

Horstman Launch a Range of Engineering Services

Horstman Defence Systems Limited has a longstanding history in designing and manufacturing military suspension products. Horstman are now extending their business through a range of value adding engineering consultancy and manufacturing management services.

Product Development – Single Point Design, Testing, Correlation and Manufacture

Horstman can help to significantly streamline all or part of the product development process. We have considerable expertise in design, development, testing and finite element modelling of:

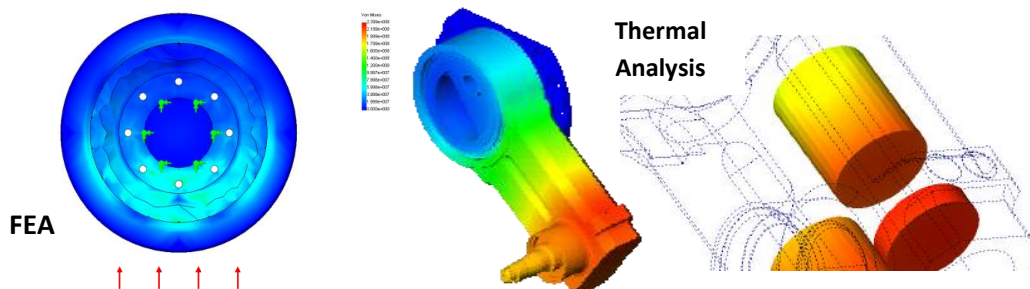
- Suspension systems
- Sealing technologies
- High pressure hydraulics and gas products

Importantly, we can also manufacture products in-house from prototype through to full rate production according to our Customers' needs.

Horstman add value to the product development process by ensuring that design requirements are met, whilst concurrently considering test and analysis needs, reducing the need for re-design, re-analysis and/or re-testing. Working to stringent timescales and specifications, up-front costs are clearer and timescales met, all with the backing of a world renowned and established engineering company.

Overleaf, please find a list of our analysis software, our machining capacity and just some of the subcontract processes that we already manage. In addition to this:

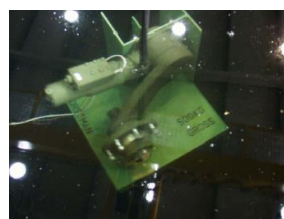
- Our test team can proof pressure test to around 2,000 Bar
- We have a comprehensive inspection centre housing 3 large CMM machines
- A range of assembly and kitting areas, including clean room facilities.



Cold temp -46C



Sand & Dust



Immersion



Vibration

Design and Analysis Services Available from Horstman

Mechanical Design

Cocreate Modelling 2006	3 seats – Due to be upgraded to Creo Elements Direct in November 2013
SolidWorks 2012	6 seats within Engineering (+3 seats in Production Engineering). Expected to be upgraded to SW 2013 in November 2013
ProEngineer Wildfire 4	3 seats. Expected to be upgraded to Wildfire 5 in November 2013

Analysis & Simulation

ProEngineer Mechanica Wildfire 5	1 seat. Linear FEA
Adams 2013	1 Seat. Multibody dynamics simulation.
Matlab 2013B	1 seat with Simulink, XPC Target, Controls Systems Toolbox, Signal Processing Toolbox, Matlab Coder, Simulink Coder. Also 2010B & 2012B
IST SpringDesign	Mechanical coil spring design and simulation. Also have calculation tools for Disc springs and Torsion bars.
BoltCalc	Full joint analysis
NCode Glyphworks	Data analysis of large data files
Advanced Mechanica / Creo Simulate	Including behavioural modelling extension and mechanism dynamics
ANSYS	Includes FULL Mechanical Workbench and Mechanical APDL
Solidworks	CFD, Solidworks Simulation, Piping design

Fatigue

Safe 4 Fatigue	Plus plug-ins for relevant software
----------------	-------------------------------------

Electronic & Software Design

OrCAD	Schematics, design & simulation of electronics
DesignSpark	PCB design (Further PCB layout to be subcontracted)
VisualStudio	Writing windows executables – GUI design & development
MPLab	Programming Microchip microcontrollers & DSP. Texas Instruments, Freescale (or others) capability can be added
Quartus 2	Programming of FPGAs

Data Acquisition

HBM QuantumX & Catman	High frequency multichannel data acquisition
-----------------------	--

Complex Manufacturing Project Management

Horstman have a proven track record of taking complex products or parts and managing the whole manufacturing process seamlessly from start to finish – single order, single delivery, often multiple separate and vastly different processes. From precision machining to treatments, from coatings to testing, from assembly to packaging, all managed and delivered by a single source. Less time, clearer costs, high quality, all delivered on time and to meet our Customers' requirements.



Some examples of parts that we currently manufacture are shown below.



If you would like to explore opportunities in any of the above areas, please contact Amy Barker at Horstman on 01225 473303 or via email at amy.barker@horstman.co.uk

Manufacturing Capacity available at Horstman

CNC Mill / Turn	Maximum Turning Dia mm	Max Distance Between Centres mm	Swing Over Bed mm	Tool Capacity	Machine Capabilities	Notes
2 x Integrex i-400	658	1519	658	72	Cat A	Max Bar Dia 102mm*
Integrex i-200s	658	1011	658	72	Cat A	Max Bar Dia 65mm, parts catcher & conveyor*

*All three of the above machines have Renishaw inspection plus software and radio probe, 70 bar coolant with temperature control and high accuracy options (scale feedback and thermal control).

