



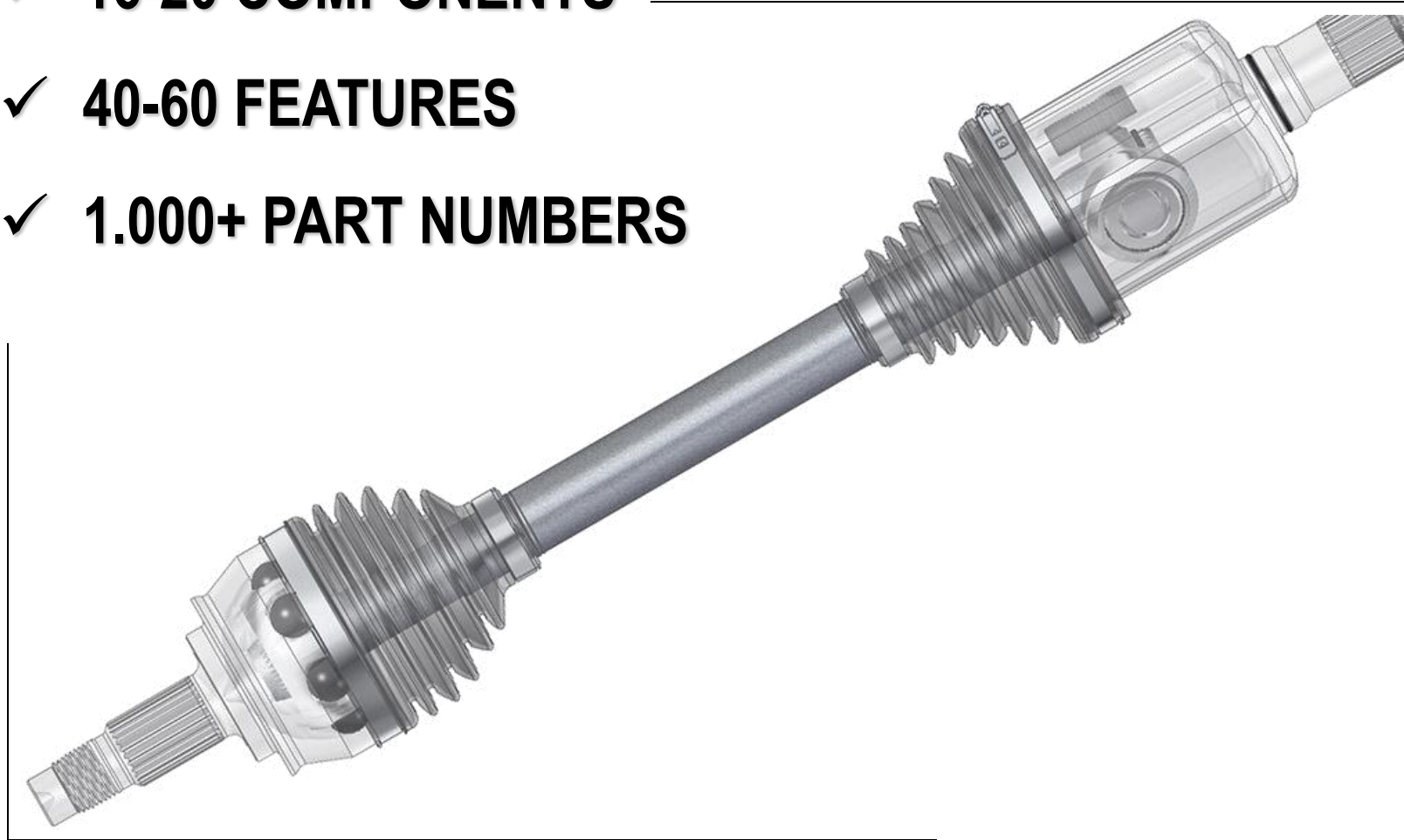


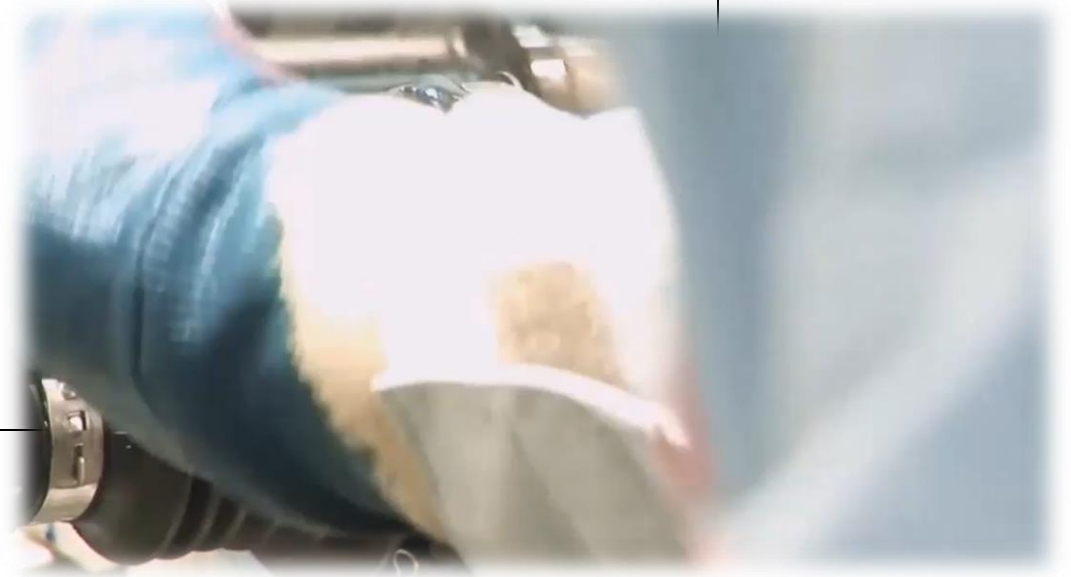


✓ **16-20 COMPONENTS**

✓ **40-60 FEATURES**

✓ **1.000+ PART NUMBERS**



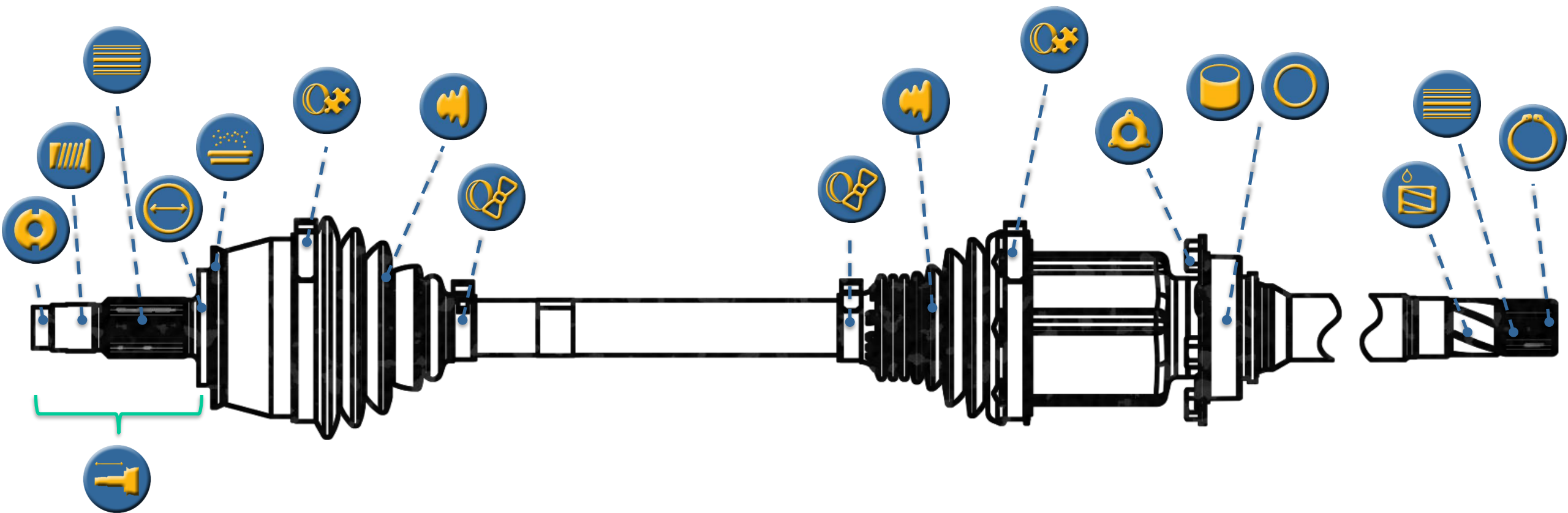


MOTIVATION

VISION SW & HW

INSPECTION STATION

EXPERT SYSTEM

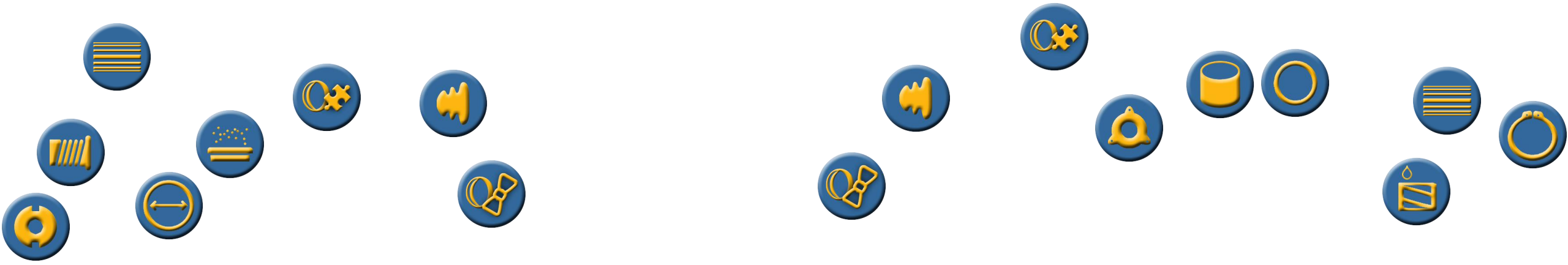


MOTIVATION

VISION SW & HW

INSPECTION STATION

EXPERT SYSTEM

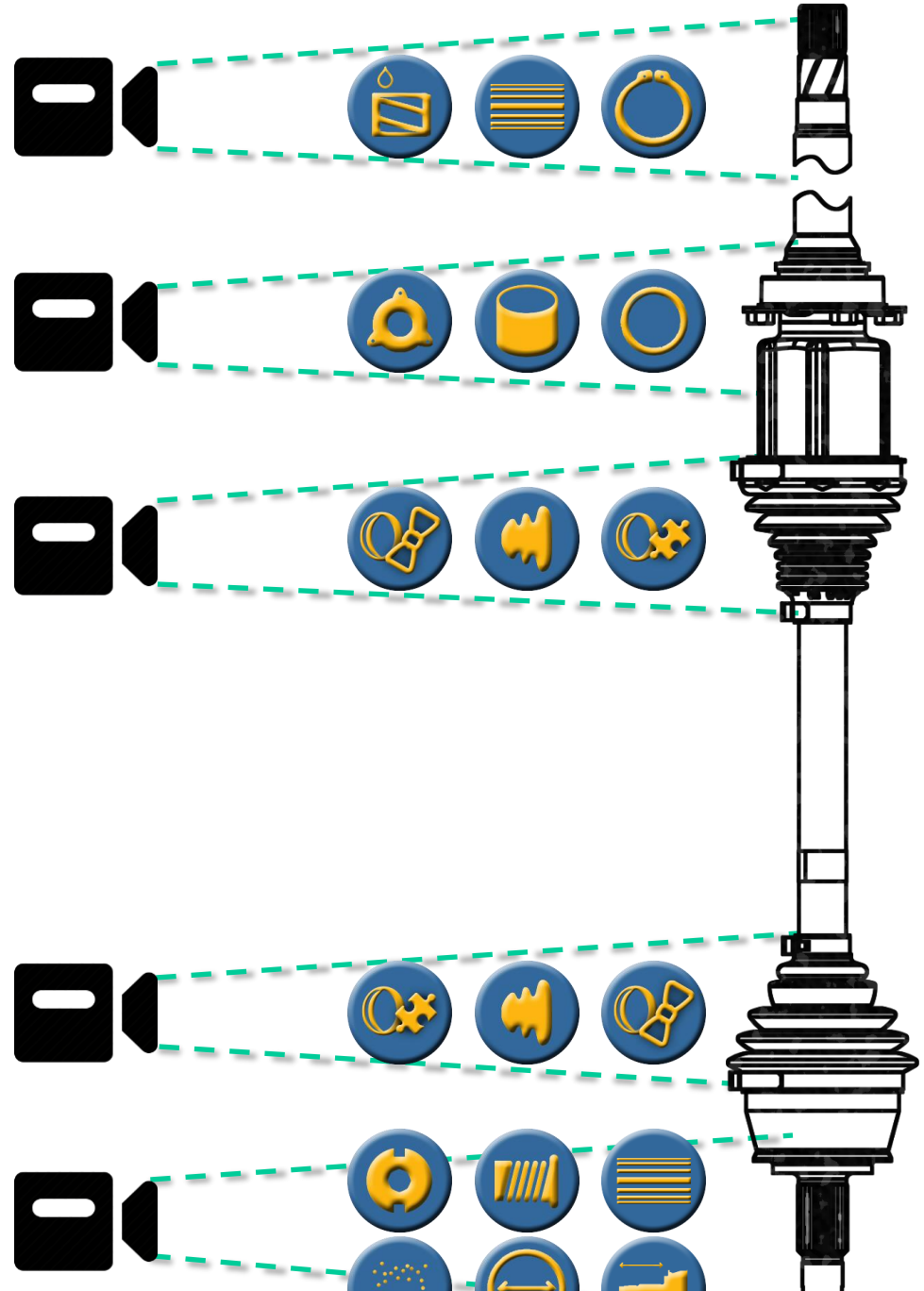


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INSPECTION STATION

EXPERT SYSTEM

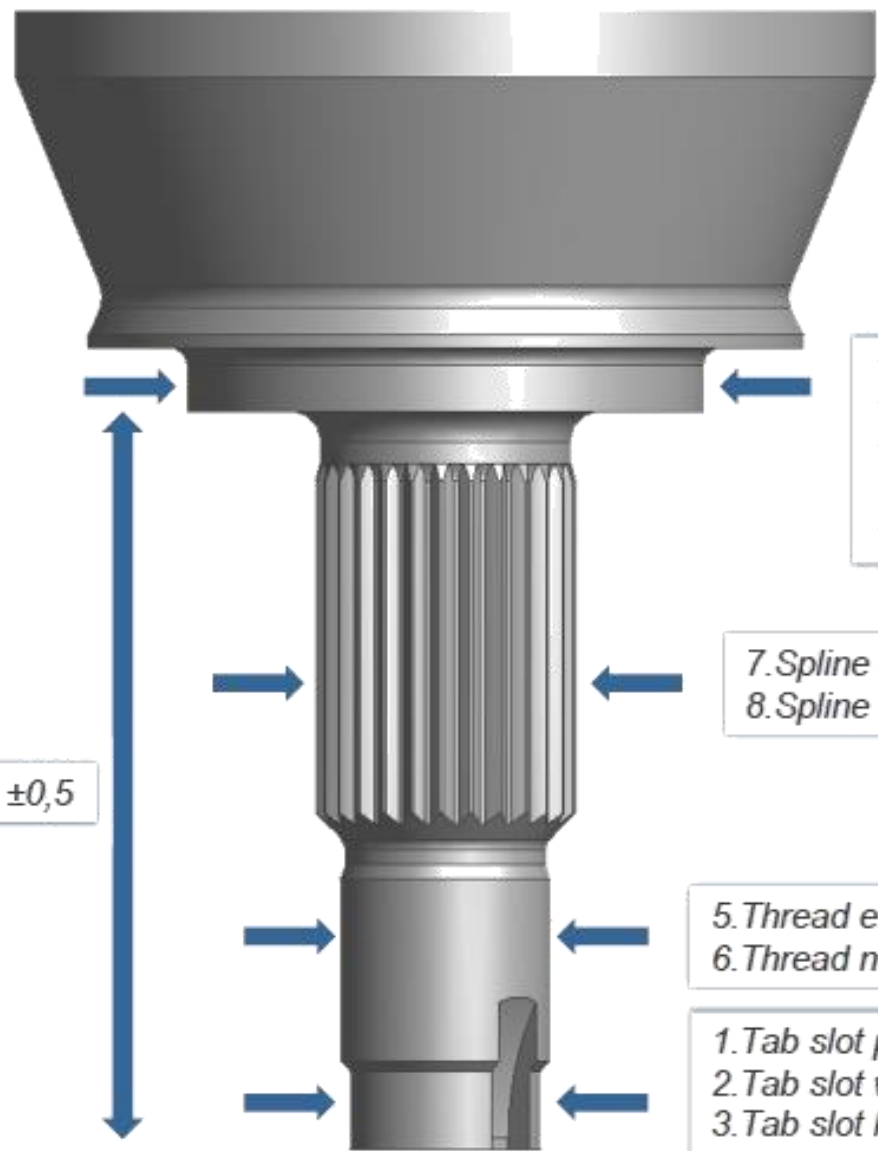


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EXPERT SYSTEM

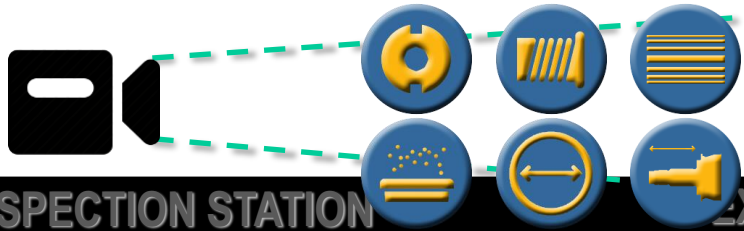
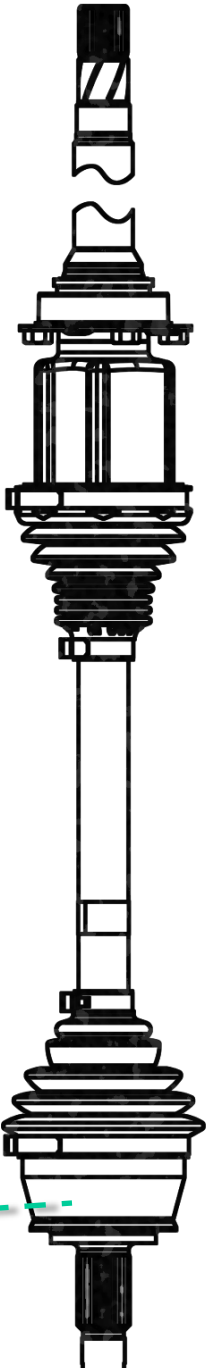


10. Joint backface diameter $\pm 0,5$
11. Joint integral dustshield $\pm 0,5$
12. Dust shield presence yes/no
13. Dust shield orientation yes/no
14. Dust shield position $\pm 0,2$

7. Spline diameter $\pm 0,5$
8. Spline no bumps

5. Thread external diameter $\pm 0,5$
6. Thread no bumps

1. Tab slot presence yes/no
2. Tab slot width $\pm 0,15$
3. Tab slot length ± 1
4. Tab slot simmetry max 3°



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INSPECTION STATION

EXPERT SYSTEM

VisionPro(R) QuickBuild Job Editor - CogJob1

File Run Configure Show Help

Tools Graphics

Graphics

<ToolGroup Inputs>

- Image Source
- Slot Square
- Thread Square
- Spline Square
- Joint Square
- Tab Slot
- Thread
