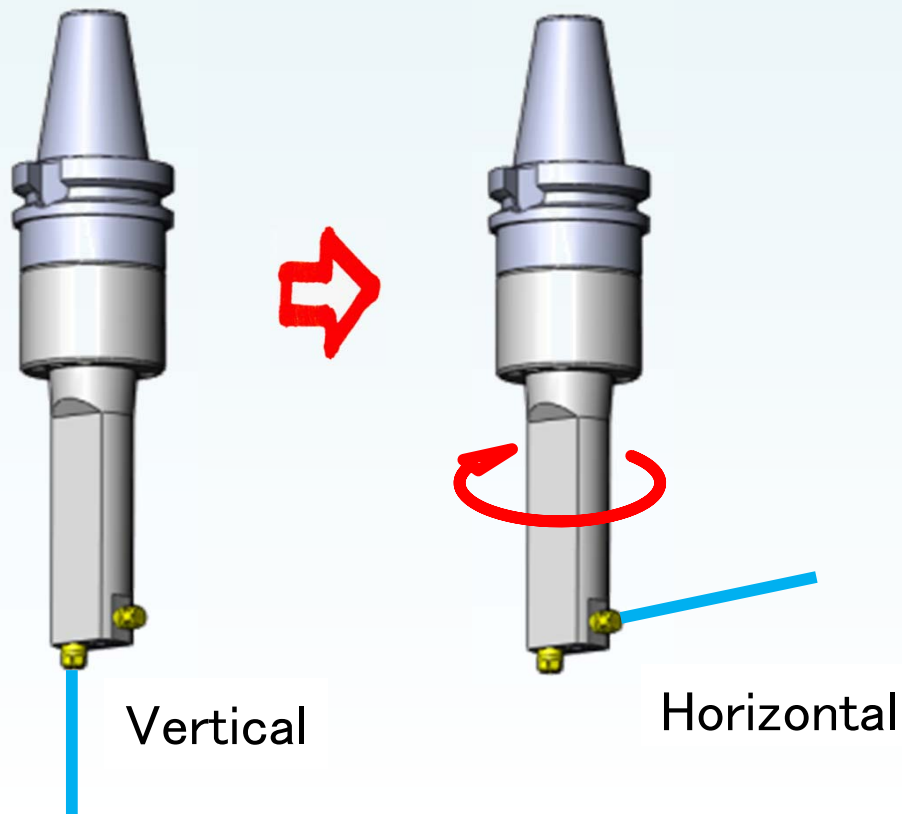
What kind of nozzle should we use?



