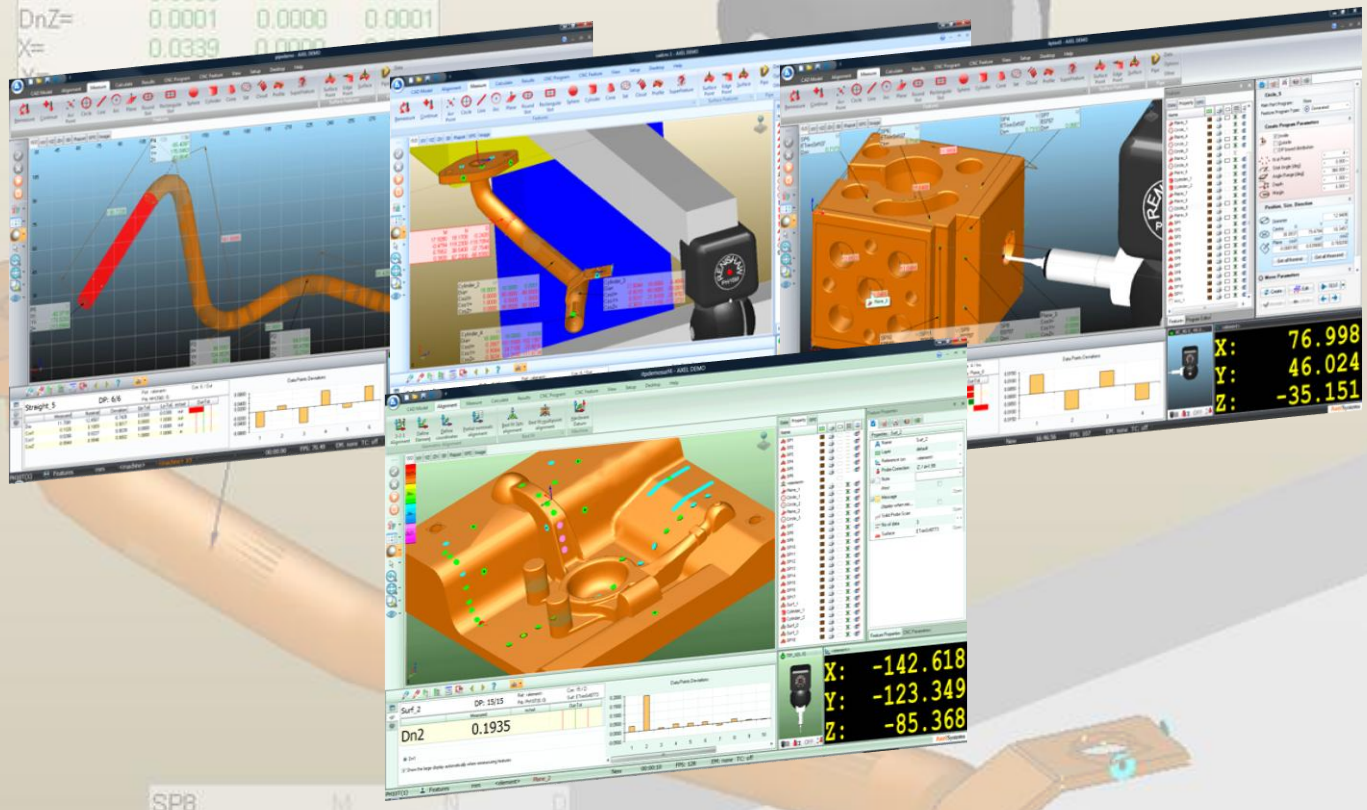
AxelSystems

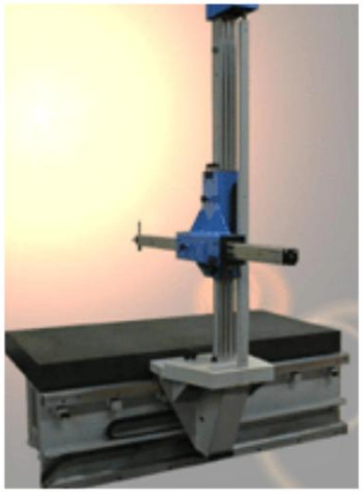


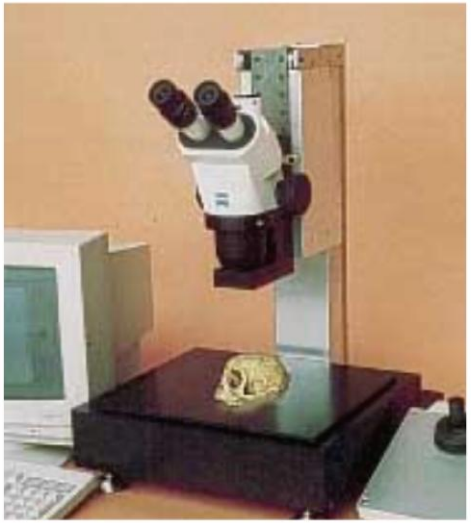
AXEL 7

Integrated Metrology Suite for
Effort Free Measurement

Applications

- Manual, Motorized and CNC CMMs
- Articulated Measuring Arms
- Non-Contact & Contact CMMs
- Measuring Microscopes





Integrated Measuring Environment

All **geometrical, surface and pipe** measurements are made from within Uniform User Interface .