- Spline
- Joint Diameter
- Dust Shield
- Distance
- Design
- CogDataAnalysisTool

<ToolGroup Outputs>

- RunParams.Item["Slot_width"].Current Value
- RunParams.Item["Slot_length"].Current Value
- RunParams.Item["Thread_diameter"].Current Value
- RunParams.Item["Thread_avg_distance"].Current Value
- RunParams.Item["Thread_max_distance"].Current Value
- RunParams.Item["Spline_diameter"].Current Value
- RunParams.Item["Joint_diameter"].Current Value
- RunParams.Item["Joint_length"].Current Value
- RunParams.Item["DustShield_Presence"].Current Value

Last Run Image Source Output Image

Result = Accept. ProcessingTime = 0,847737

CogDataAnalysisTool

Settings Results

Channels

N	Name	Value	Reject Low	Warn Low
0	Slot_width	5,68766 *	<input type="checkbox"/>	<input type="checkbox"/>
1	Slot_length	15,1398 *	<input type="checkbox"/>	<input type="checkbox"/>
2	Thread_diameter	24,3548 *	<input type="checkbox"/>	<input type="checkbox"/>
3	Thread_avg_distan...	1,4817 *	<input type="checkbox"/>	<input type="checkbox"/>
4	Thread_max_distan...	1,50156 *	<input type="checkbox"/>	<input type="checkbox"/>
5	Spline_diameter	29,4222 *	<input type="checkbox"/>	<input type="checkbox"/>
6	Joint_diameter	59,3541 *	<input type="checkbox"/>	<input type="checkbox"/>
7	Joint_length	85,99 *	<input type="checkbox"/>	<input type="checkbox"/>
8	DustShield_Presence	0 *	<input type="checkbox"/>	<input type="checkbox"/>