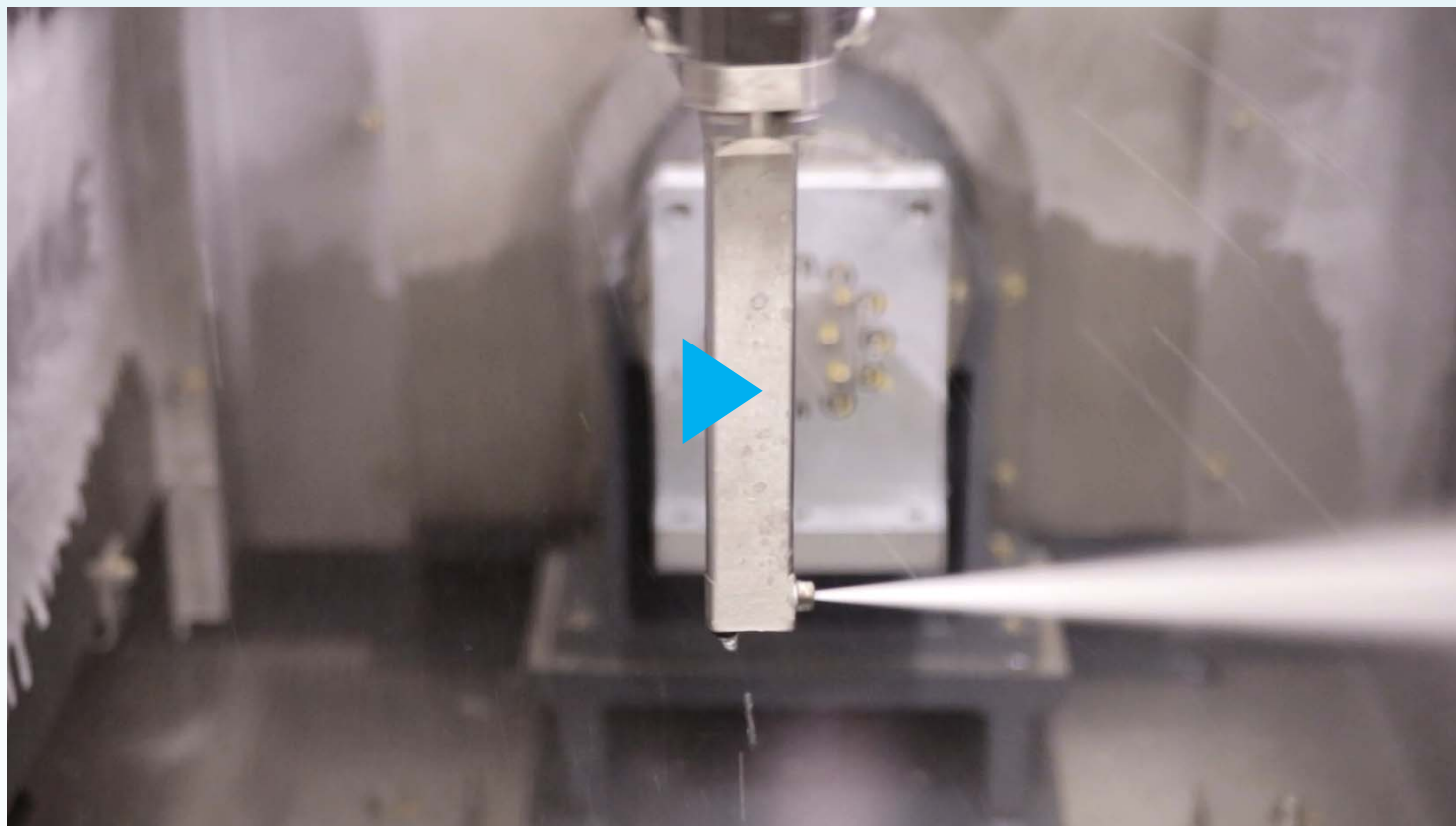


Speed Flex Nozzle

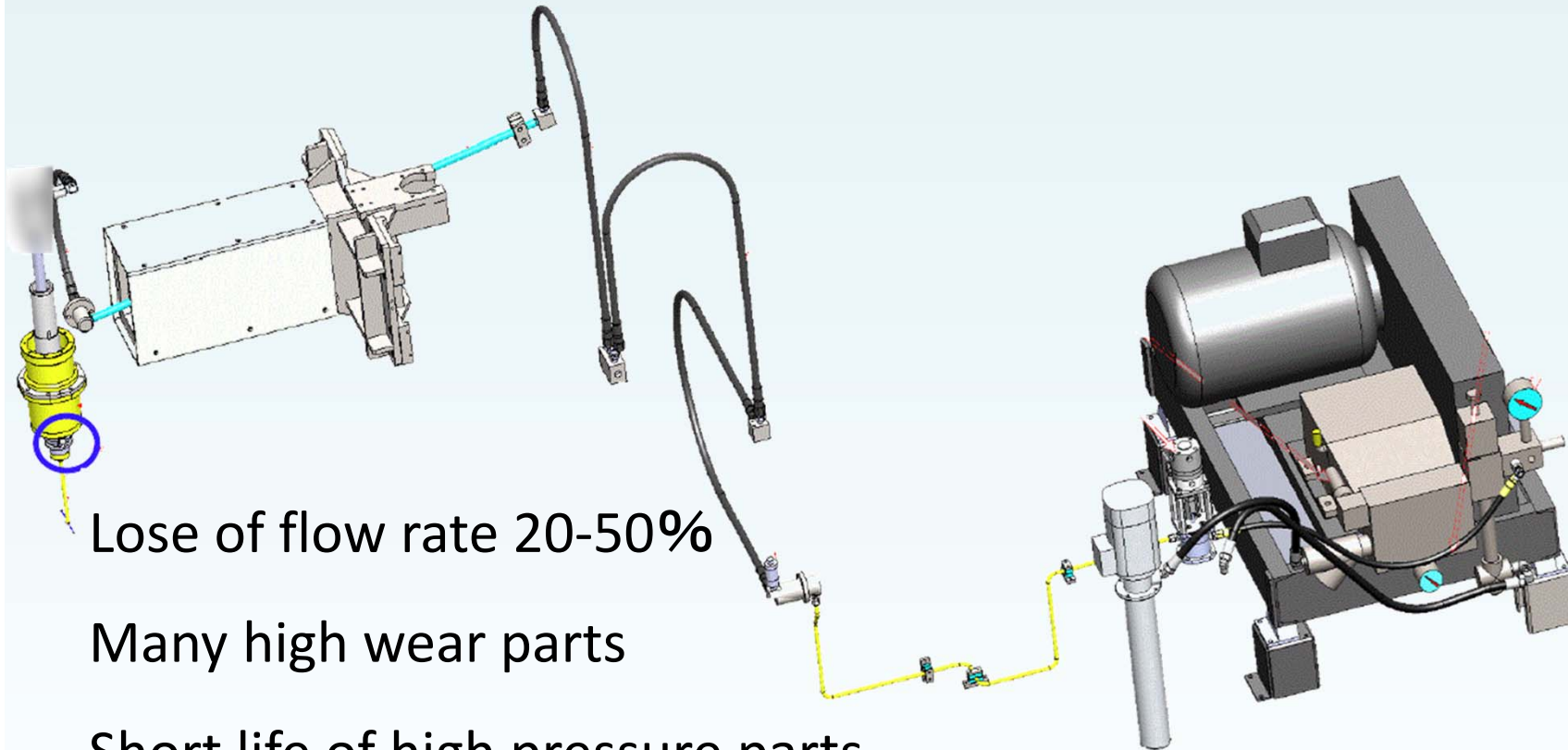
reduces loss time
from nozzle change



Movie Speed Flex Nozzle

**12**

Problems of legacy type High pressure system

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Lose of flow rate 20-50%

Many high wear parts

Short life of high pressure parts

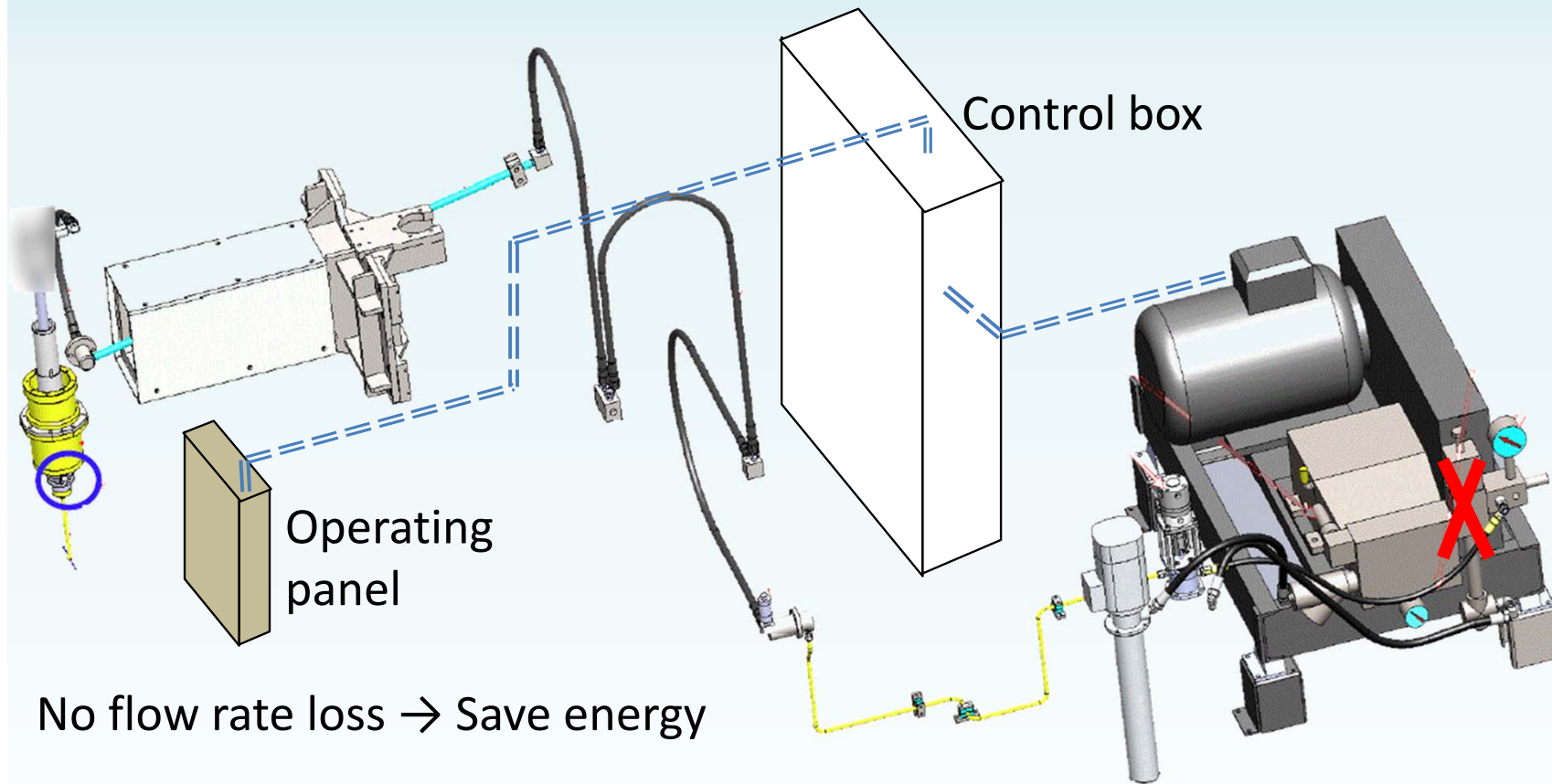
Manual pressure adjustment

No nozzle clogged sensing capability

13

Smart pressure control system (Standard)

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No flow rate loss → Save energy

Eliminate regulator valve → less maintenance

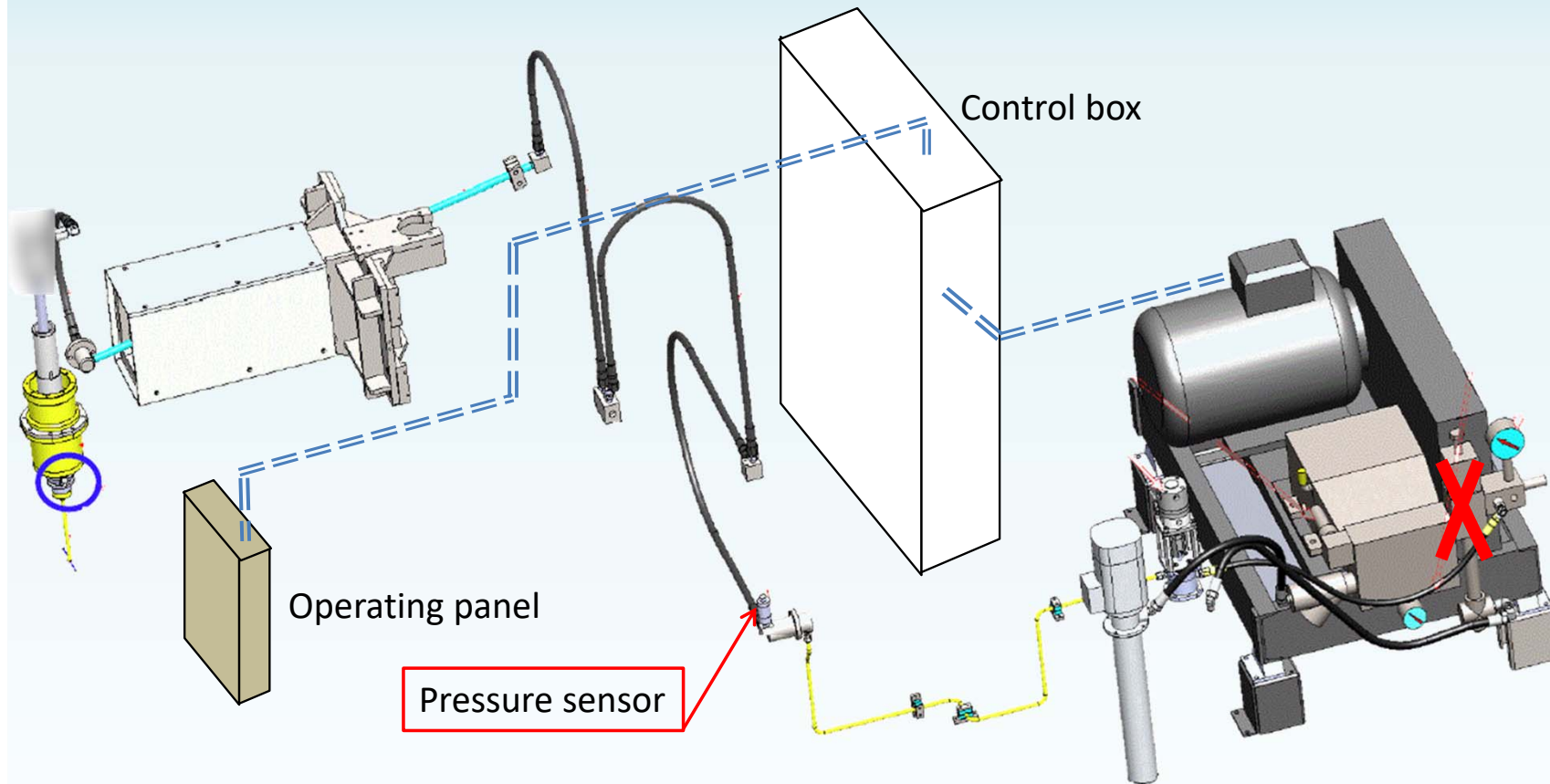
Pump parts life → life time improve 50%

Common Pump model → common spare parts.

SINCE 2010

14

Automatic nozzle clogging detecting system

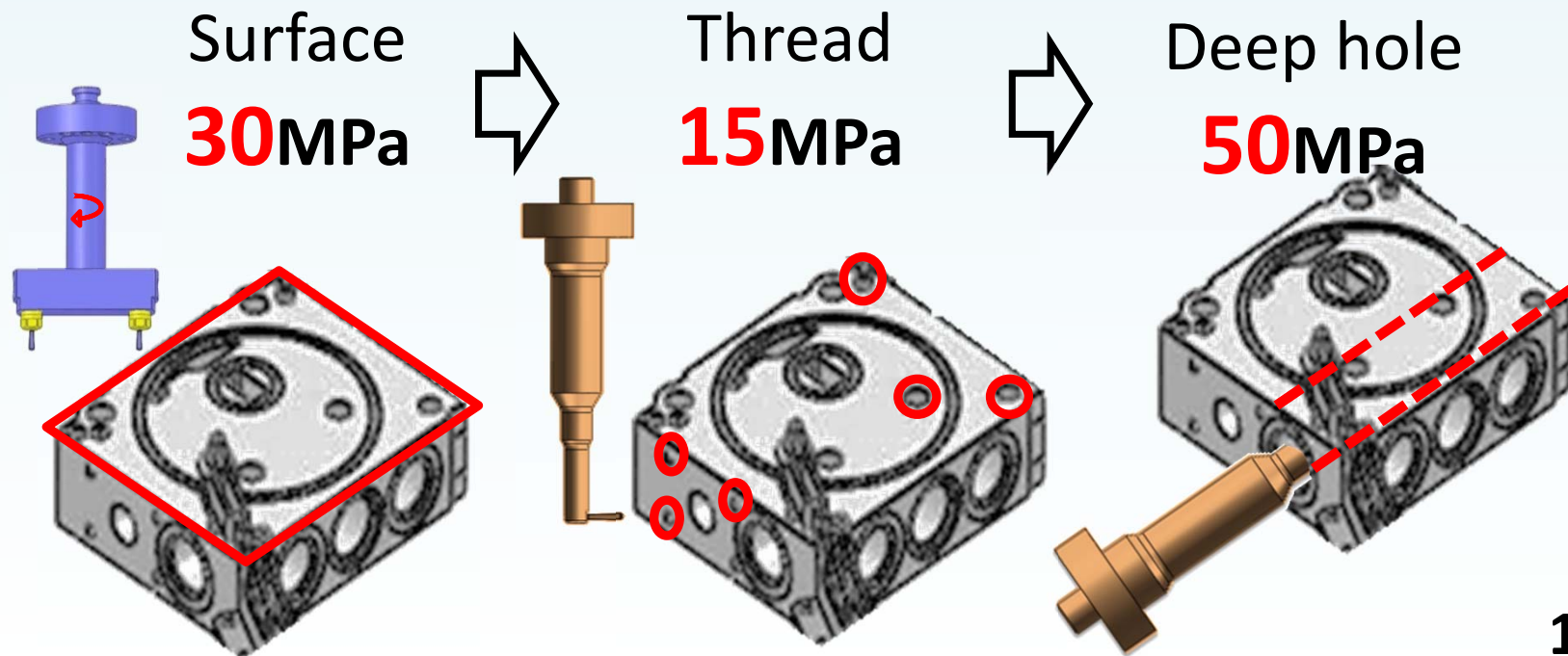
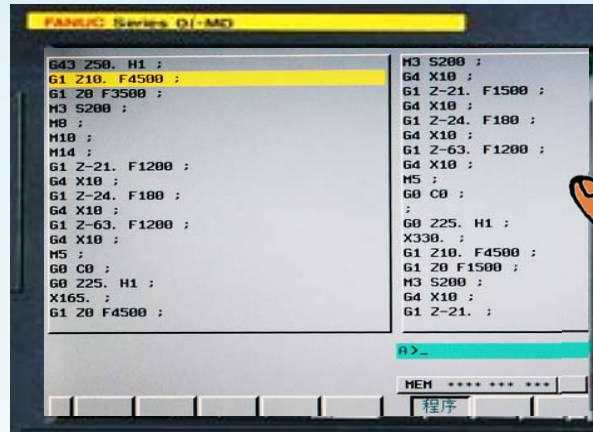
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The system can detect problems of high pressure line.