Geometric,

Surface

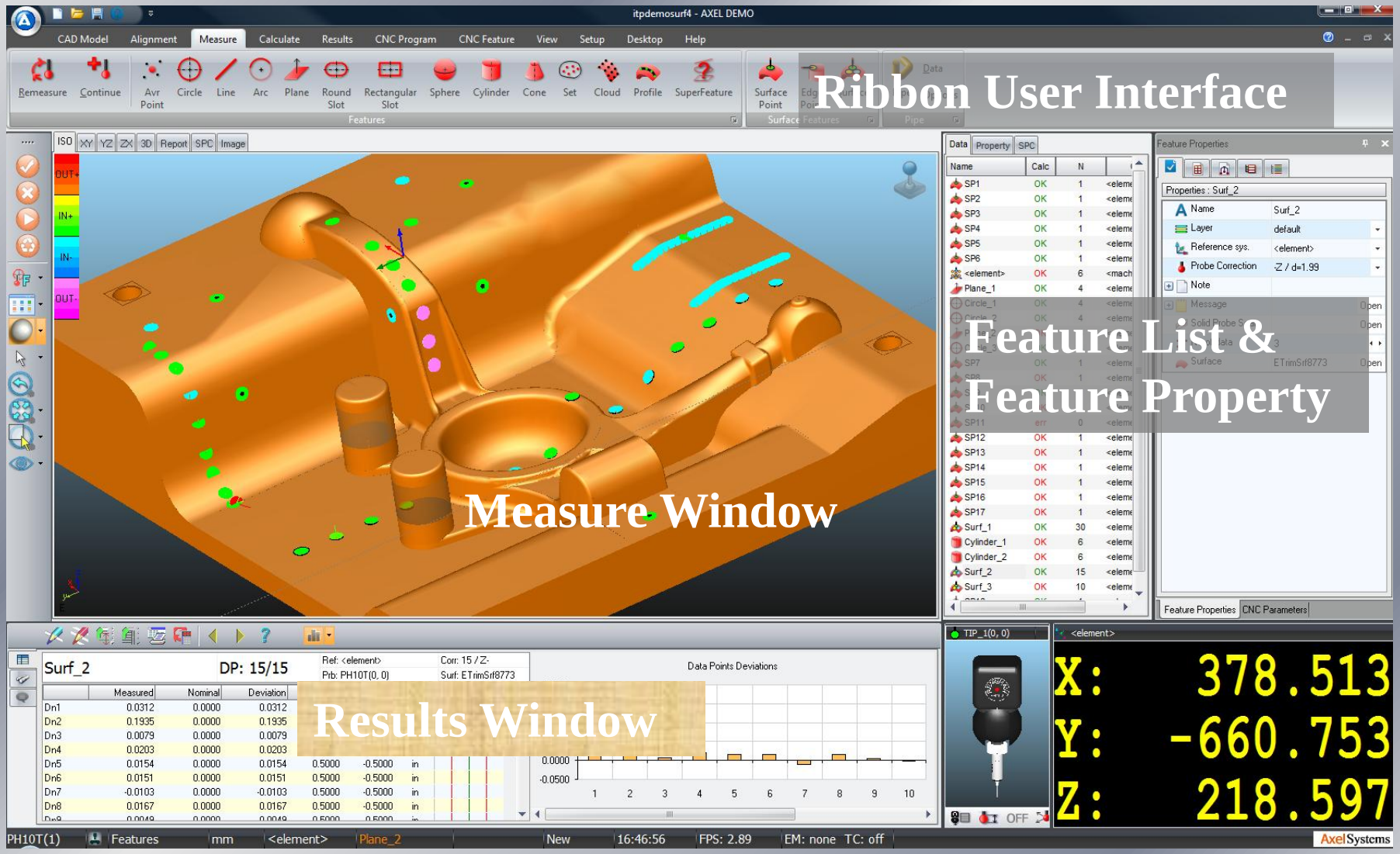
and Pipe

Inspection

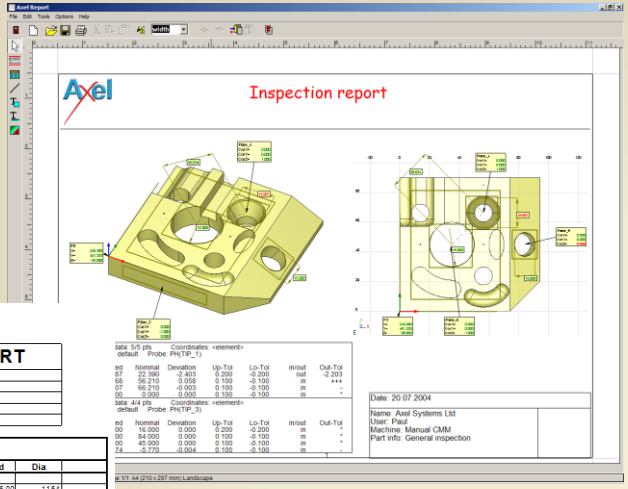
Interfaces

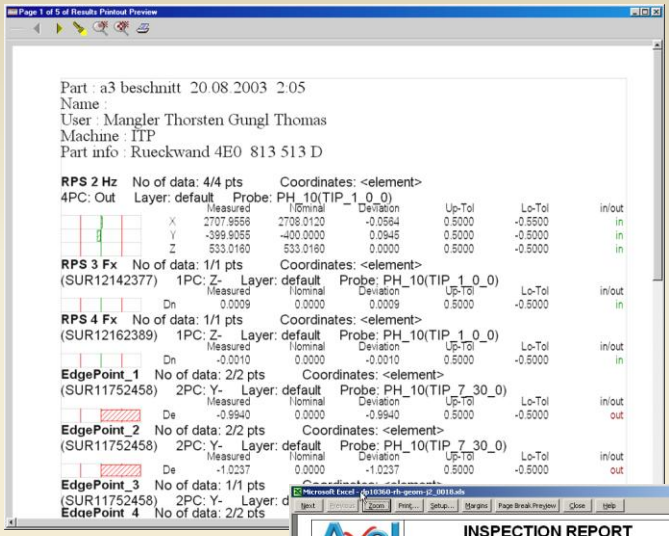
- SPC Interface
- HTML, Excel Templates
- Import CAD templates (Catia, Pro-Eng, Step ...)
- DXF and IGES import/export
- Pipe Benders
- DDE data exchange

Axel Window Overview



Reporting





AxelSystems

TUBE INSPECTION REPORT

Part name	pipedemo
Part info	Black Pipe0261
User name	Axel Systems Ltd
Machine	HA-213
Modified by	Ed

Pipe_1, (nominals)

Coordinates: <machine>, Layer: default, Probe: Red Arm(TIP_1)