* Indicates values that have not been updated since the last run

Reject if Channels Not Updated Individual Results Enabled

Statistics

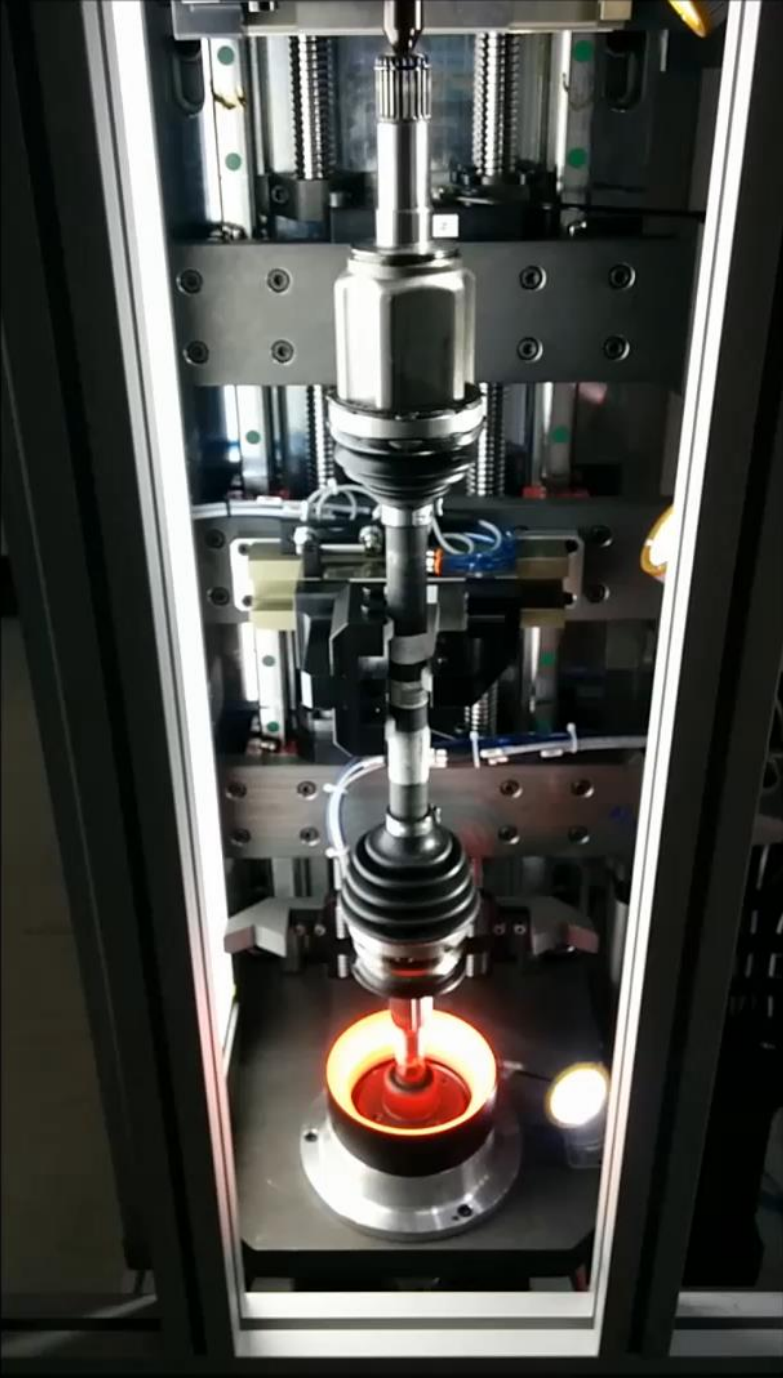
Buffer Length:

Num Buffered:

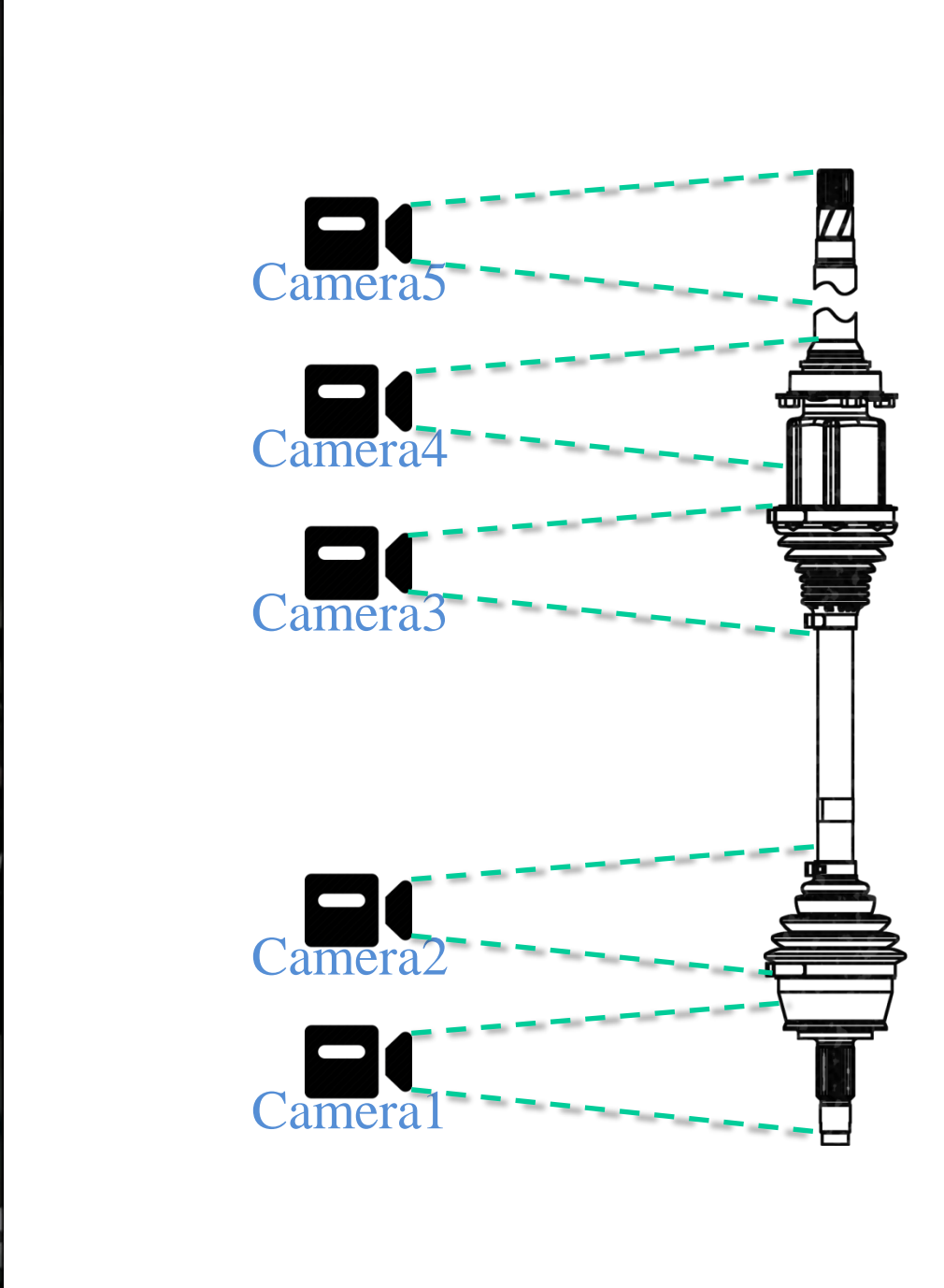
6,302ms 7,158ms The Tool has Run successfully with a reject level r

65,02 ms 98,89 ms Stopped Tool "CogDataAnalysisTool1" reject. The Tool has Run successfully with a reject-level result.





MOTIVATION

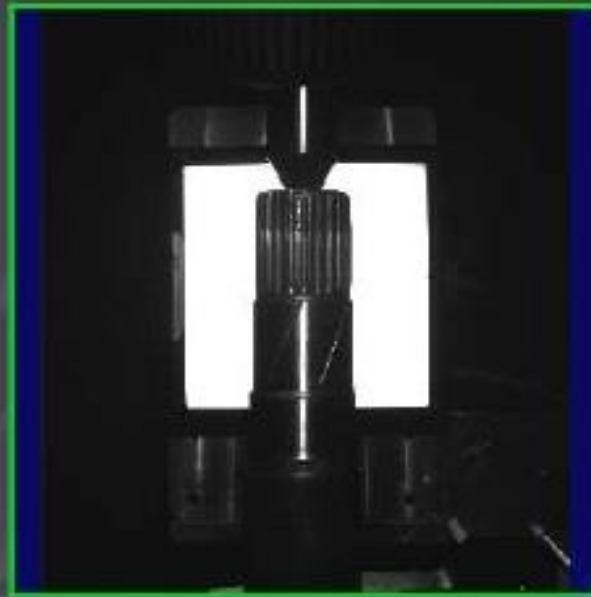
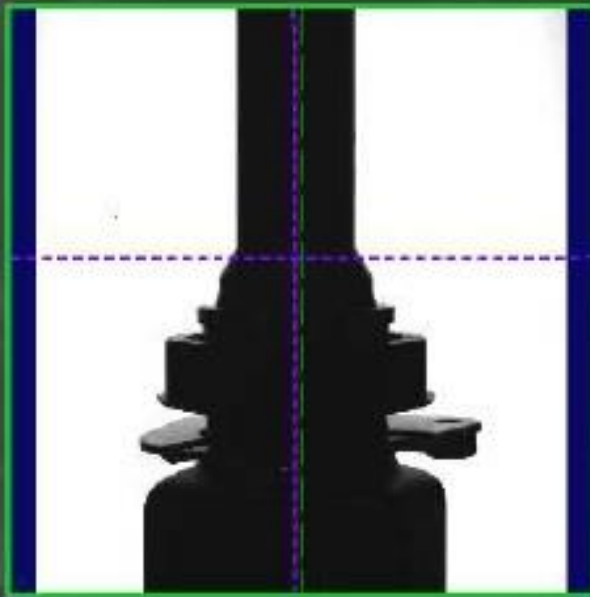