15

Adjust pressure freely and easily using control Panel

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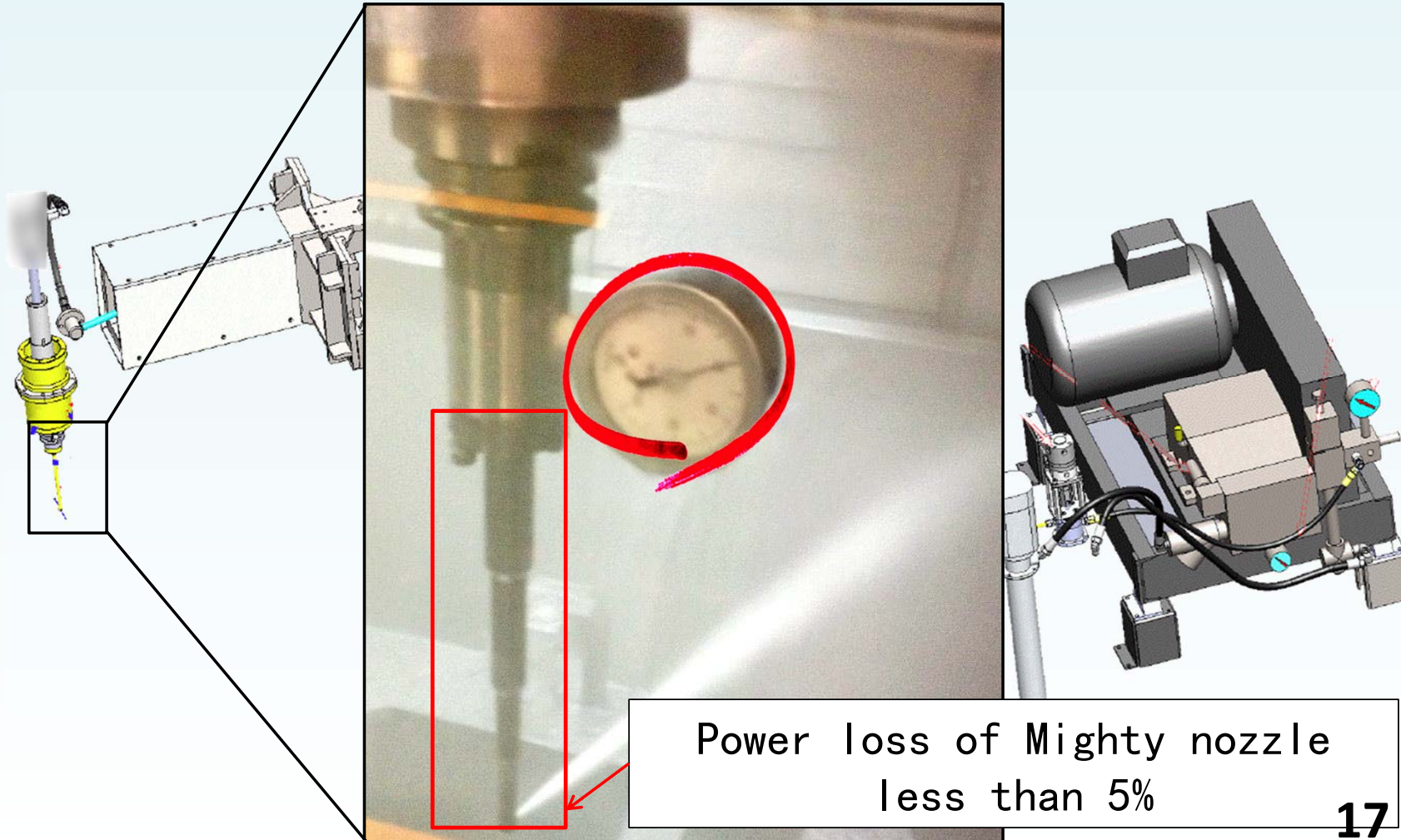


16

Low Power Loss

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Power loss less than 5%

**17**

Spindle Solution

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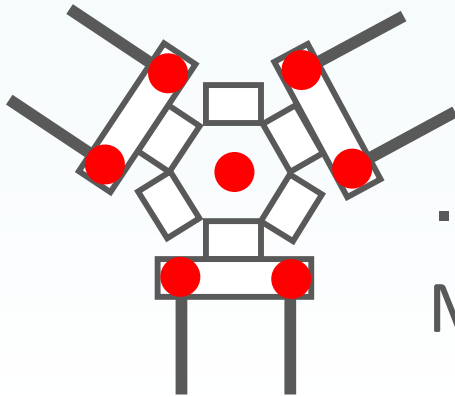
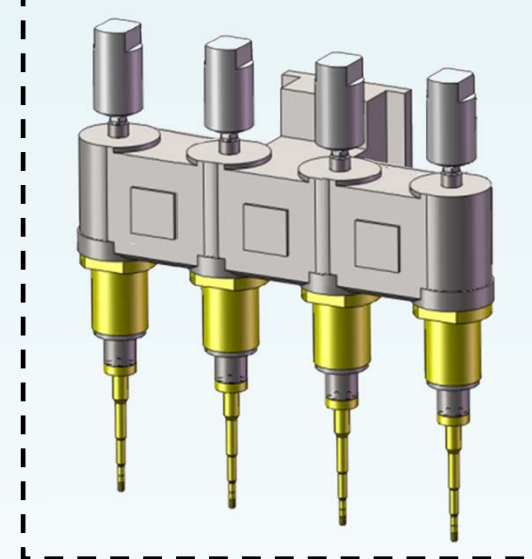
Single



ATC Twin



Quad



···Turret type – Inherently High Maintenance

18

Movie of ATC Twin Spindle

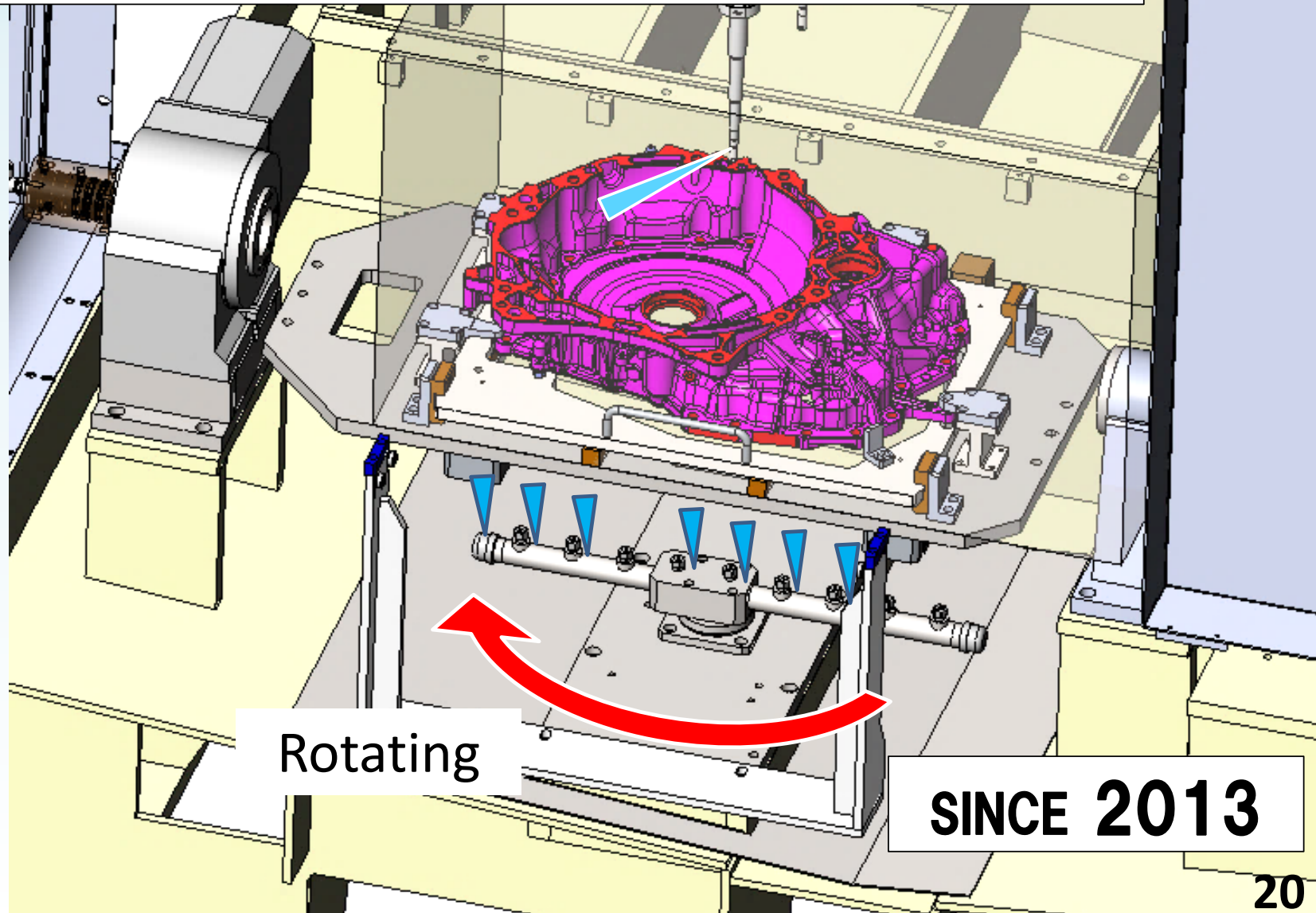
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19