	X	Y	Z	Y[mm]	B°	C°	Bend	Dia	
0	0.00	0.00	0.00						
1	72.73	0.00	0.00	41.03		82.73	36.00	11.64	
2	84.31	90.79	0.00	43.17	-98.81	57.27	36.00	11.64	
3	100.43	133.50	-68.26	27.51	98.72	88.32	36.00	11.64	
4	-66.69	176.94	-83.69	91.96	-149.15	89.80	36.00	11.64	
5	-42.51	179.87	-213.69	94.83				11.64	

Pipe_1, (deviations)

Coordinates: BestFit_coord, Layer: default, Probe: Red Arm(TIP_1)

	dX	dY	dZ	Env1	Env2	Y[mm]	B°	C°	Dir°
0	0.20	0.03	-0.27						
1	0.17	0.12	-0.05	0.27	0.16	-0.23		0.50	0.19
2	-0.50	0.31	0.27	0.10	0.44	-0.45	-1.16	0.98	0.48
3	0.72	-0.50	-0.12	0.27	0.26	-0.82	1.24	0.85	1.06
4	-0.26	0.10	0.17	0.29	0.12	0.38	-0.43	0.21	0.15
5	-0.14	-0.06	0.21	0.23	0.12	-0.16			0.09

Tolerance band 2.00 mm [PASS]
Total length of measured tube 496.08 mm
Total length of nominal tube 495.35 mm
Tangent length 296.90 mm
Tangent length nominal 295.48 mm
Distance between centres of end faces measured 282.90 mm
Distance between centres of end faces nominal 282.53 mm
Total bend 315.58°
Total rotation 343.96°

AxelSystems

INSPECTION REPORT

Part name	itptest5
Part info	
User name	Axel Systems Ltd
Machine	
Modified by	Ed

Surface points

Name	X	Y	Z	DnX	DnY	DnZ	Dn	Up-Tol	Lo-Tol
SP1	49.9817	91.9138	-25.1279	0.0001	0.0876	0.0004	-0.0876	1.5000	-1.5000
SP2	54.4875	78.6293	-9.0081	-0.0001	-0.3098	-0.3725	0.4845	1.5000	-1.5000
SP3	9.0733	72.7792	-4.1904	0.0002	-0.2909	-0.3497	0.4549	1.5000	-1.5000
SP4	68.3952	38.9646	0.7310	0.0004	-0.0001	-0.7310	0.7310	1.5000	-1.5000
SP5	21.4184	15.3407	0.7173	-0.0002	-0.0002	-0.7173	0.7173	1.5000	-1.5000
SP6	56.5594	7.5677	0.7147	-0.0001	0.0004	-0.7147	0.7147	1.5000	-1.5000
SP7	72.6723	16.0000	-6.4794	-0.0003	0.0687	-0.0002	0.0687	1.5000	-1.5000
SP8	70.2975	16.0016	-19.5352	0.0000	0.0212	-0.0001	0.0212	1.5000	-1.5000
SP9	70.6221	16.0153	-42.7550	0.0002	-0.0627	0.0002	-0.0627	1.5000	-1.5000
SP10	62.6096	5.9994	-43.0434	-0.0002	0.0712	0.0001	0.0712	1.5000	-1.5000
SP11	62.4685	5.9817	-9.7421	-0.0001	0.0597	0.0001	0.0597	1.5000	-1.5000

Plane_1

No of data: 0/0 pts, Coordinates: <machine>, 0PC: Z-, Layer: default, Probe: PH10T(TIP_1)

	Measured	Nominal	Deviation	Up-Tol	Lo-Tol	in/out	Out-Tol

Line_1

No of data: 0/0 pts, Coordinates: <machine>, 0PC: Y+, Layer: default, Probe: PH10T(TIP_1)