VISION SW & HW



INSPECTION STATION

EXPERT SYSTEM



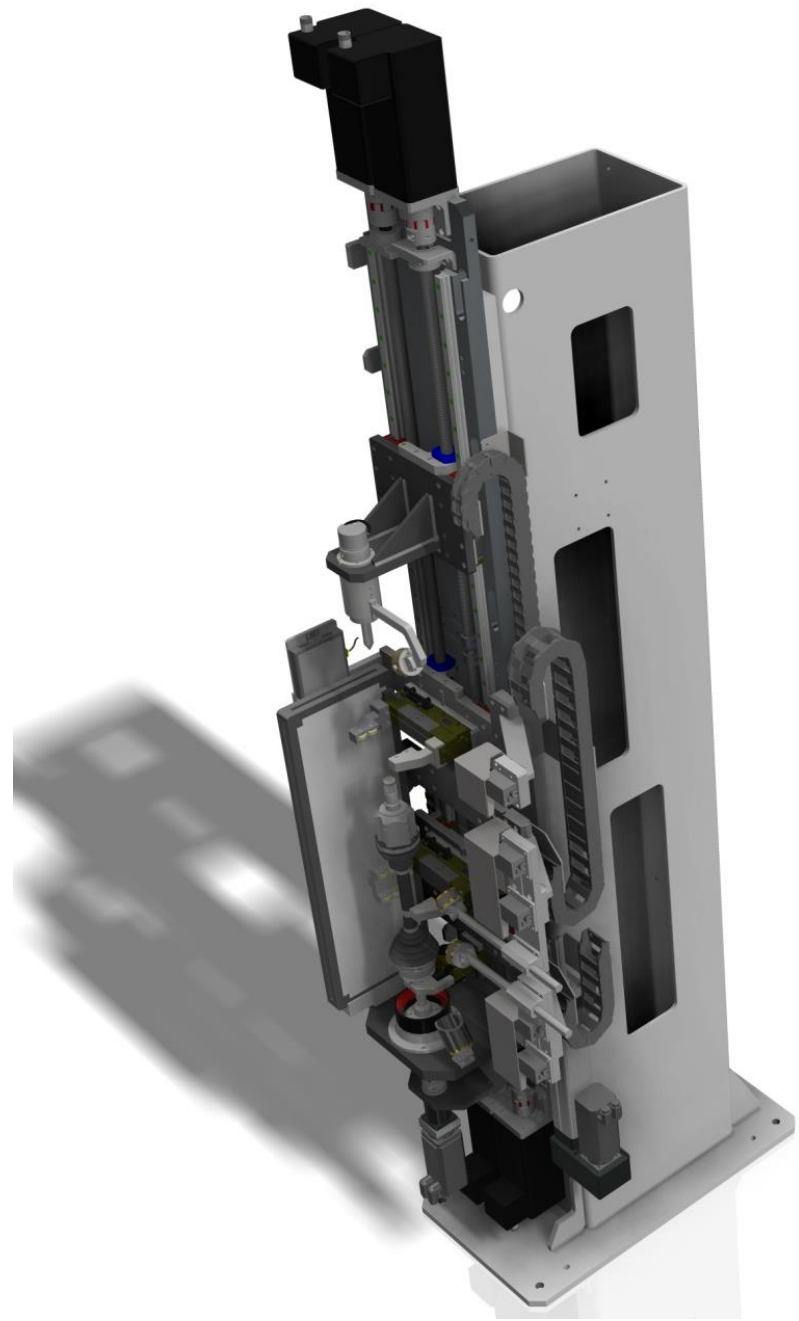
Famiglia: 4 

Tipo: Lungo

00520500990971082078807617

Analizzati	OK
69	63



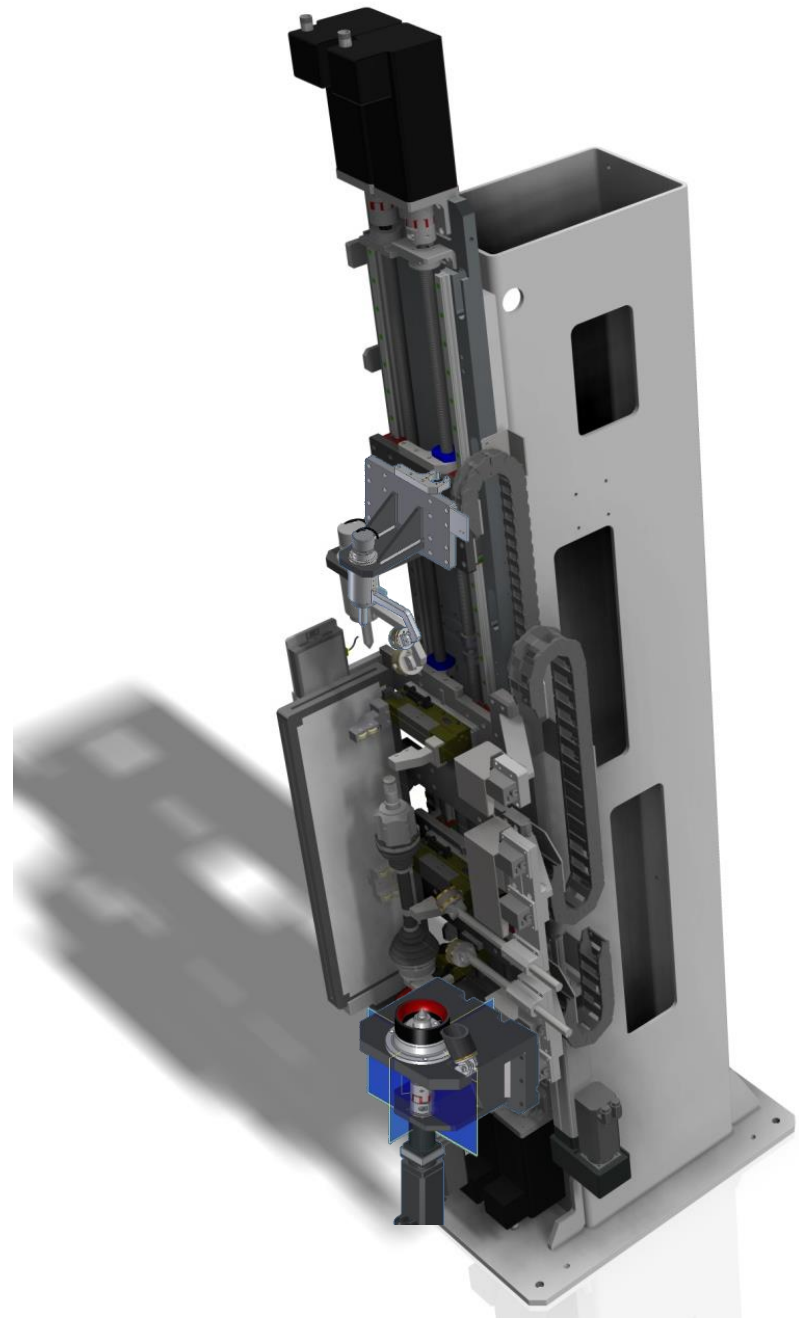


MOTIVATION

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INSPECTION STATION

EXPERT SYSTEM

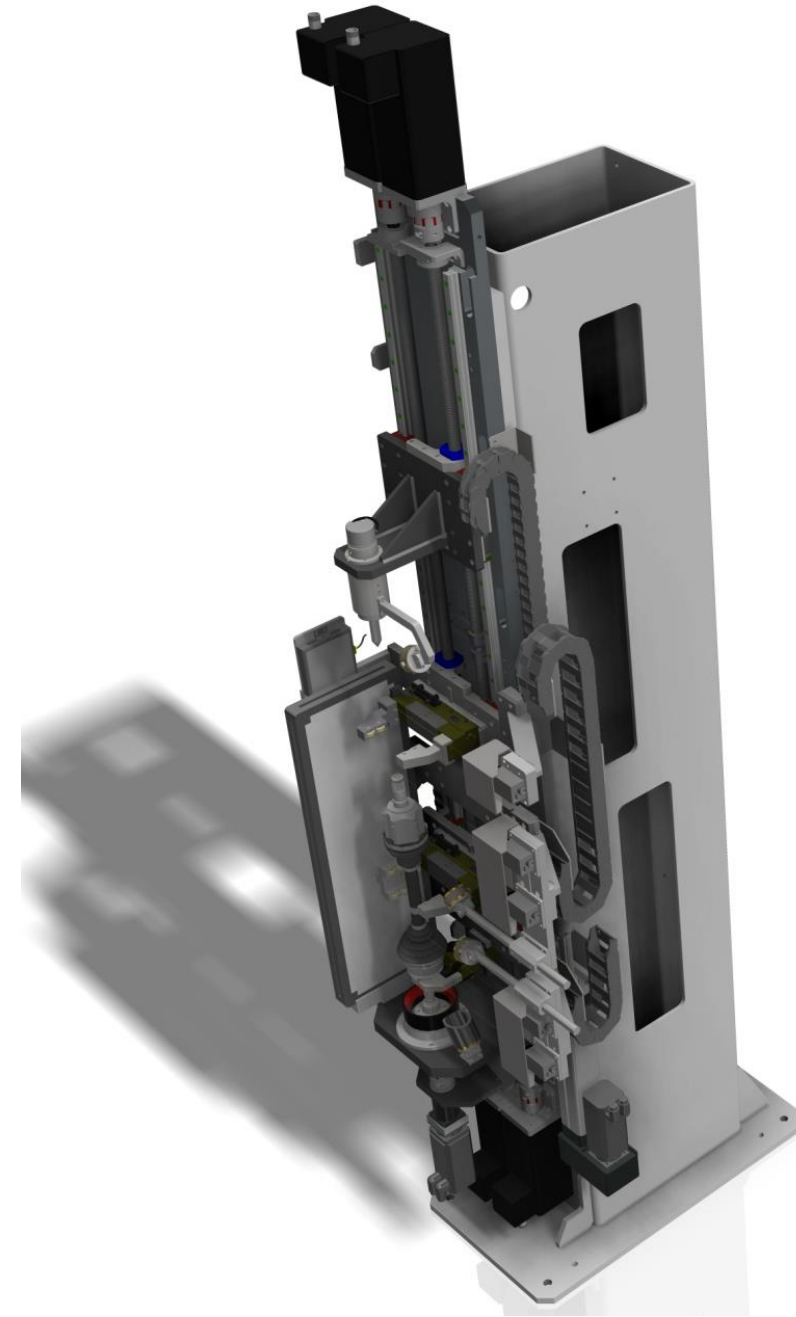
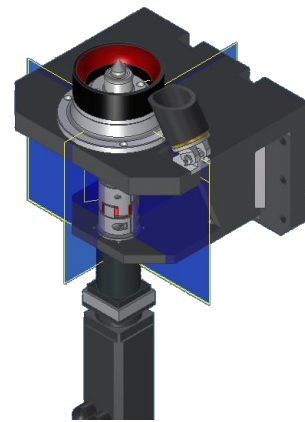
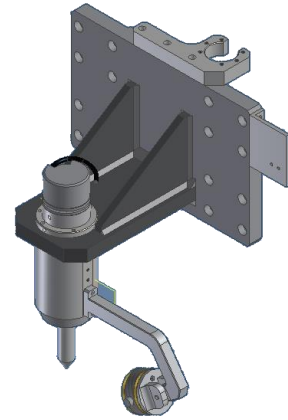