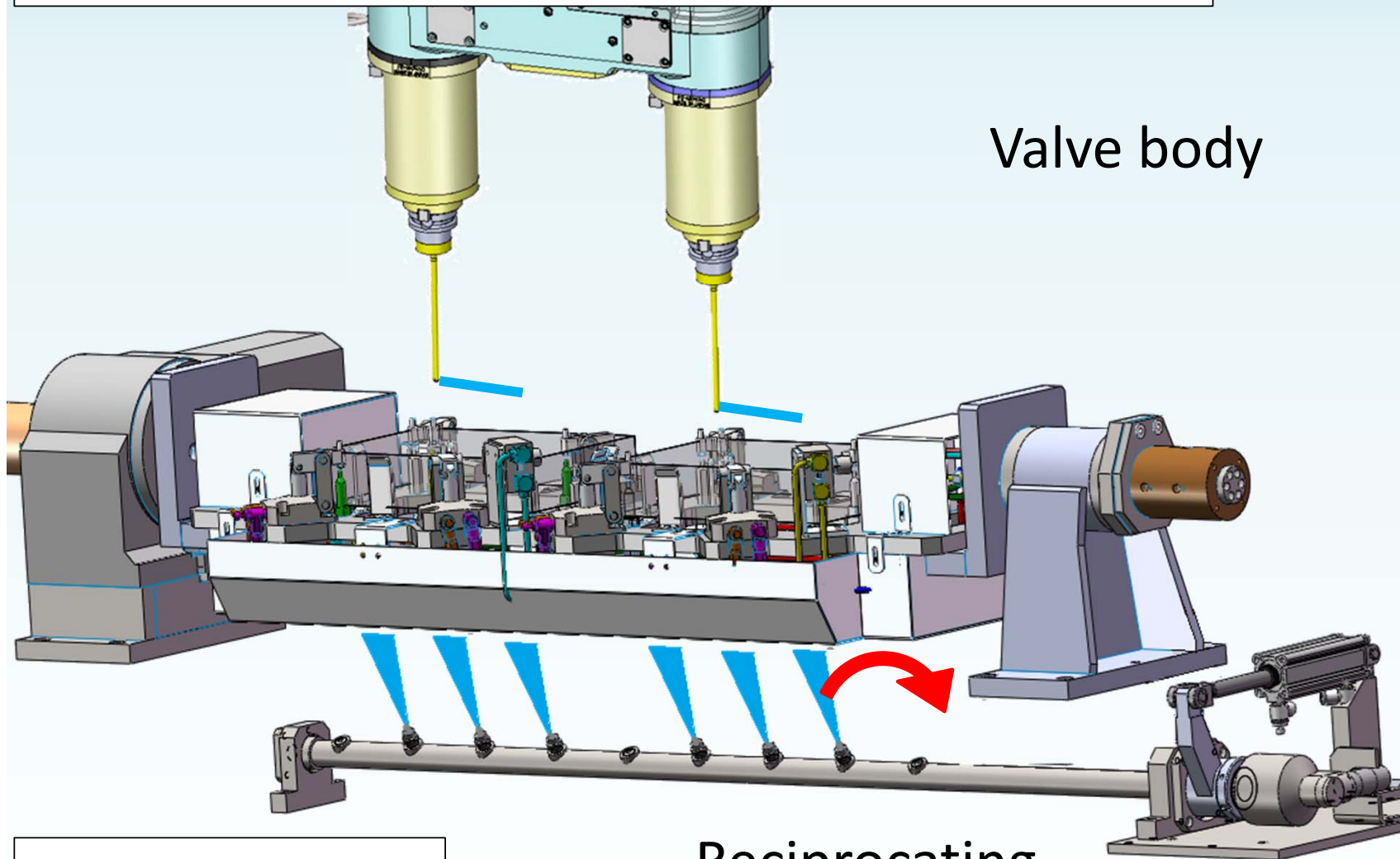
High press. from Side, Low press. from Under

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H.P. water from side, L.P. water from lower

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SINCE 2014

21

Cylinder Block Video with Low Pressure water



Our system doesn't have to separate L.P. wash booth
and H.P. wash booth

22

Transmission Case

H.P. water from side, L.P. water from lower

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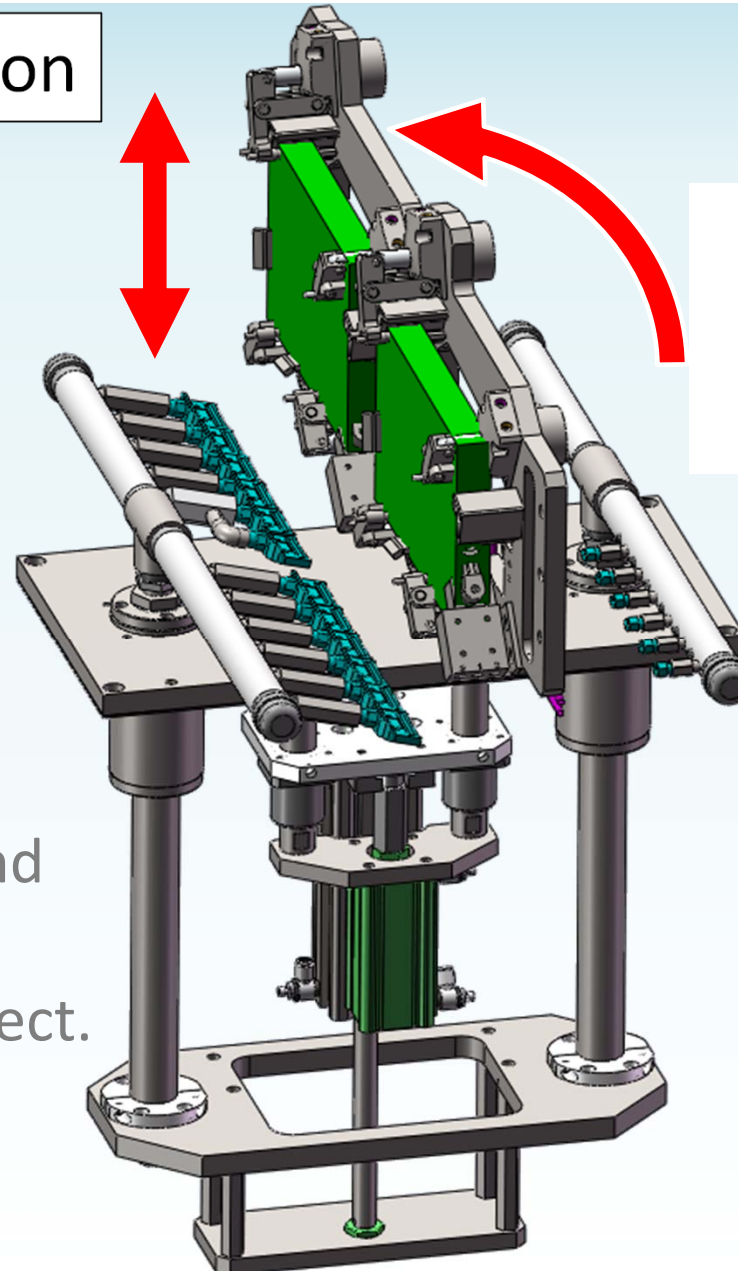
Air blowing suggestion

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Blow off
nozzle is
feeding
up/down

Rotating
fixture
90°

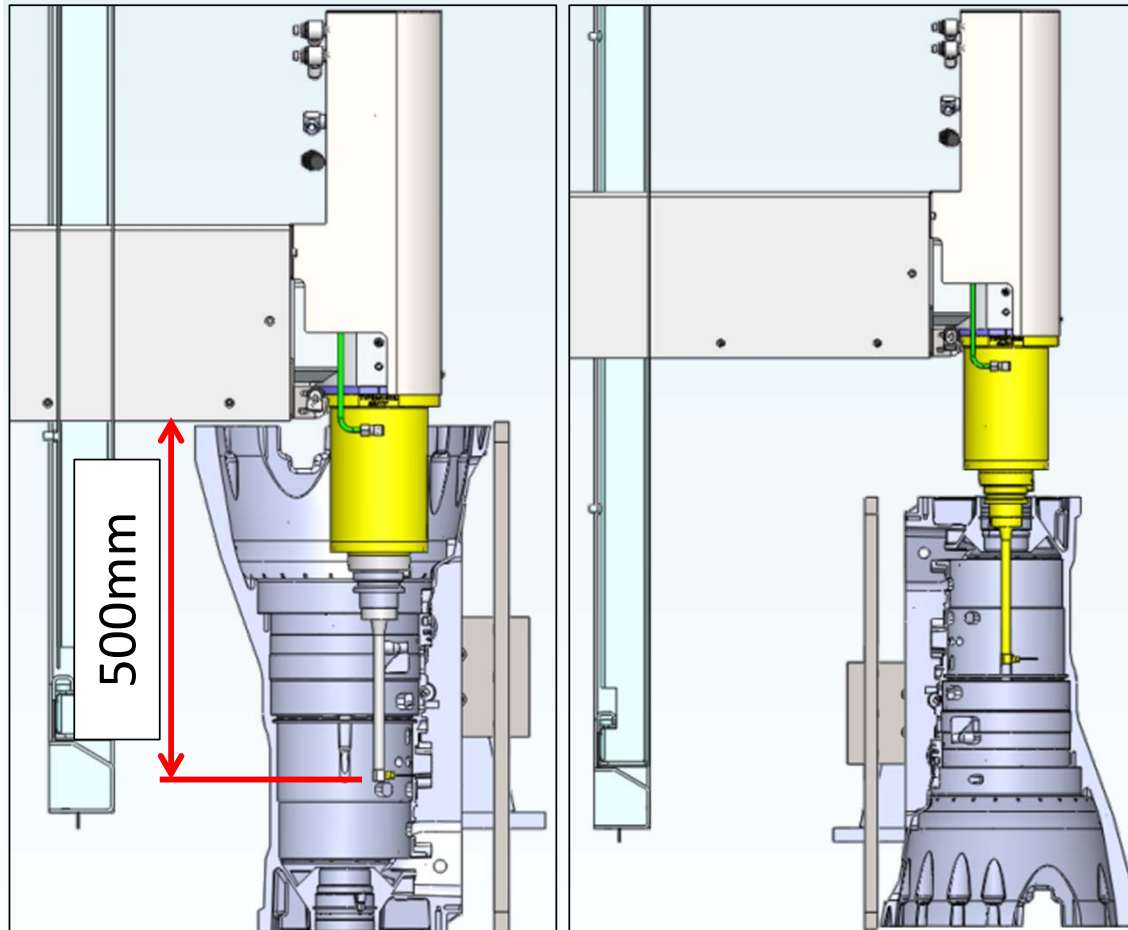
Type of “fixed nozzle and
rotating parts” have
problem of washing effect.



