



Racing with...

Del West Europe Measures up to Formula 1 Standards



The company specializes in the design and manufacture of valve train systems for racing car engines ...

It is a paradox that Del West Europe SA, a world leader in supplying valve train components to virtually all Formula 1 engine manufacturers, is located in Switzerland, a country that manufactures no cars.

"It was a deliberate decision," says Bruno Engelric, Del West Europe's managing director, "For one thing, Switzerland is centrally located within Europe giving us easy access to our automotive customers in France, Germany and Italy. For another, the Swiss-made label is synonymous with precision and quality."

Del West Europe SA, which started with just one employee in 1996, now has more than 90 employees handling everything from design and

process planning to manufacturing and final inspection in a 3,000 square metre facility in Roche.

The company specializes in the design and manufacture of valve train systems for racing car engines. Its goal is to use the latest material technologies for making lightweight but highly rigid components that operate with minimal reciprocating mass in high-speed car engines. For this reason, titanium and aluminium alloys are used to make valve train components such as valves, valve guides, camshafts, keepers and pneumatic spring systems. By optimizing the design of matching components, Del West engineers can improve the performance of valve trains to enable ever higher engine speeds without the loss of valve control. This results in an improved

torque curve over the entire engine RPM range - crucial for the performance of racing engines. Thus, through its focused concentration on valve train development, Del West has acquired an intimate understanding of the influence of this critical system on engine performance.

Reverse Engineering in Design

To remain at the forefront of technological innovation, Del West is constantly investing to improve product design and manufacturing control processes.

B&S Messtech SA, today Hexagon Metrology Switzerland, has partnered with Del West since its inception and supplied a Leitz PMM-C 700 coordinate measuring machine (CMM), three DEA CMMs and two non-contact measuring systems.

An interesting aspect of the Leitz PMM-C 700 is that this machine works with PC-DMIS as well as QUINDOS software.

Del West engineers work with PC-DMIS, a CAD-based interactive graphics software package from Hexagon Metrology, for reverse engineering applications. The Leitz CMM captures the profile of a part either through point-to-point or scanning measurements and PC-DMIS software then converts this data for use with a CAD program to generate drawings. This makes it very easy to make copies of parts and cuts down development cycle times.

While the Leitz PMM C-700 is mainly used for inspecting ring cages for ball bearings and engine blocks, the QUINDOS software also enables the

inspection of complex geometric forms such as those found on racing engine camshafts.

Unmanned Inspection Shifts

Once parts are designed then it is up to the manufacturing department to implement processes aimed at meeting tight tolerances as well as avoiding defective parts from leaving the plant.

All components are 100% checked for visual aspects and critical dimensions on certain components such as valves, keepers and mechanical spring retainers are also 100% inspected. For this purpose, the company has three DEA coordinate measuring machines (2 Global and 1 Mistral), which work on a two-shift basis.

One DEA Global CMM is used to inspect parts during the second shift on an unmanned basis. About a hundred parts are positioned in a pallet placed on the CMM granite surface and the inspection cycle takes about six minutes per part. By the next morning all parts are inspected. This is a good example of building the skill and eliminating any operator influence from the inspection process.

The bonus is that the measured data is stored since it is the company's policy to provide 100% traceability on all components from receipt of material to shipment of product.

The company has designed its own special purpose inspection machine for measuring the diameters of the rollers and then classifying the same into different diameter groups for assembly. This is a fully automatic process where the rollers are fed into a stacker and then inspected with pneumatic sensors.

In fact, Del West firmly believes that a necessary element of any successful design is the ability to properly test that design in an application. The company has also built special purpose machines to test valve trains, both pneumatic as well as coil spring based, for system perform-





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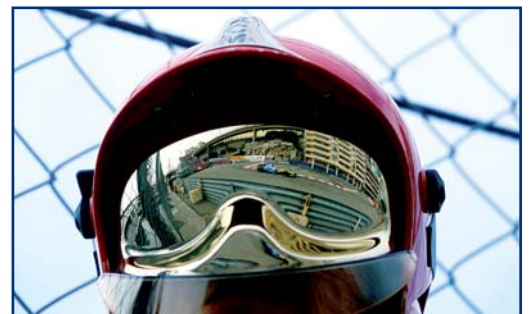
ance and component reliability. The company actively teams up with partners like Hexagon Metrology Switzerland to introduce the latest technologies in dimensional measurement. "We are honoured to be able to work with Del West in meeting their quality goals," says Andrew Barclay, Hexagon Metrology Switzerland managing director, "In the process, we are also learning about the true potential of our systems."

charge are quite frequent, they are to be considered as "complications". Additional examples of complications are the chronograph, moon phases, perpetual calendar functions, etc.

Many spectators of Formula 1 races see the competition in terms of big names and a sheer test of human endurance. Few think about the endurance tests imposed on engine components such as the valve trains. A Formula 1 engine, however, can be compared to a Swiss mechanical watch with a number of complications* making up the whole system. In this context, Del West can be considered as one of the makers of "complications" for Formula 1 engines.

Del West is content to stay in the background but knows that today's innovations will allow its Formula 1 customers to celebrate with the traditional bottle of champagne in tomorrow's victory circle. ■

** In the jargon of the watchmakers' masters, a "complication" is every possible function besides the display of hours, minutes and seconds by a manual charge movement. Although the calendar or the automatic*





Hexagon Metrology

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