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EXPERT SYSTEM

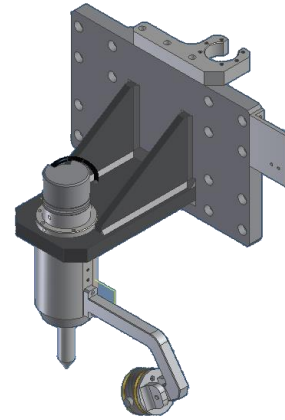


MOTIVATION

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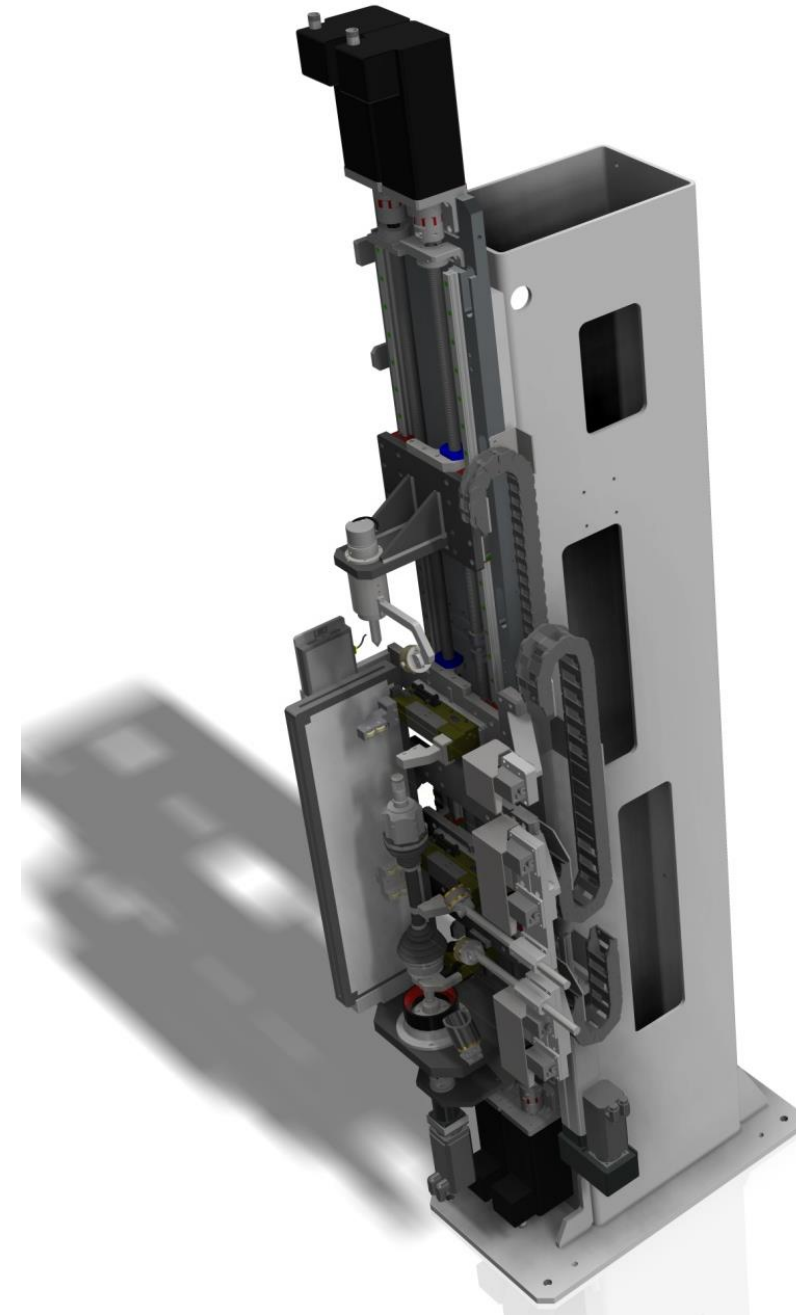
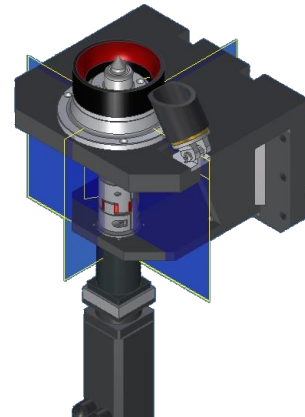
INSPECTION STATION

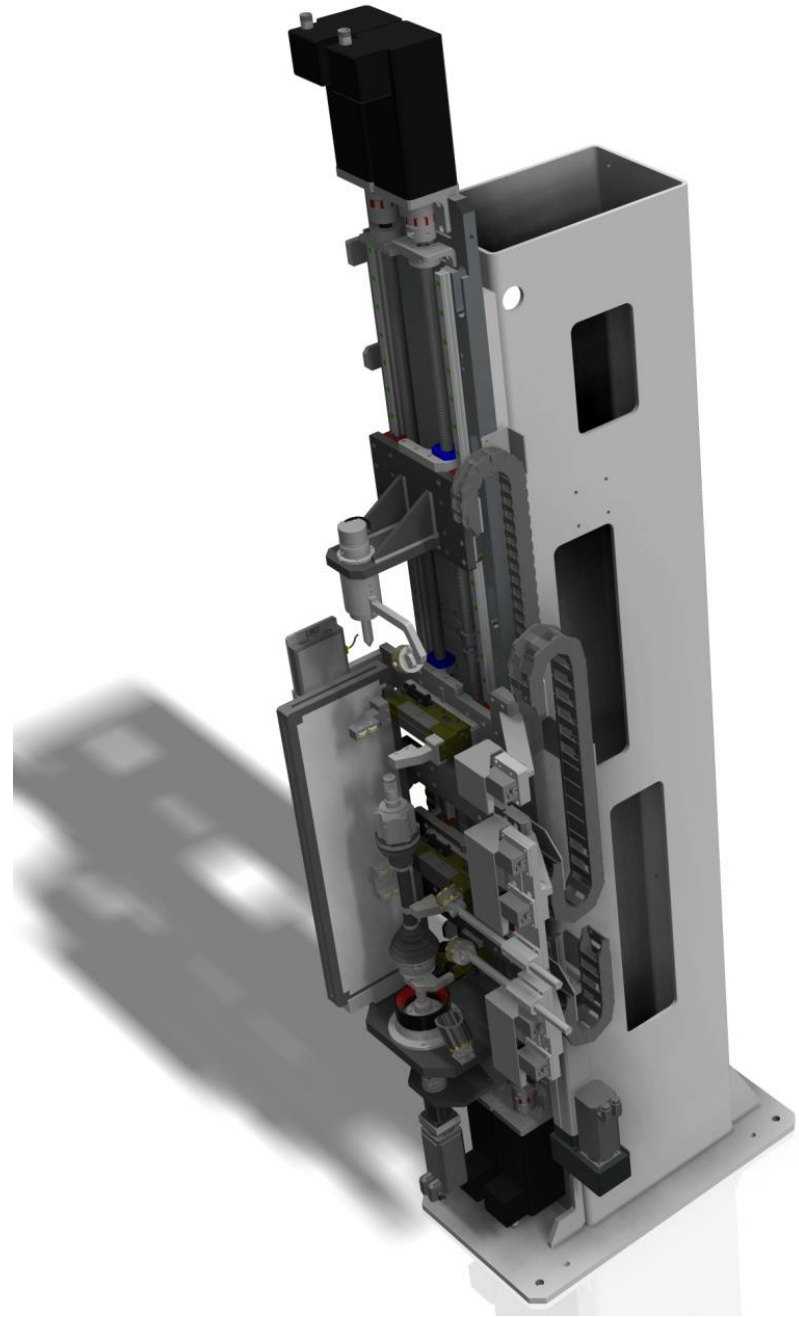
EXPERT SYSTEM



UPPER TAILSTOCK

DRIVING TAILSTOCK



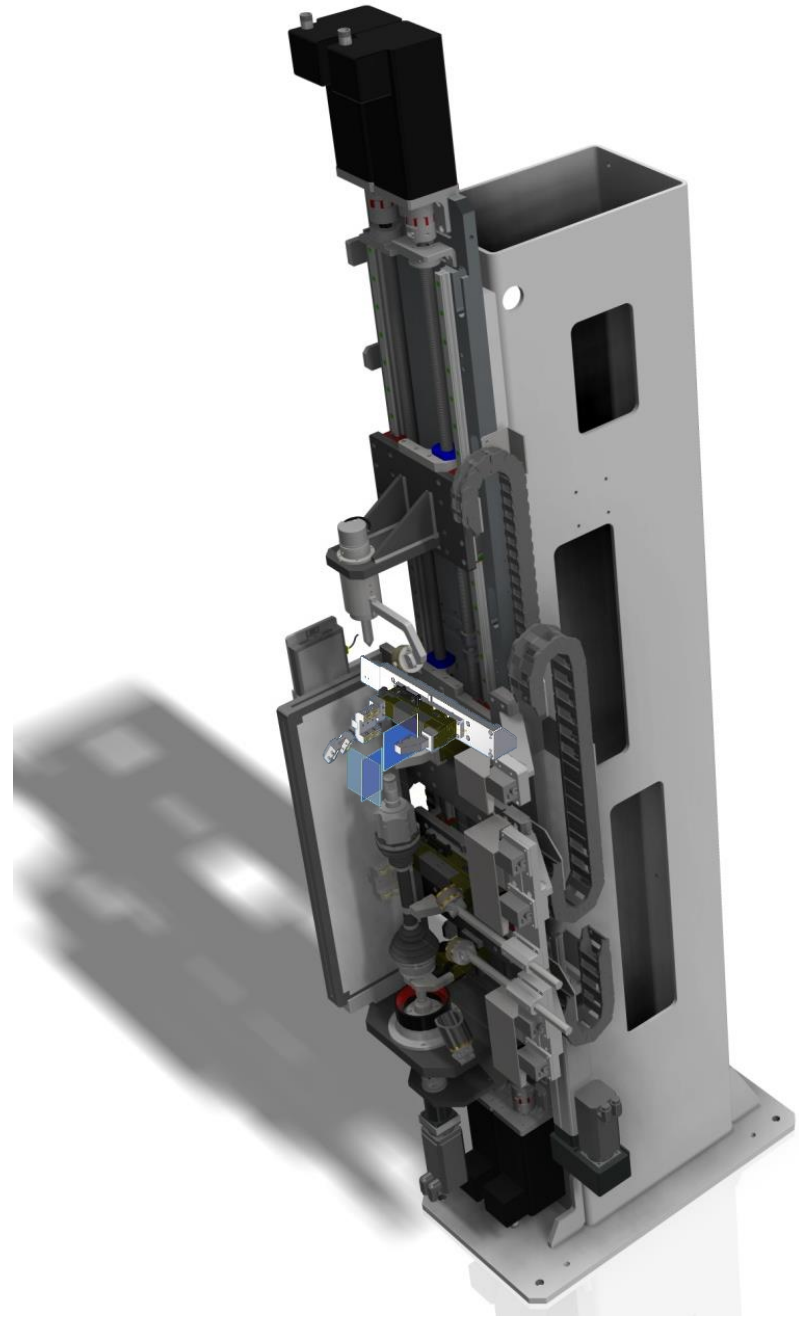
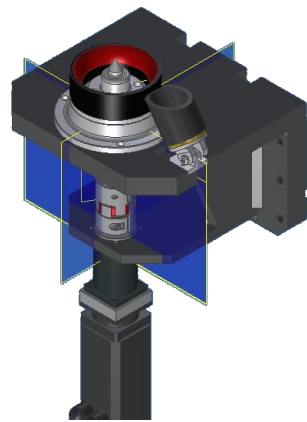
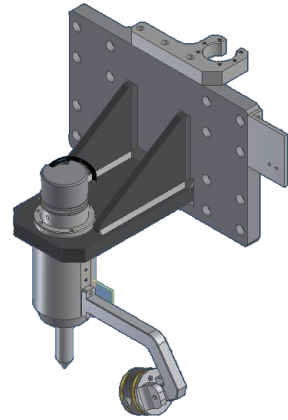