	Measured	Nominal	Deviation	Up-Tol	Lo-Tol	in/out	Out-Tol

Line_2

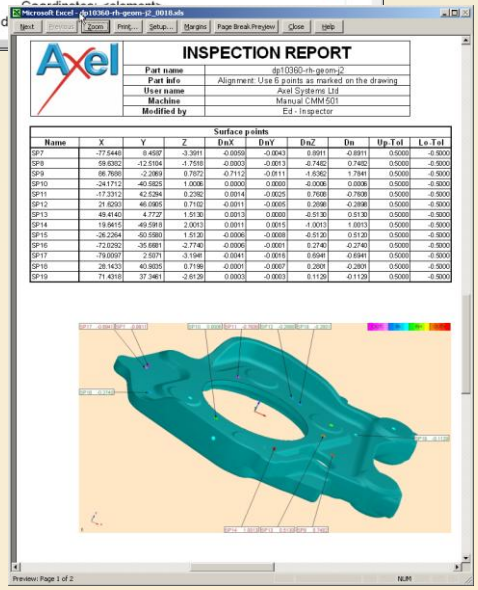
No of data: 0/0 pts, Coordinates: <machine>, 0PC: X+, Layer: default, Probe: PH10T(TIP_1)

	Measured	Nominal	Deviation	Up-Tol	Lo-Tol	in/out	Out-Tol

Plane_2

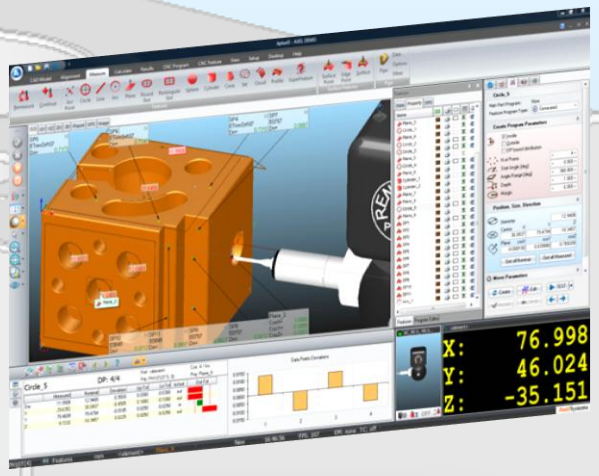
No of data: 4/4 pts, Coordinates: <element>, 4PC: Z-, Layer: default, Probe: PH10T(TIP_1)

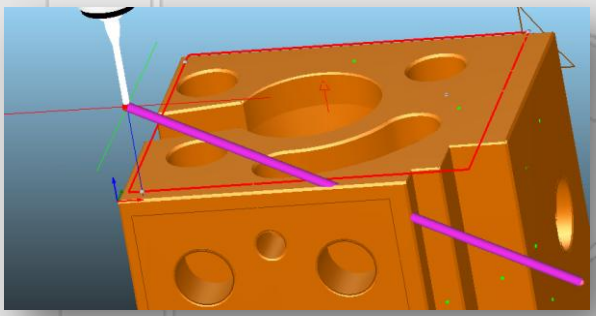
	Measured	Nominal	Deviation	Up-Tol	Lo-Tol	in/out	Out-Tol
X	35.3880	51.0521	-15.6641	0.1000	-0.1000	out	-15.5641

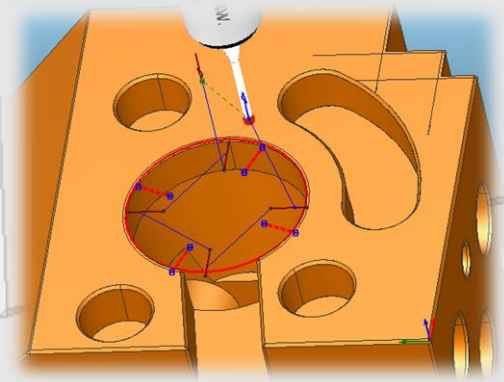


Axel CNC

- Click and Measure functionality. Axel Suite strikes perfect balance between power and ease of use. Majority of applications can be handled with Click and Measure functionality whereas for those special tough jobs
- Automatic collision avoidance strategies find the best route between measured features
- CAD initial alignment to place the CAD model within CMM envelope
- Graphical program editing to quickly introduce program changes
- Automatic selection of Renishaw probe positions with automatic CNC probe calibration
- DMIS / Text Program import / export