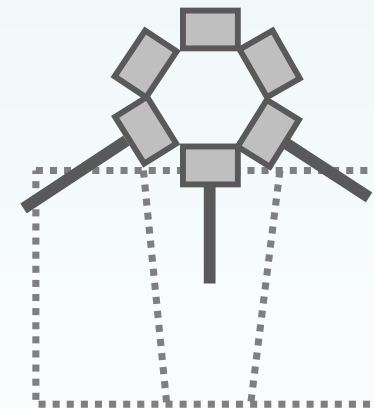
24

Good for Large type parts

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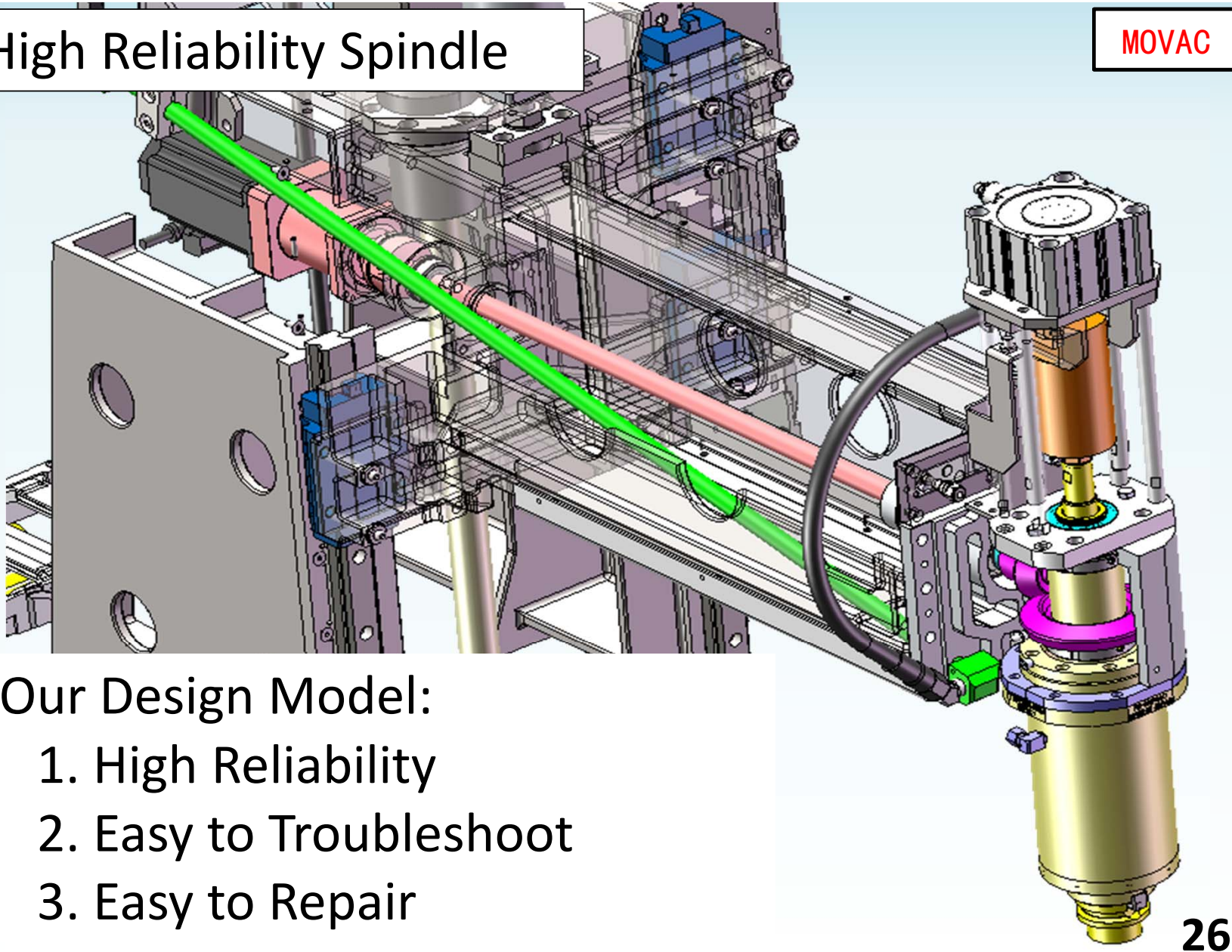


Turret type has problem for large type parts



High Reliability Spindle

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Our Design Model:

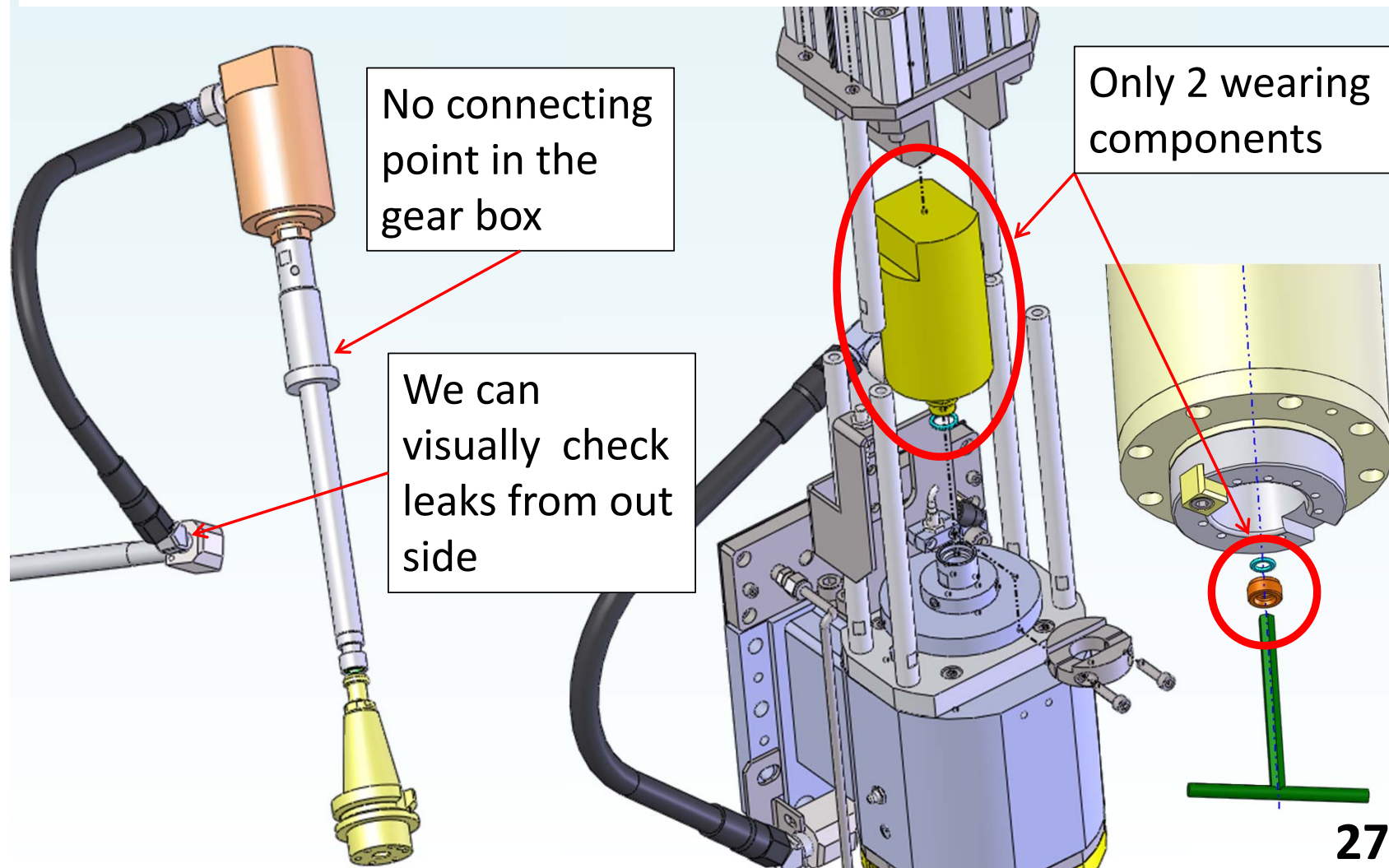
1. High Reliability
2. Easy to Troubleshoot
3. Easy to Repair

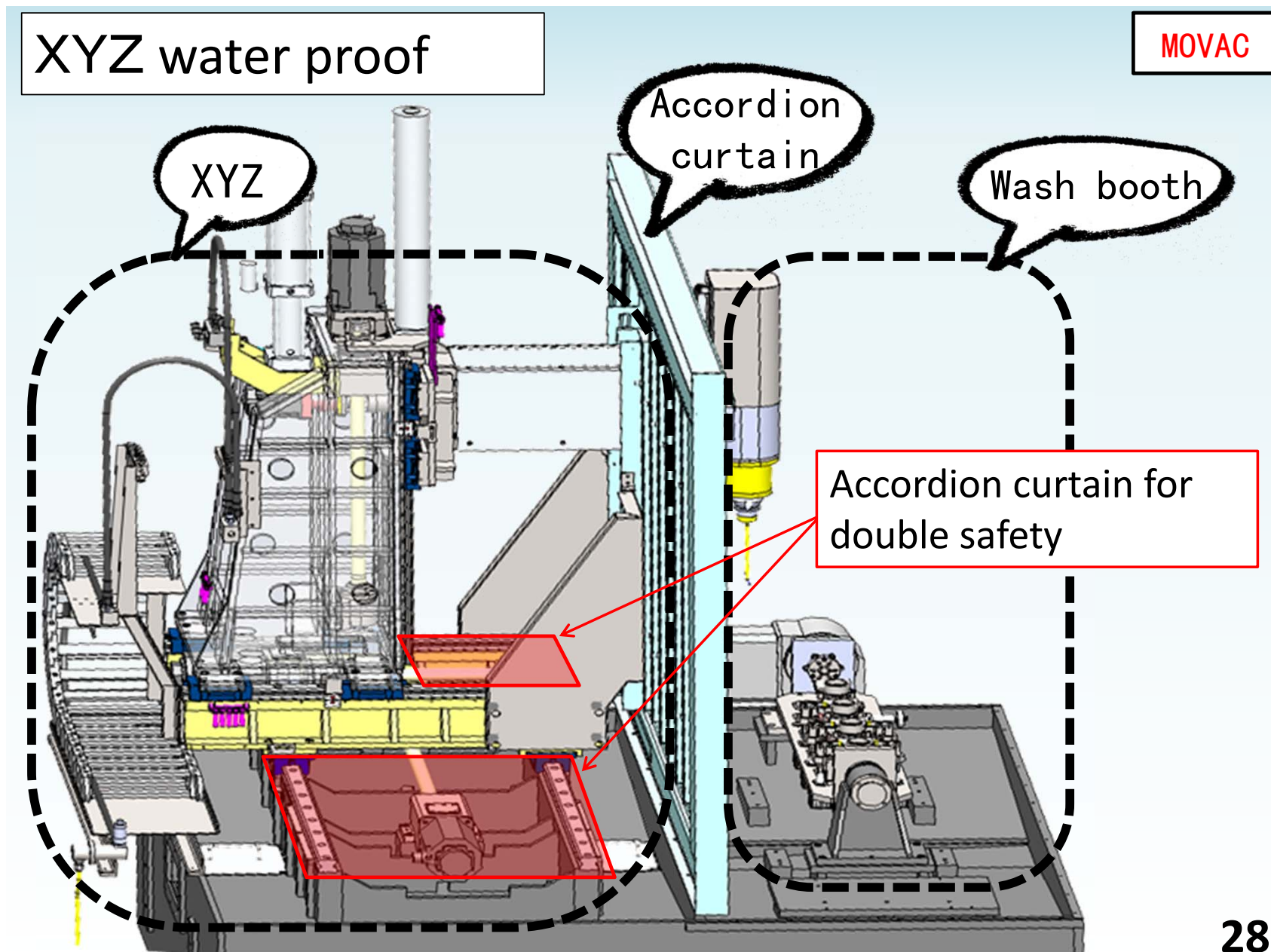
26

Easy Maintenance Spindle Design

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We designed for easy machine trouble shooting.