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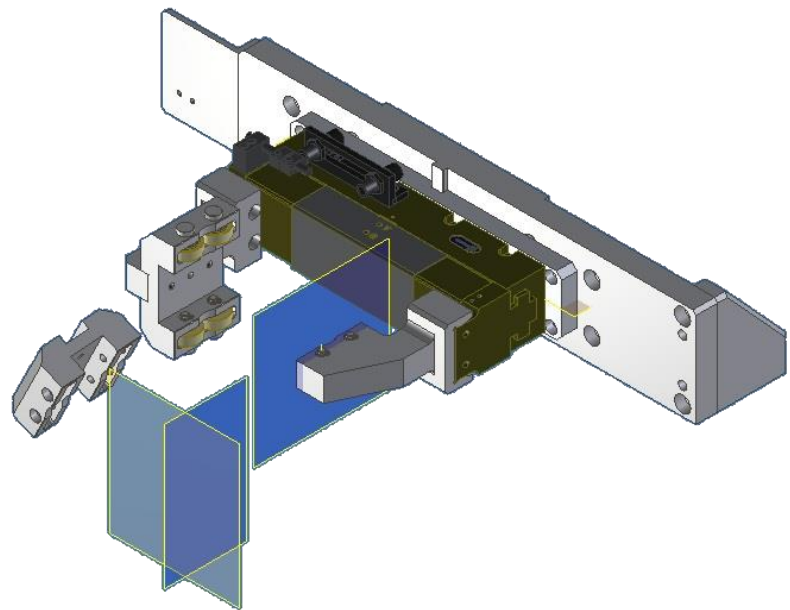


MOTIVATION

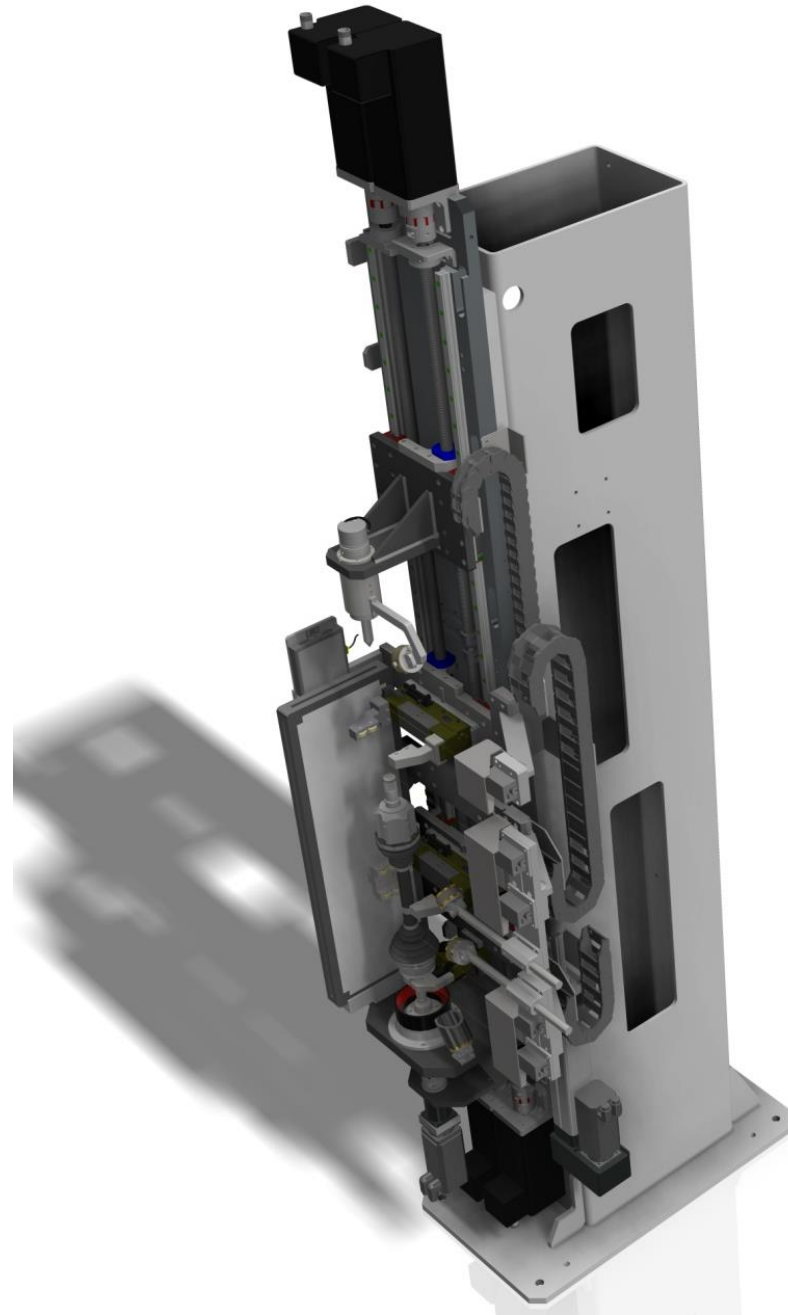
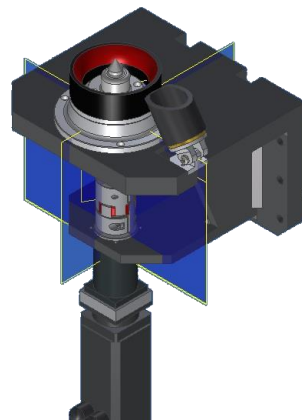
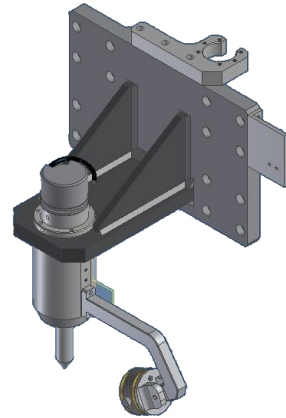
VISION SW & HW