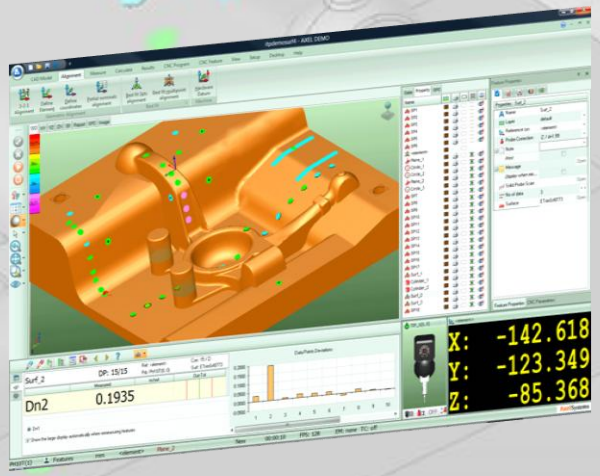


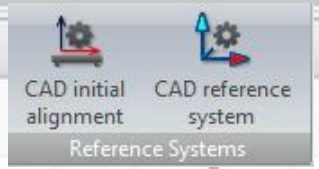




Axel Surface

- Part inspected against nominal CAD data
- Part alignment with 3D best-fit method, multi-entity or Reference Point System (RPS)
- Interfaces available to various CAD formats – DXF / IGES / CATIA v4 & 5 / ProEngineer / STEP / VDA
- Surface Point, Surface Edge & Surface Block inspection
- Metal thickness compensation
- CAD transformation
- Extensive CAD feature extraction methods
- Label / vector / colour-coded representation of surface errors
- Adjustable search range & error magnification





Axel PIPE

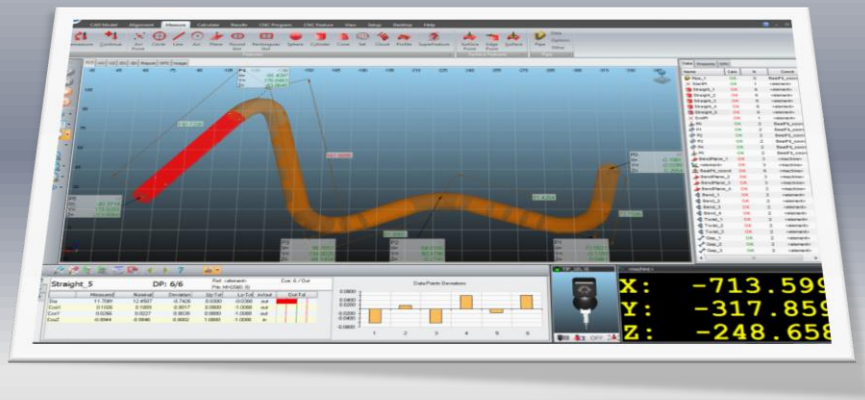
- Fully integrated with existing measurement functions allowing tube, geometric and CAD features to be measured in the same operation
- Rapid inspection of pipe fixtures with respect to pipe nominal data
- Automatic generation of 3D pipe graphic from nominal data
- Automatic generation of pipe inspection sequence
- Pipe line / car line / aircraft line data entry
- Pipe inspection against nominal model with comprehensive selectable fit on start points / intersection points & brackets
- Custom designed graphical reports & measured pipe summary
- Data manipulation allowing rotation of tube into a ‘flat’ orientation allowing efficient fixture design
- Bracket / end fitting / additional feature measurement
- Interface to pipe benders via serial link or network