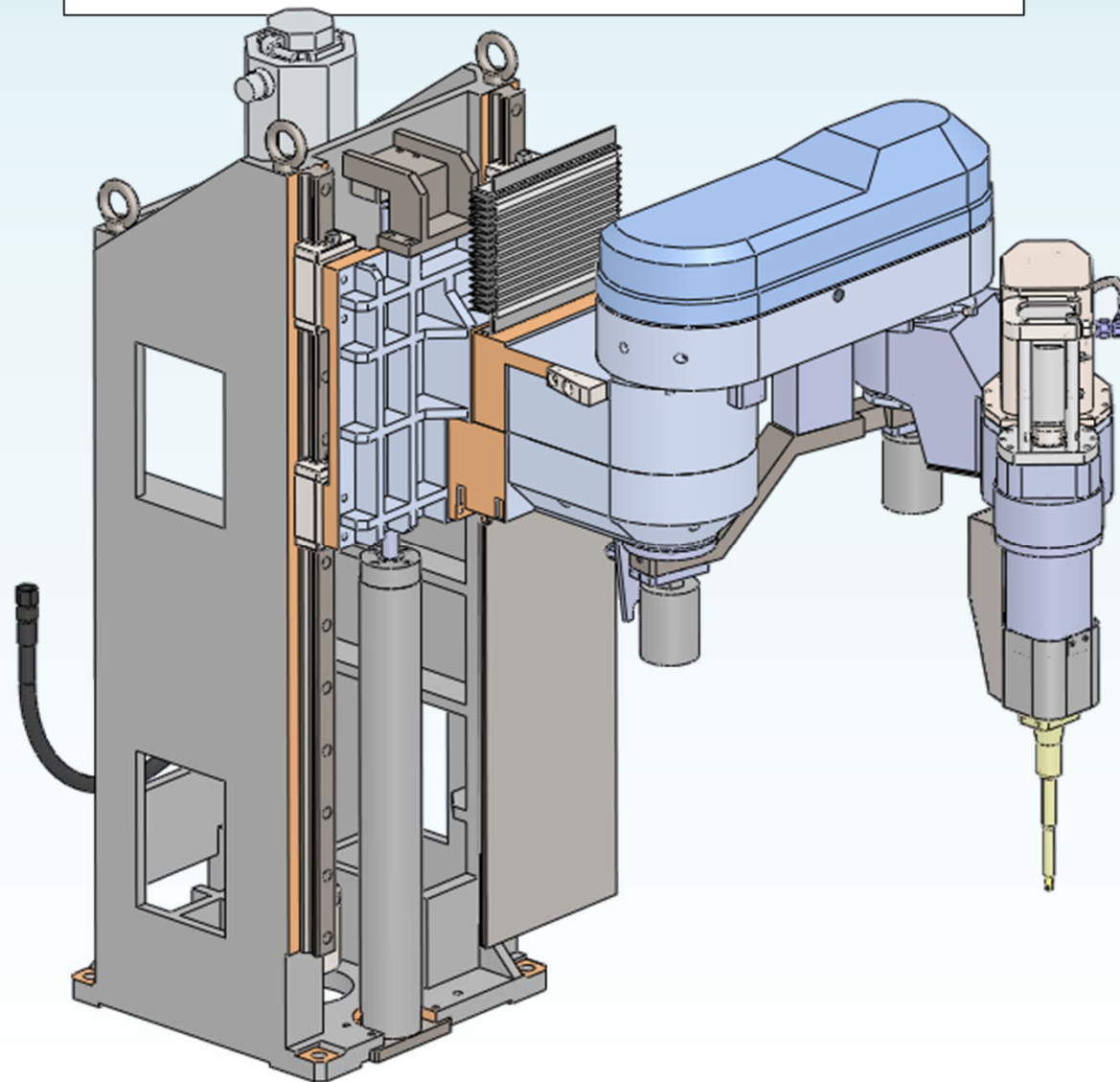




Scara-Jet

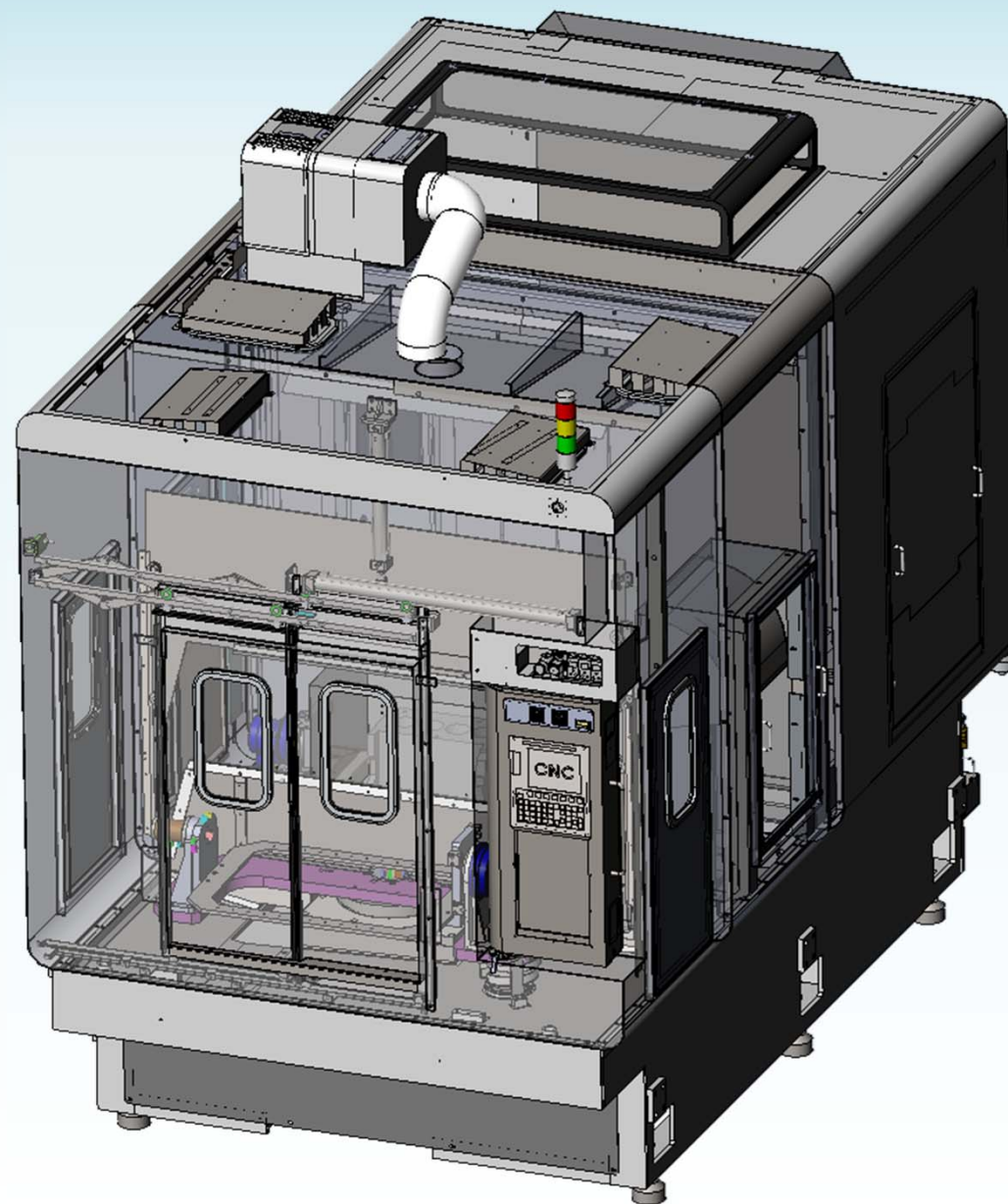
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NEW!