INSPECTION STATION

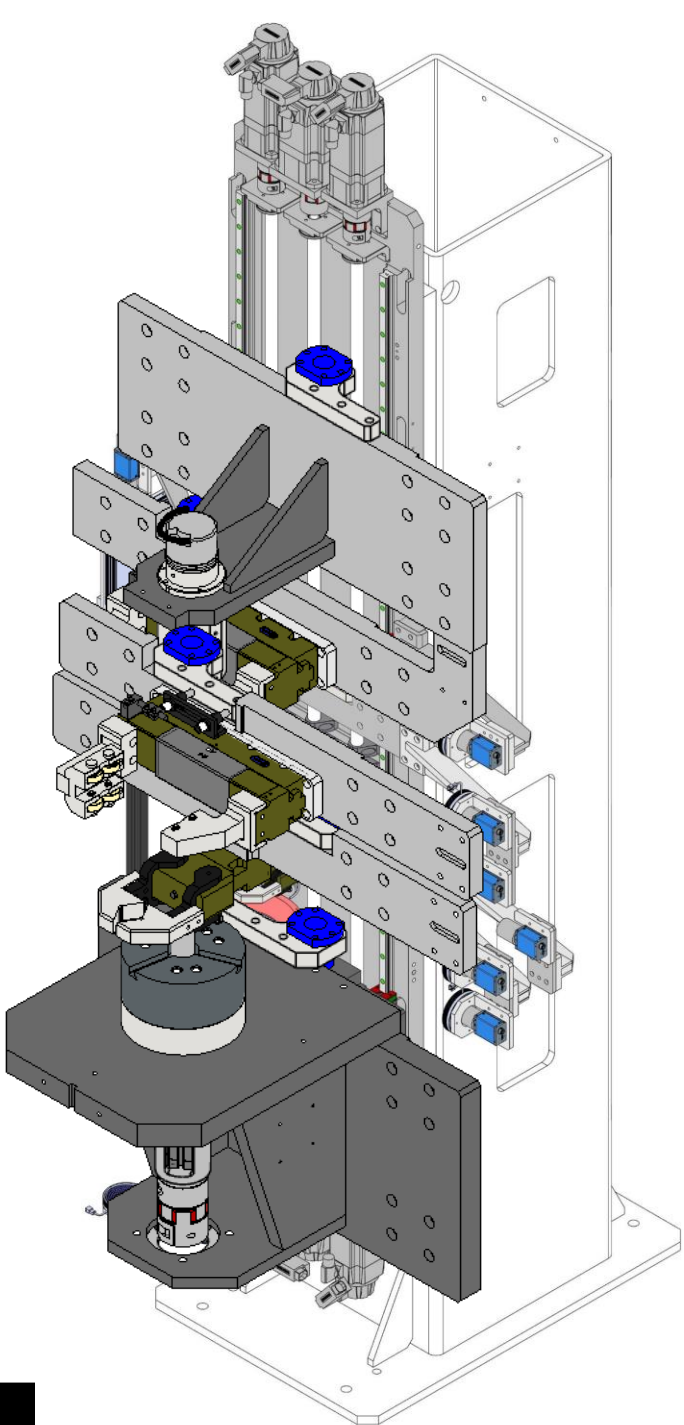
EXPERT SYSTEM



CLAMP WITH IDLE WHEELS



Hardware

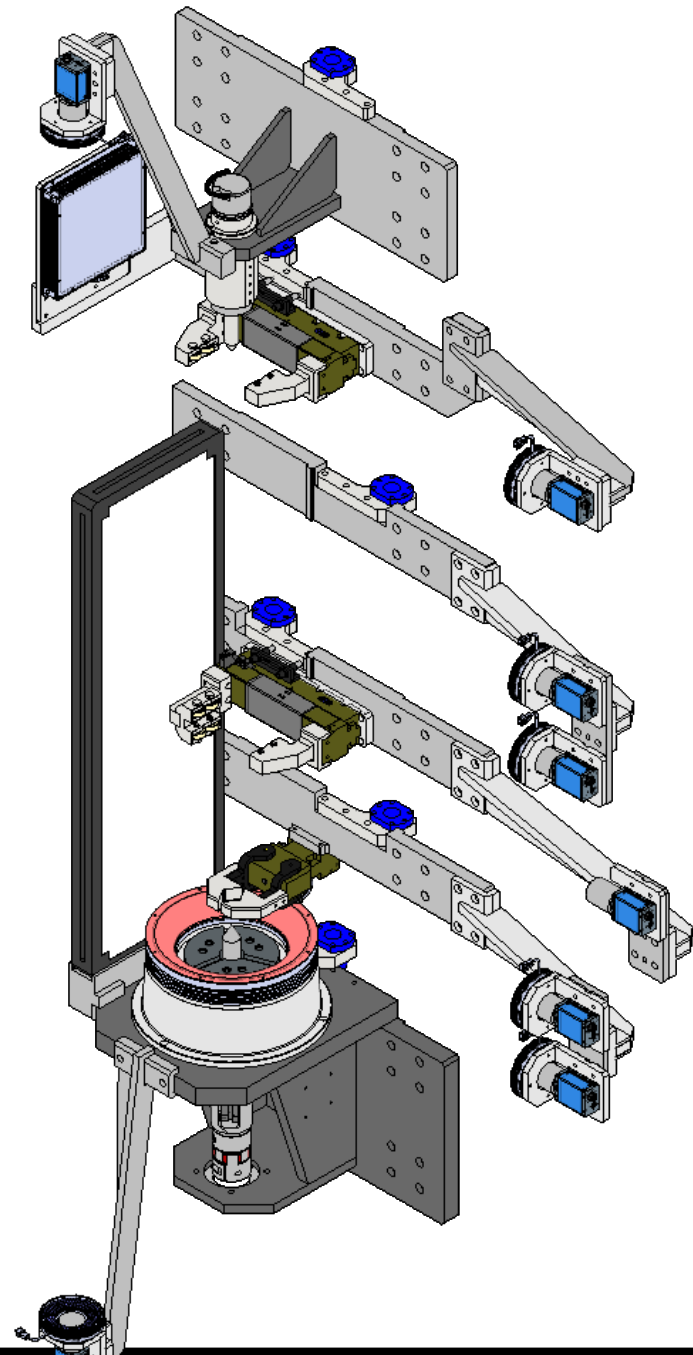


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INSPECTION STATION

EXPERT SYSTEM

Hardware

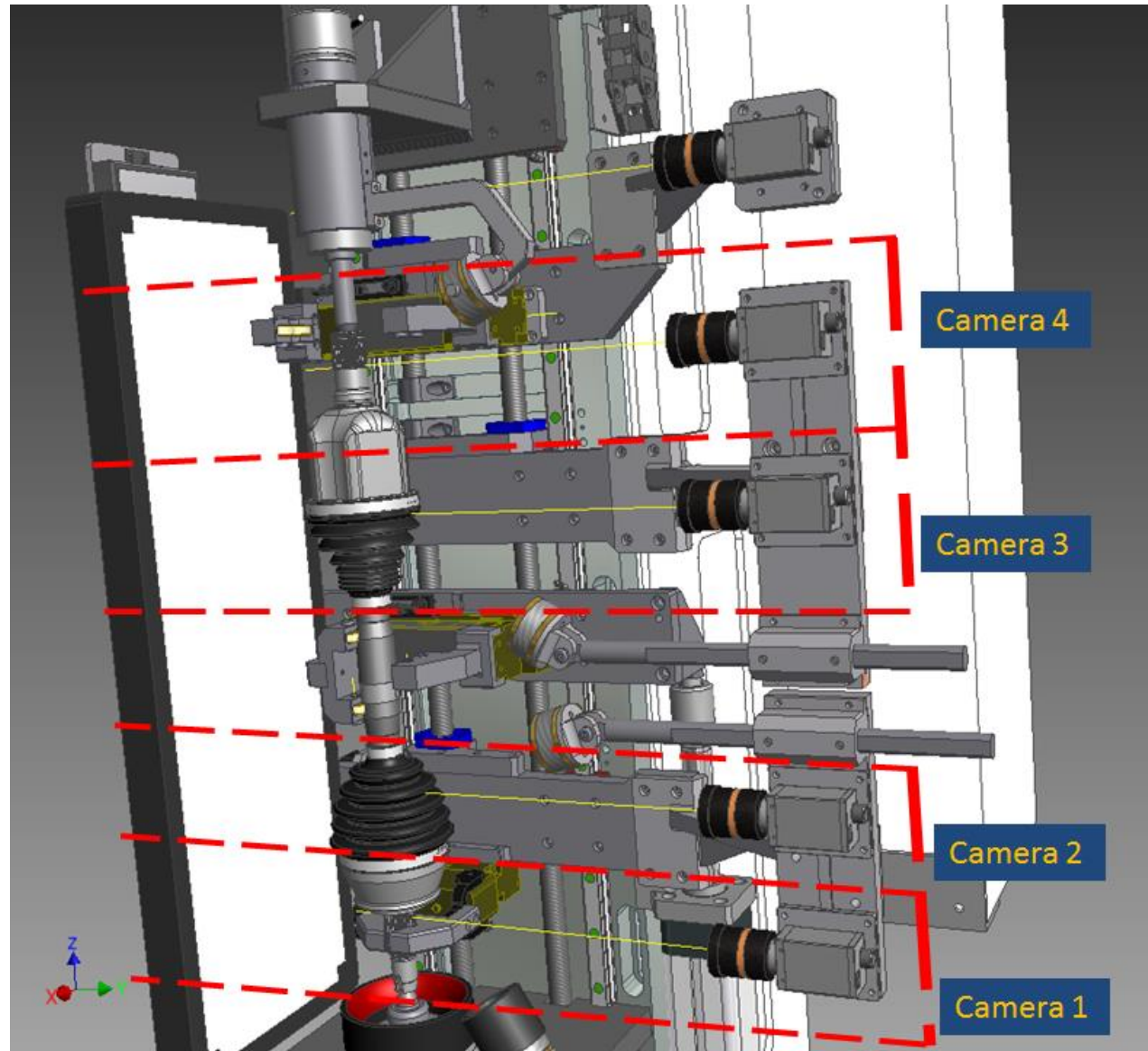


MOTIVATION

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INSPECTION STATION

EXPERT SYSTEM



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INSPECTION STATION

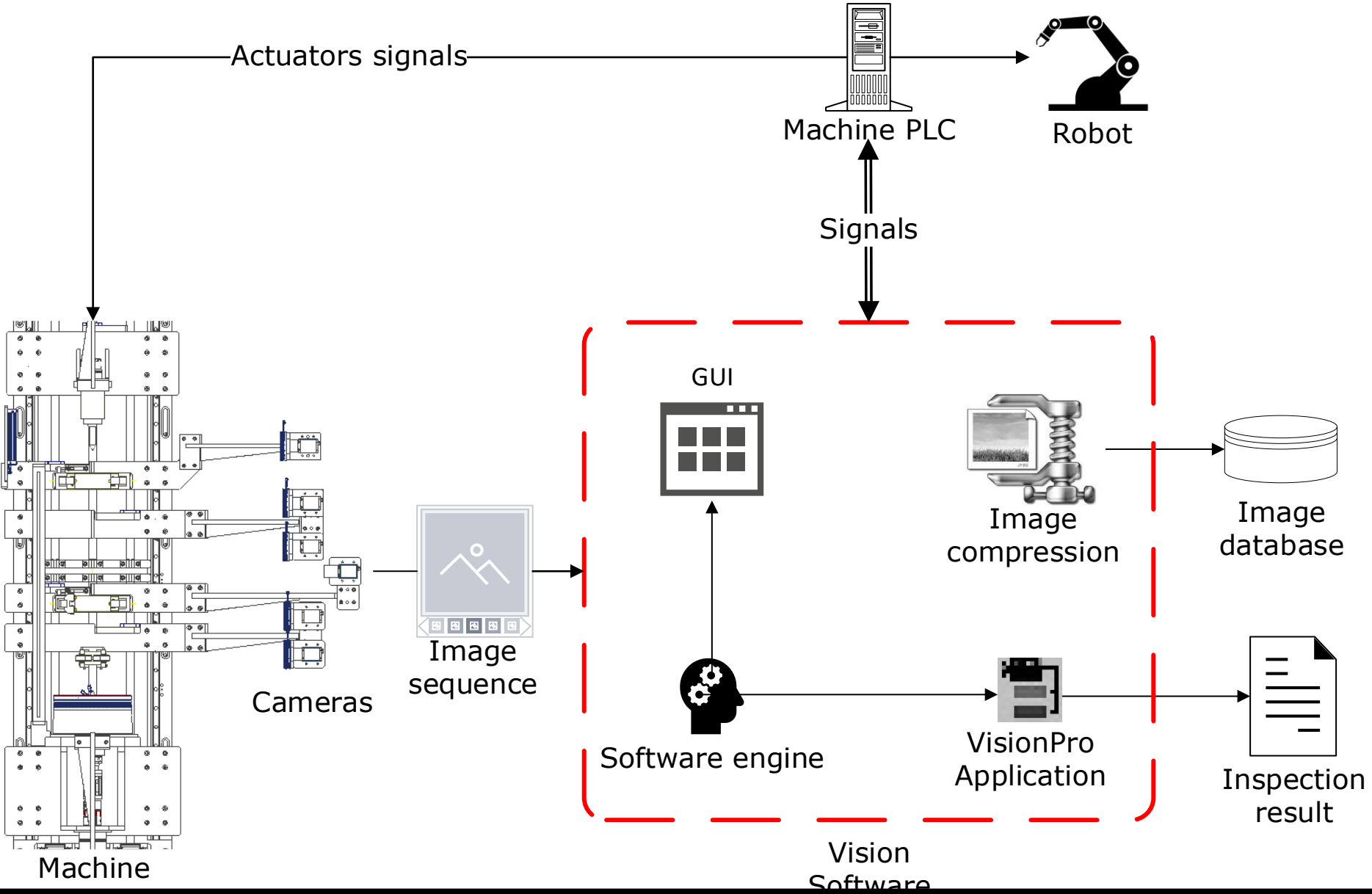
EXPERT SYSTEM

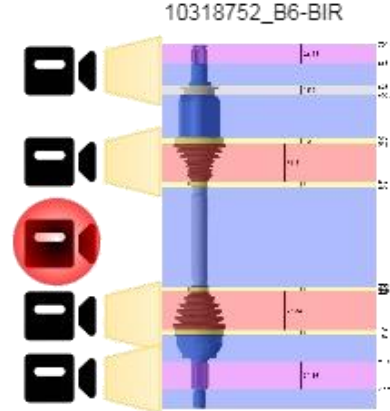
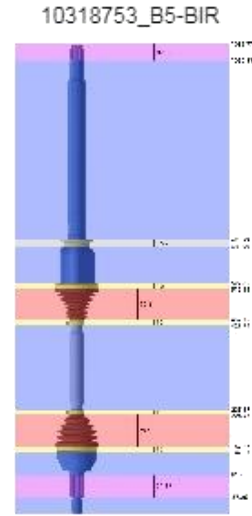
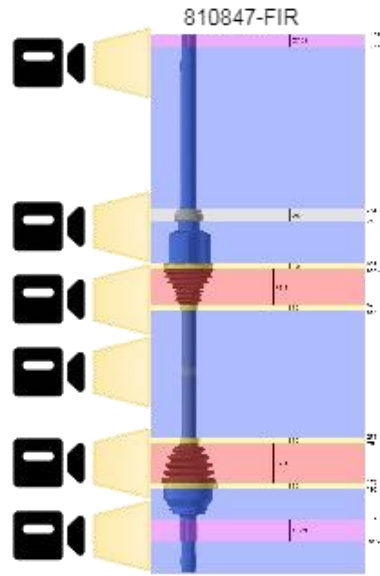