Setting Up for Recording

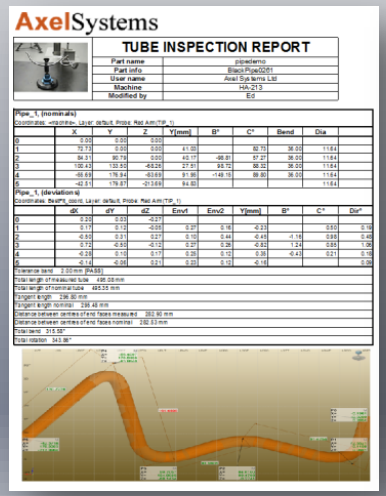
Inspect Fixtures and Tubes

Axel interfaces with articulated arms and CMMs

Setting Up for Recording



Tube Inspection Reports


AxelSystems

TUBE INSPECTION REPORT

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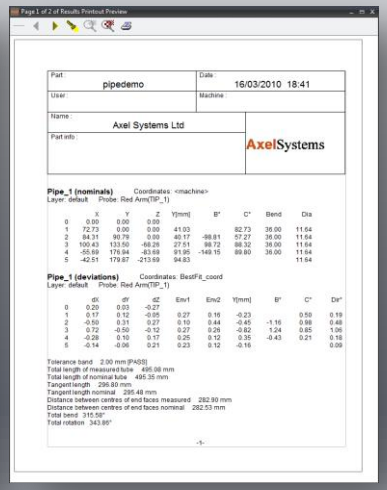
Part info	Black Pipe 0261
User name	Axel Systems Ltd
Machine	HA-213
Modified by	Ed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Date: 16/03/2010 18:41

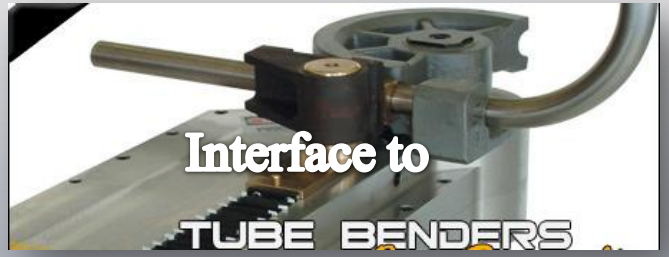
User:

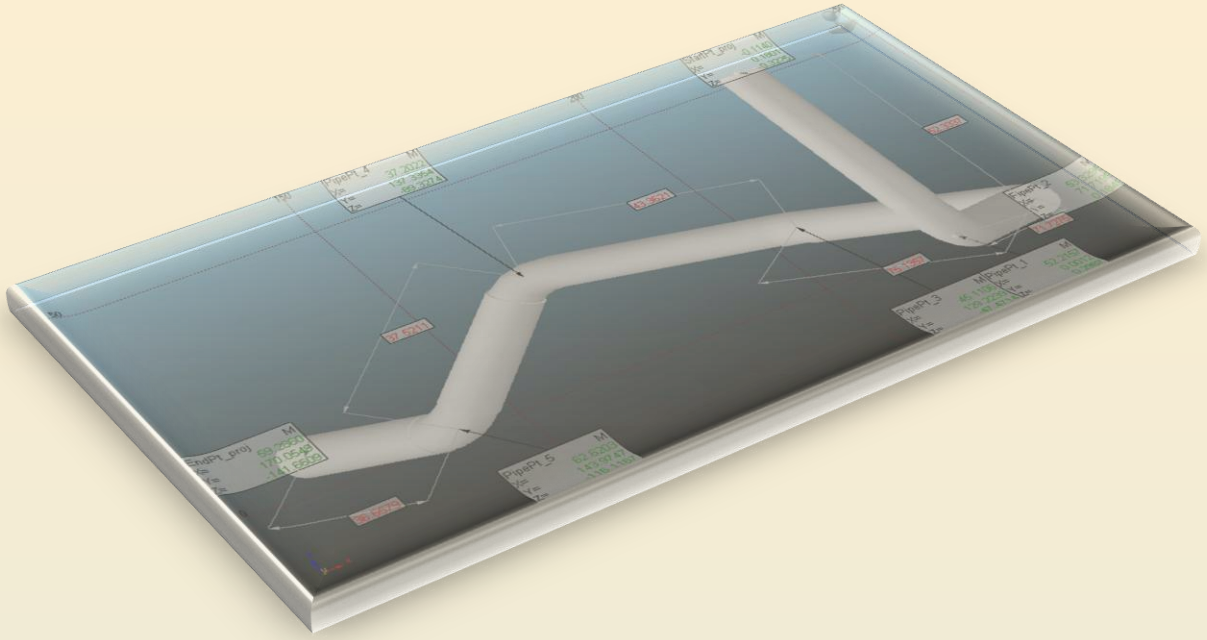
Machine:

Name: Axel Systems Ltd

Part info:

AxelSystems





The Axel Software is currently available in the following languages

For sales information telephone: 044-208-579-7013 or email sales@axelsystems.co.uk