CNC Lathes	Maximum Turning Dia mm	Max Distance Between Centres mm	Swing Over Bed mm	Tool Capacity	Machine Capabilities	Notes
Dainchi BX60	410	820	560	12	Cat C	Max Bar Dia 76.2mm x 2mtr Fanuc 10T Control LNS
Puma 8 S	360	370	500	10	Cat C	Max Bar Dia 50.8mm x 1mtr Fanuc OT-C. Multifeed bar-feed system
Puma 400M	560	1000	770	12	Cat A	Fanuc 18iT
2 x Puma 18	700	1575	900	12	Cat C	Fanuc OT-C
Heid SD 800	700	2000	800	8	Cat C	Fanuc 18iT

Conventional Lathes	Maximum Turning Dia mm	Max Distance between Centres mm	Swing over Bed mm	Machine Capabilities	Notes
Harrison M350	380	1000	400	Cat D	Max Bar dia 60mm
Harrison M400M	420	1000	400	Cat D	Max Bar dia 60mm
Feeler 618EM	115	400		Cat D	Mitutoyo CR.O

CNC Milling Machines	Work Surface mm	Travel XYZ mm	Tool Capacity	Machine Capabilities	Notes
Daewoo Mynx 550	1200 x 500	1020 x 510 x 625	24	Cat A	Fanuc 21I-M Control
Daewoo Mynx 550 With Indexer	1200 x 500	1020 x 510 x 625	24	Cat A	Fanuc 21I-M Control
Niigata HN80C	800 x 800	1270 x 1020 x 920	120	Cat B	Twin pallet system fanuc 15 control
Kitamura H600	630 x 630	1016 x 813 x 765	60	Cat B	4 axis twin pallet system, Fanuc 11m
Daewoo HM500	500 x 500	800 x 650 x 650	120	Cat A	4 axis twin pallet system, Fanuc 18iM
OKK HM50	500 x 500	760 x 730 x 800	80	Cat B	Fanuc 16 Mi
OKK HM40	400 x 400	620 x 560 x 560	60	Cat B	Fanuc 16 Mi

Jig Boring Machines	Work Surface mm	Travel XYZ mm	Machine Capabilities	Notes
Sip Hydroptic 6A	800 x 1000	100 x 700 x 300	Cat A	Vertical Jig Borer
Dixi 75	800 x 1000	700 x 800 x 800	Cat A	Horizontal Jig Borer
Devlieg 2B -2 Mach	915 x 610	610 x 915	Cat D	Jig Mill with Digital Readout

Grinding Machines	Capacity mm	Machine Capabilities	Notes
Jakobson SJ24	800 x 250	Cat B	Surface Grinder
Lodi Microstatic	600 dia	Cat B	Rotary Table Surface Grinder
Jones & Shipman 1307	350 dia x 1016	Cat B	Surface Grinder

Honing Machines	Capacity mm	Machine Capabilities	Notes
Sunnen 804	75 dia	Cat B	Delapena Speed Hone
Delapena Stroker	25.4 to 368 dia	Cat B	Max Length 812 mm

Inspection and Special Purpose Machines	Capacity mm	Machine Capabilities	Notes
Robofil 330F EDM	900 x 600 x 400 5 axis control	Cat A	EDM Machine with Fanuc controller
Ferranti CNC CMM Inspection Centre	970 x 1350 x 860	Volumetric accuracy is 0,0064mm	PH9 Probe system Calibrated Annually
FARO ARM		Volumetric accuracy is 0,0062mm	
Melrin CNC CMM Inspection Centre	1100 x 2250 x 1000	Volumetric accuracy is 0,0062mm	PH9 Probe system Calibrated Annually
Impact CNC CMM Inspection Centre	500 x 600 x 450	Volumetric accuracy is 0.0019mm	PH9 Probe system Calibrated Annually
Trimos Sylvac Height Gauges			
Autocollimator Type VA900			
Fibre optic inspection probe			
Magnetic particle crack detection			
Hydraulic test facility			Flow and pressure 1200 lt/min @420 bar
Electro-Mechanical test			

Machine Capabilities Accuracy and Repeatability	
Category A	0.005/0.010mm
Category B	0.010/0.015mm
Category C	0.015/0.025mm
Category D	0.025/0.030mm

Other processes managed by Horstman as part of complex manufacturing projects include:

Treatments / coatings / other:

Thick & thin anodising
Heat treatment
Stress relieve
Hard chrome
Broaching
Gear cutting
Nickel plate
Tuftride
Zinc & passivate
Phosphate
Gas nitriding
Plasma nitriding
Harden & temper
Case hardening
HIP
Paint
Electron beam welding
"Metal spray"
PVD coating
Shot blasting
EDM
Spark eroding

And many more!

Non Destructive Testing:

MPI
Ultrasonic inspection
Eddy current
X-Ray
Dye pen