MOTIVA

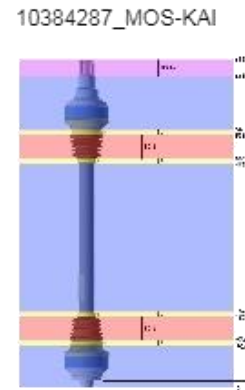
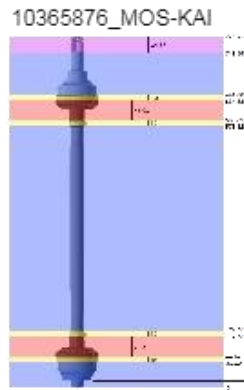
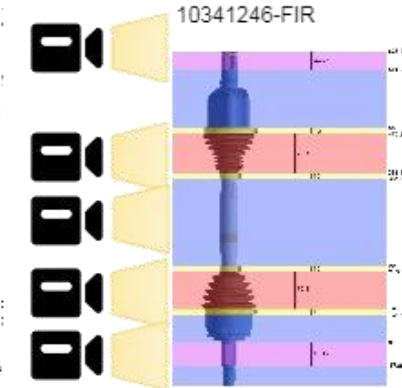
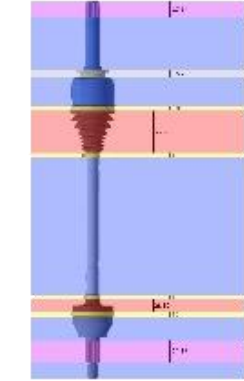
T SYSTEM

Software

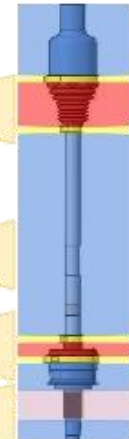




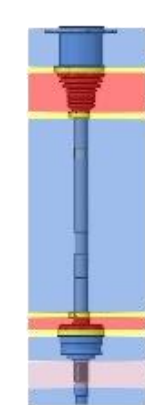
10379459_B6-BIR



1034098_A



10303358_A



MOTIVATION

VISION SW & HW

INSPECTION STATION

EXPERT SYSTEM

VISION EXPERT SYSTEM

CodeID: **00520289830971082000234**

Details: *Fixed ball joint*




Previous Search Next


Add Save Delete

Update

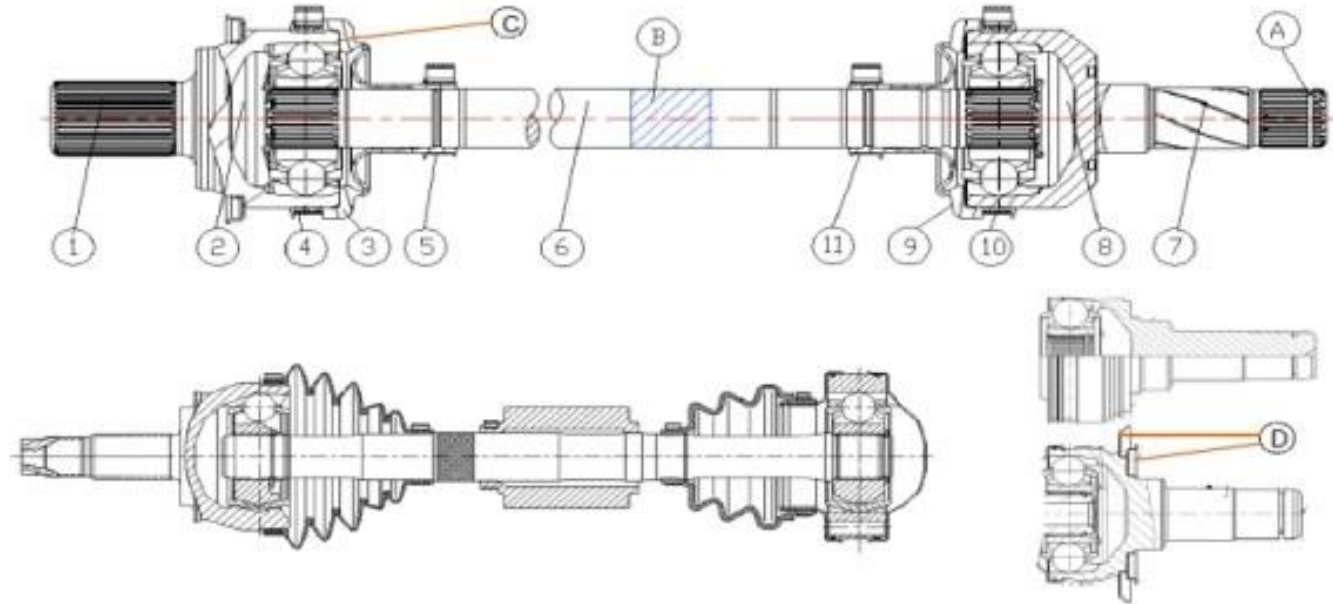
Component

Exit

	Code	Description	Image
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▶	0052028983097...	Fixed ball joint	
	0052028983097...	Fixed ball joint	



Fixed Ball Joint (FBJ) with Verschiebegelenk Löbro Joint (VL)

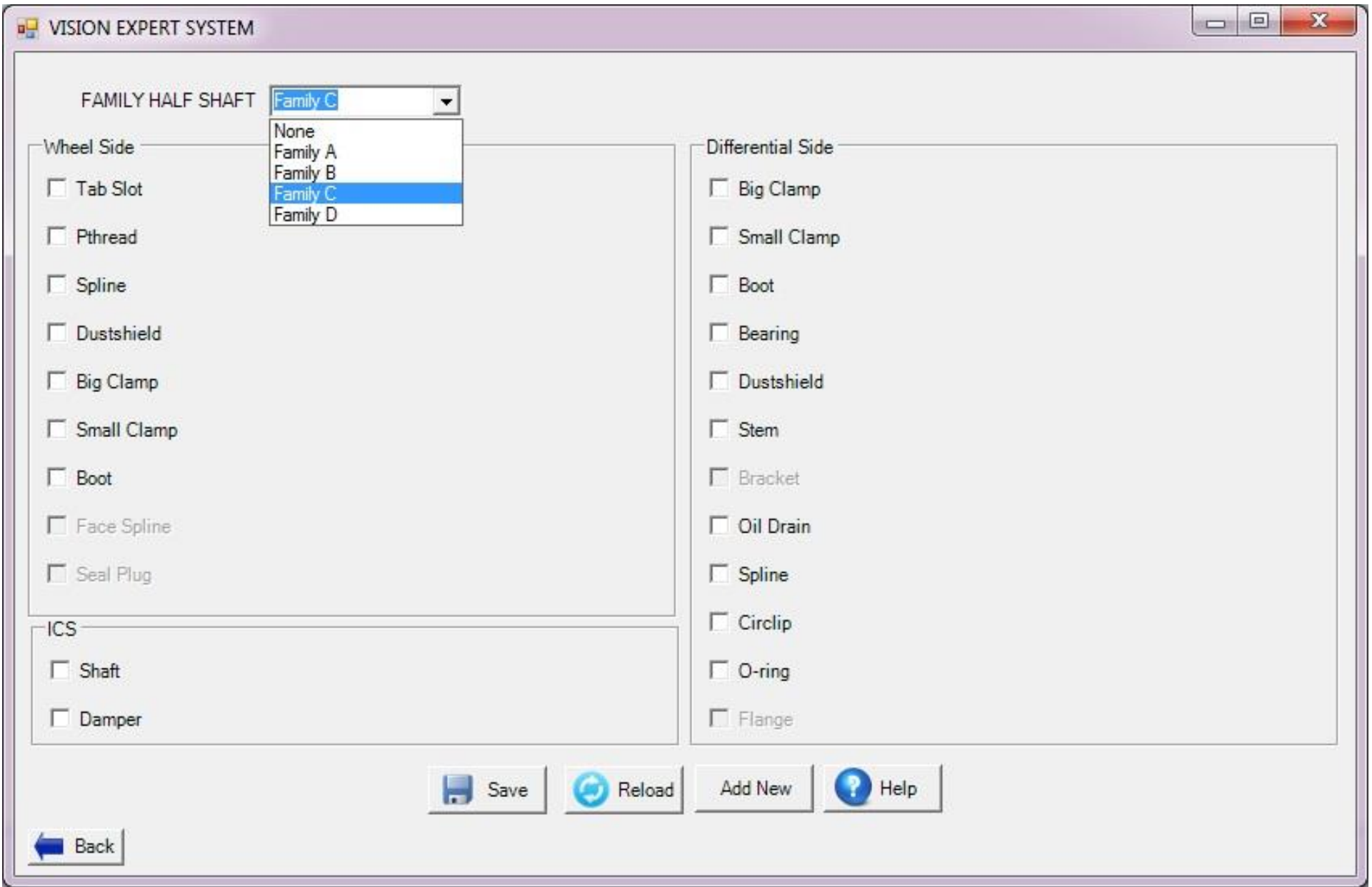


Standard components

1 VL Joint	8 VL Joint
2 Grease	9 Grease
3 Boot	10 Boot
4 Large SEC/MCR clamp	11 Large SEC/MCR clamp
5 Small SEC clamp	12 Small SEC clamp
6 Shaft	

Optional components

A Ring retainer (gearbox side)
B Label
C O- Ring Seal
D Dust Washer



VISION EXPERT SYSTEM

Group A | Group B | Group C | Group D | Components | Components

Outboard Joint - Wheel Side

SX(6.1/8.1) ACI UF(I/3) VL-MB*

IJB - Differential Side

Tulips
- GI
- AAR

DO VL MB

Tripod and Circlip

Circlip Ring retainer GI GI3 AAR

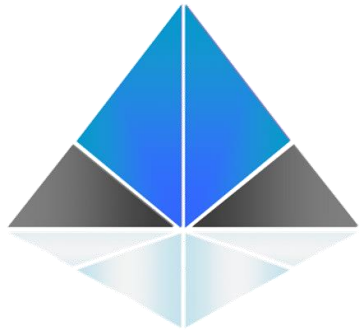
Continue





International Academy for Production Engineering
Scientific Technical Committee A – Life Cycle Engineering & Assembly
CIRP Winter meeting – Paris – February 21-23 2018

Vision Expert System for Halfshafts Inspection



Michele Lanzetta *et al.*

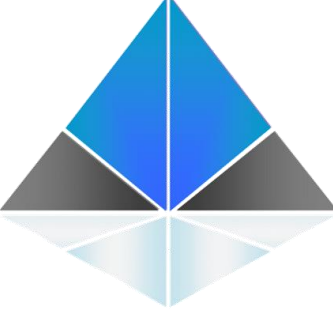


University of Pisa, Italy
Dept. of Civil and Industrial Engineering



International Academy for Production Engineering
Scientific Technical Committee A – Life Cycle Engineering & Assembly
CIRP Winter meeting – Paris – February 21-23 2018

Vision Expert System for Halfshafts Inspection



University of Pisa, Italy, Dept. of Civil and Industrial Engineering
Michele Lanzetta, Gino Dini, Michele Biancalana, Stefano Chiodi,
Pierfrancesco Ceccarelli, Giovanni Salvatore,
Federico Lusiani, Ludovico Barsotti, Yanet Vila,
Flavio Antonelli, Gabriele Moretti, Andrea Rossi



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Cesare Ottavi, Enrico Cannoni, Carlo Cavallini, Gianni Salvini,
Valerio Raugi, Nicola Coscia, Massimo Mazzi