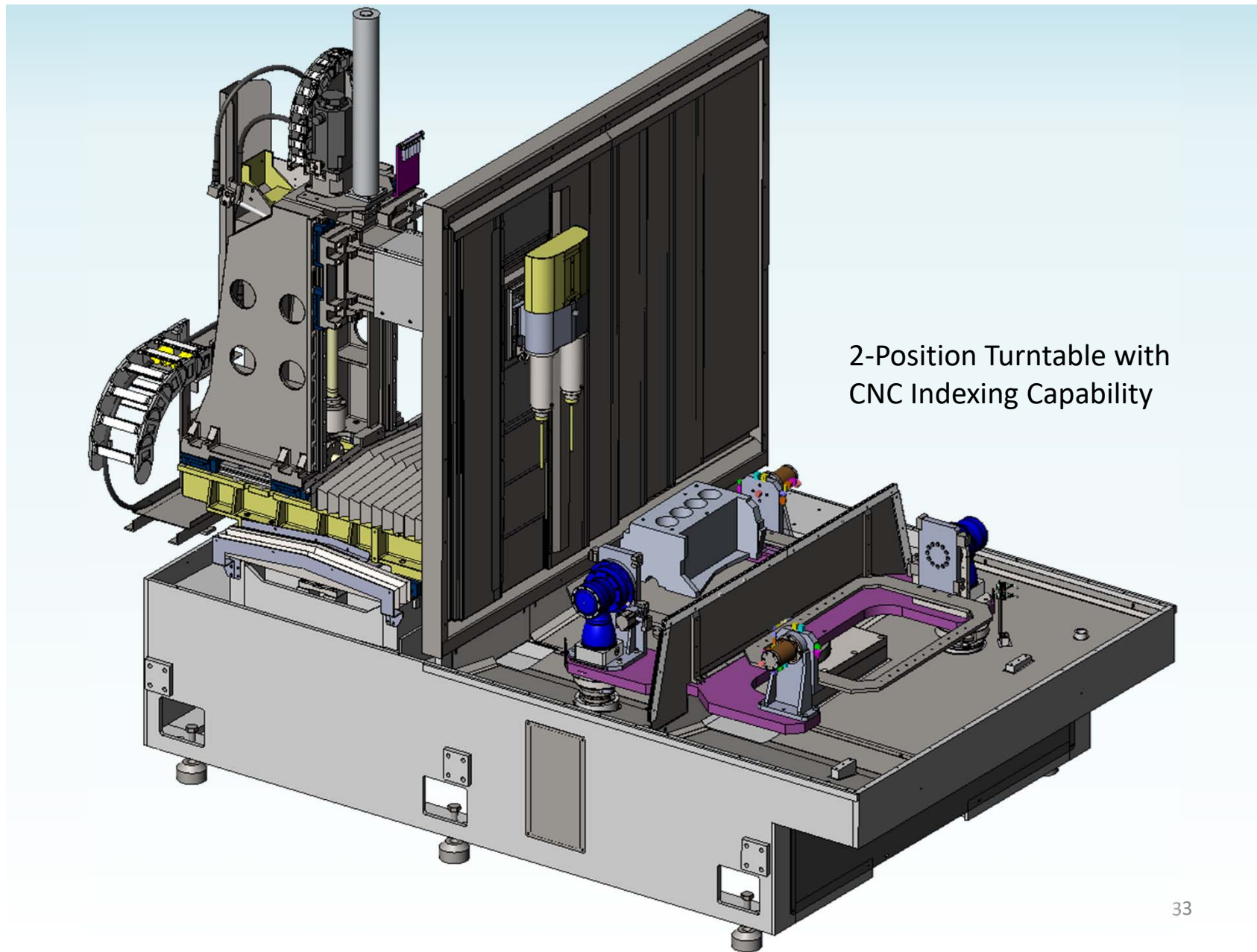


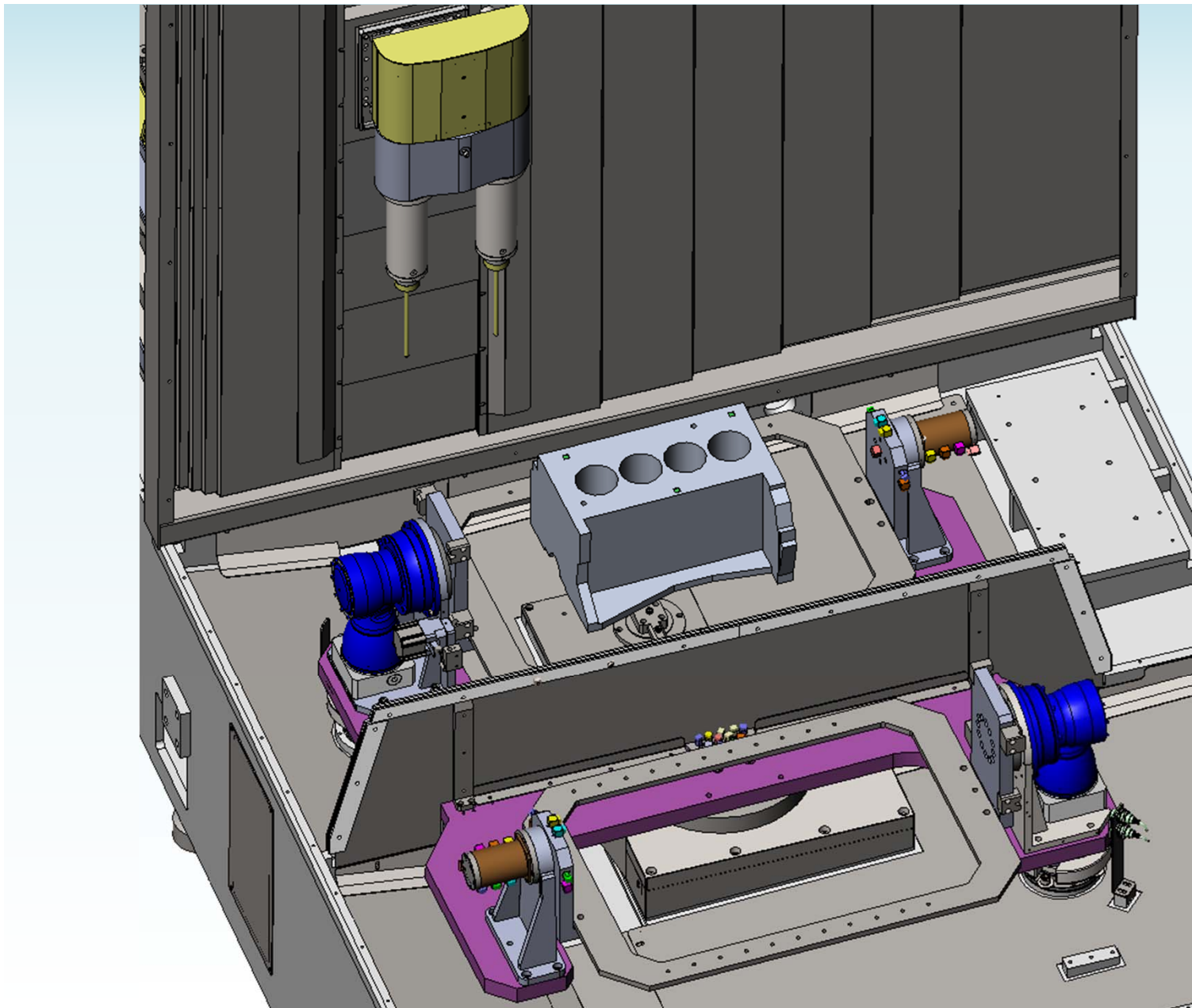
30

Proposal Concept

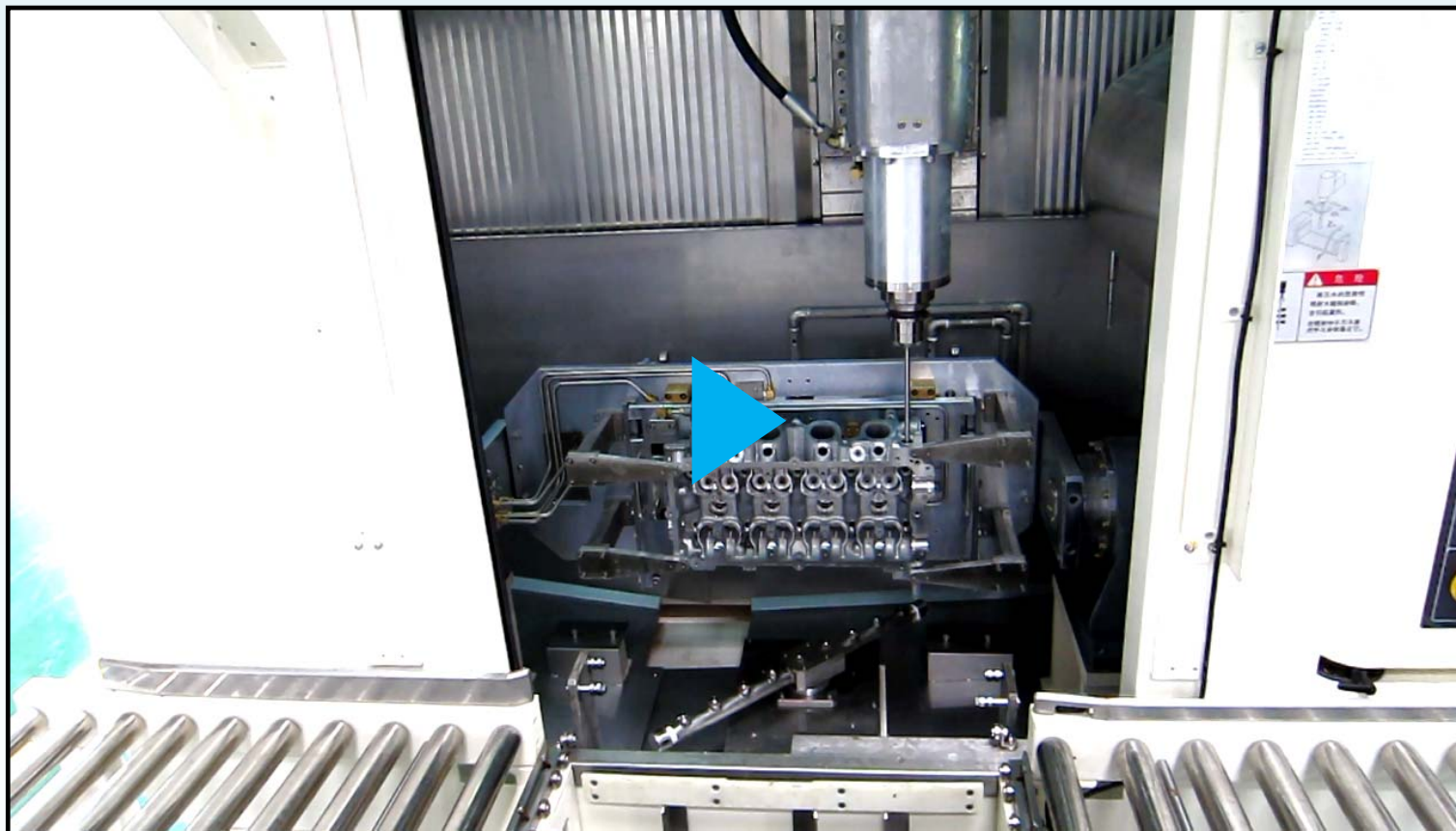


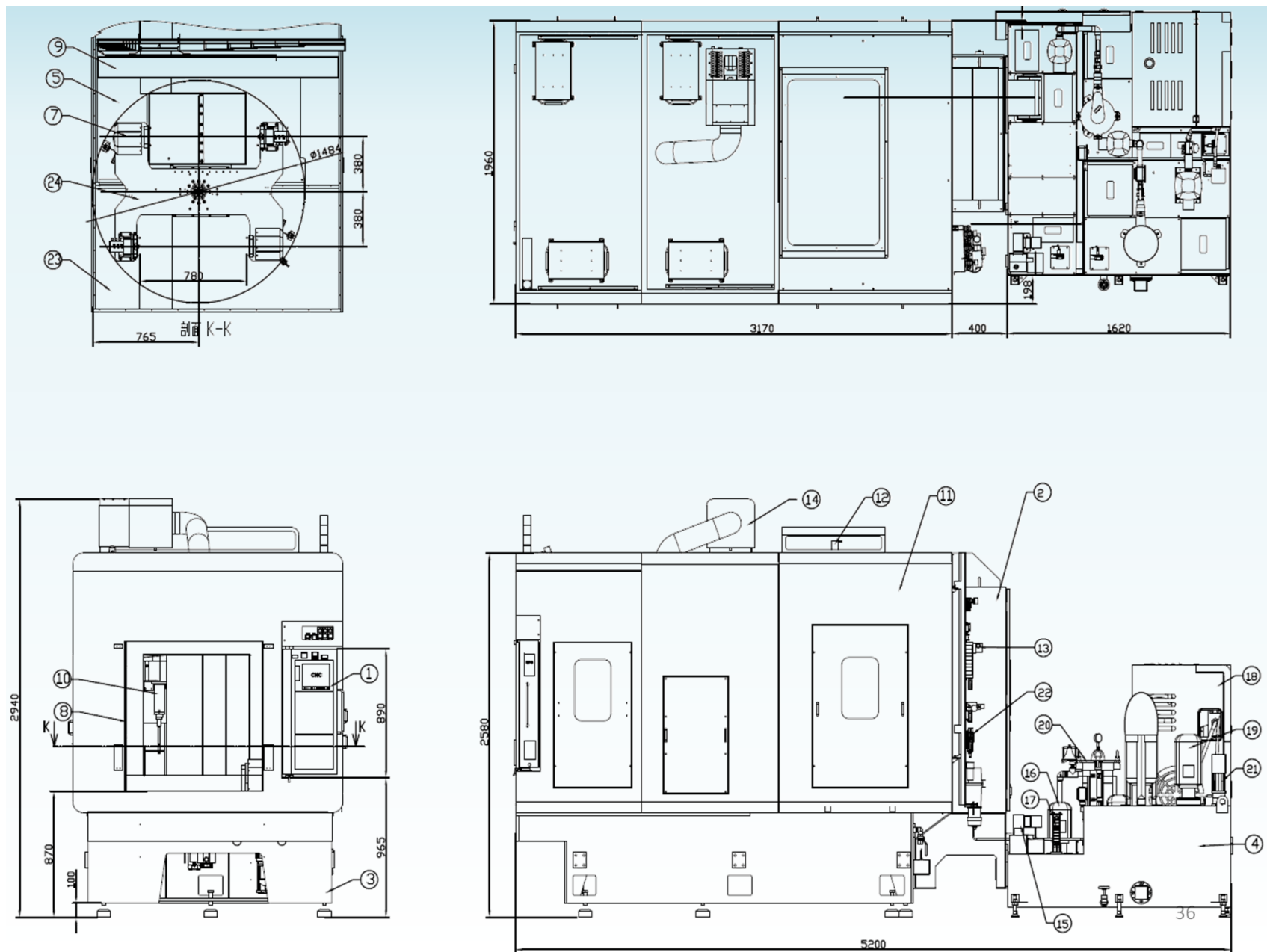
32





34





Specification 1

Main Unit

1. Machine Cycle time: ■ 150 sec./ MC. (50sec./ 3 MC.) **require:51.9sec**

2. Fixture

■ With A(Indexing)-axis(Fanuc)

