

As a consequence of the rapid evolution of laser sensors, with the resulting increase in the speed of measurement capture and accuracy down to near micron levels, there is increasing demand for non contact measuring systems capable of controlling different parts with a variety of characteristics.

Some applications are limited to 2D profile detection for the determination of measurements of steps, chamfers, joints, heights, widths and radius of curvature. Other applications require the 3D examination of the piece to be controlled, especially for laser applications in Reverse Engineering.

Thanks to the Blues and Swing system there is the possibility to detect 2D profiles or a series of them, in order to determine measurements of different points of the same piece. It is also possible to create 3D scans and to transmit the relevant file to software for quality control or to software for subsequent CAD CAM data conversion to be sent to the production machine.

Laser measuring systems are successfully used in the following sectors: mechanical engineering, plastic moulds, aerospace, packaging.

“Swing R5” is a 5 axis measuring machine with a laser sensor, largely used in measuring and in Reverse Engineering of turned, milled and moulded plastic parts. The system scans different parts in 2 and 3D, obtaining 2D profiles and point clouds that are combined in a unique 3D file, usable with CAD-CAM.

“Blues” is a 2 axis measuring system, for High Definition Reverse Engineering of moulds in the graphic and artistic fields, with a third auxiliary rotary axis, intended for 2D measurement of joints and shafts.

With the “Emerald” periscope it is possible to scan the internal portion of cavities and holes, in order to measure diameters, races, threads and radii, without having to section the piece to be measured.

Thanks to **METRACS**® Microplan software, it is possible to detect intuitively measurements on 2D profiles of diameters, step heights, throat depths, radius of curvature, flare angles, threads and race widths, both in Cartesian and in polar coordinates. The surveyed measurements are saved in report form with automatic calculation of the



HAMAR LASER GEOMETRIC ALIGNMENT AND MEASUREMENT SYSTEM

The setting up of the machine-tools geometry and generally speaking of other production machines has always been complex and very important, directly related to the machine dimensions. If the geometry setting were to be done by several instruments, it can easily happen that the sum of the measuring errors could result in significant errors on the final accuracy; moreover the setting up time is often very long.

The HAMAR LASER alignment system operates in a very short time and easily produces all the geometrical controls needed, with micrometric resolutions for distances up to 60 m with a high repeatability; in addition the wireless connections allow the operator to manage the system very easily avoiding long cable handling problems.

All system components are powered by rechargeable batteries (except for laser scanner). The Measuring principle is based on an emission of a rotating laser beam, which produces one or more reference laser planes (depending on the model), perpendicular among themselves up to 1 arc/second.

One or more targets properly positioned on the machine axis, provide to a digital indicator the position deviation related to the reference plane/planes; in one, two or three directions (X, Y, Z).

For a machine-tool, a geometric control of motion-straightness, surfaces-flatness, axis-perpendicularity and guides-parallelism (ex. Gantry-machine) is obtainable much faster that with any other traditional instruments used.

The total accuracy, using the most precise model, is 2,5 µm/m.

Laser scanner fits into a small, portable shipping case with wheels, with its accessories (targets, “V” magnetic support, calibrated bars with extensions, battery charger and visual systems (digital readout, data display, PC interface). HAMAR LASER alignment system is delivered with N.I.S.T. certificate.