■ Automatic Clamping
(with Pneumatic Cylinder)

3. Nozzle

Mighty Nozzle

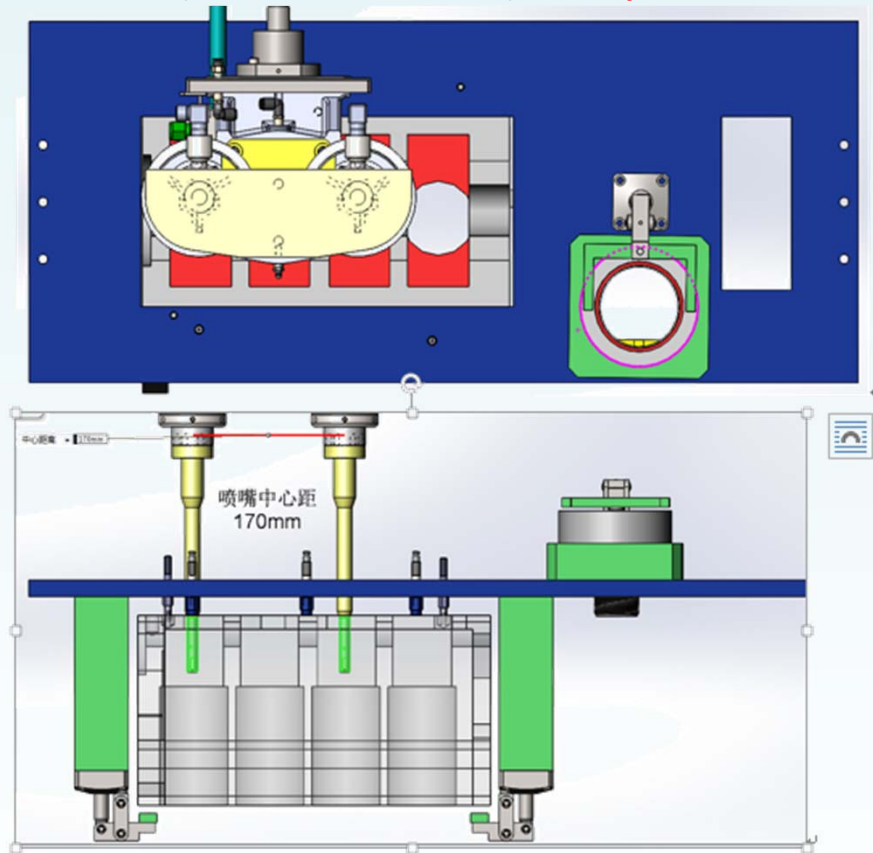
■ 35MPa-8L/min x 2 pcs.

4. XYZ : X700 × Y500 × Z500

Max. 48m/min

5. Spindle: ■ MST01 Twin Nozzle (Made in Japan)

Rotating speed 500min⁻¹



Specification 2

6.Repeatability: +/-0.05 mm (X,Y,Z axis)

7.Rotary Joint: MRJ3S01 (Made in Japan)

8.Auto tool changer : ☒ NO ☐ 4 Nozzles

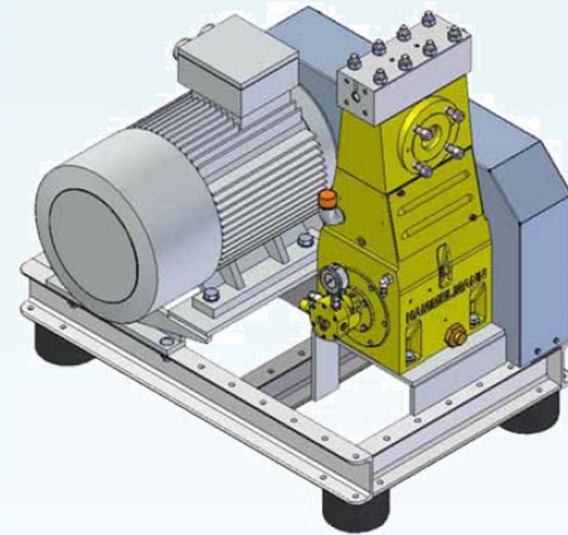
9.High pressure pump: Set.35MPa

10.Running Flow rate : Set.24L/min

11.Type: HDP-42 Dia.24 (Hammelmann)

12.High pressure valve : MVR401 (FE-MOVAC Made in Japan)

13.High pressure sensor: 2 channel (Detect Max. and Min. pressure)



Specification 3

14. Mist collector : MZ-15 (FE-MOVAC)

15. Auto Lubricator: AMO-II-150S/1.8IPM (LUBE)

16. Rust protection level

Spindle : Plated steel, Aluminum, Stainless steel

Machine base : Mild Steel & Paint

Front Cover, door, tank: Stainless steel

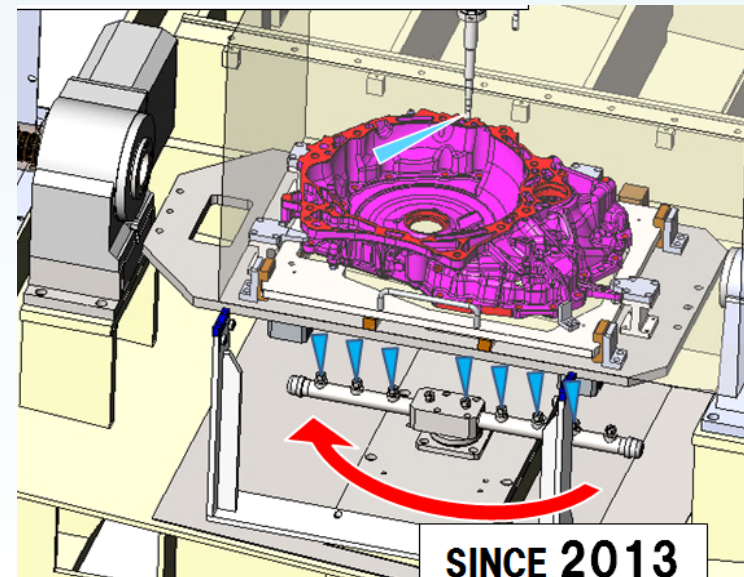


17. Automatic door

18. Light for cleaning booth

19. ■ Automatic Nozzle clogging error checking system

20. ■ Low Pressure Washing System

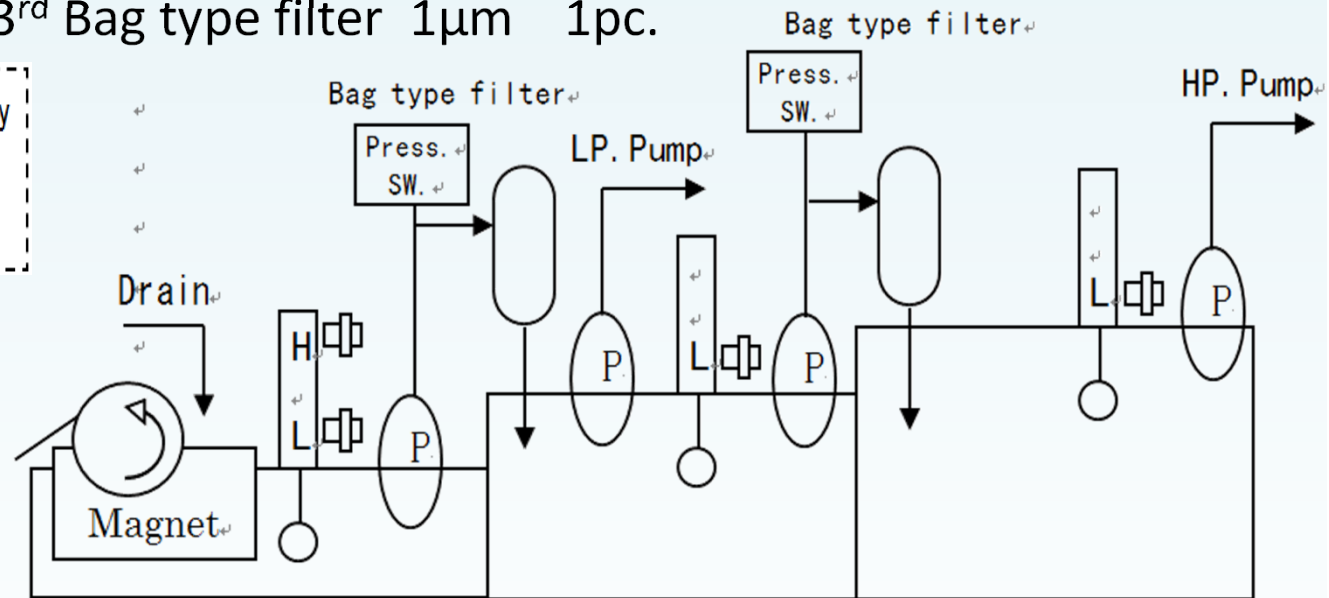
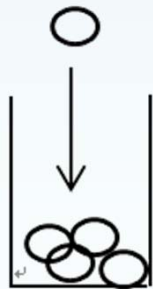


Specification 4

Tank

1. Coolant Capacity: 1st tank(230L), 2nd (220L), 3rd (300L) Total 750L
2. Filtration: 1st Magnet Separator (with rotating unit)
 2nd Bag type filter 10 μ m 1pc.
 3rd Bag type filter 1 μ m 1pc.

The machine automatically
drop off the ring
(at the Blowing booth)



3. Oil skimmer : FE-MOVAC (With Nissei geared motor)
4. Pump for filter : ■ Grundfos (0.55KW) x 2pcs.
5. ■ Electrical Coolant Heater : 10kW x 1pc(s). Max. set temp. 50°C 40

Specification 5

Pneumatic piping

1. Air combination : 3/8" filter + regulator + Lubricator (SMC)
2. Supply pressure : Min. 0.4MPa
3. Quantity : Max. 3000 L/min(ANR)
4. Type of Solenoid valve: (SMC)
5. ■ Reciprocating blow-off system 1-1/4" filter + regulator (SMC)

Electrical components

1. Power supply Frequency : 60Hz
 Main power : 3-phase 460V (± 10%)
 Control : DC24V
2. CNC : FANUC ☐ 0i-Mate MD ☒ 0i-Mate MD (200V)
3. Servo motor : FANUC Model Beta
4. Starting High press. Motor : Inverter
5. Signal Tower (Red, Yellow, Green)
6. Capacity : Total Approx. 50 KW FLA: 100A(460V)
7. Electrical parts Manufacturer: OMRON, FUJI, Schneider, etc

