

Application Story

Automotive

Precision measurements of automotive components using Miniature Probes



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The Product

The Digital Mini Probe is a very robust miniature flexure with all the attributes of the larger flexure gauging products. It's particularly useful in all aspects of bore gauging where high accuracy and durability are required. A range of customer-fit contact tips are available to suit most gauging applications.

Range: 0.5 and 1 mm – Accuracy: Up to 0.2% of reading – Resolution: Up to 0.01 μm – Repeatability: Up to 0.1 μm



The Challenge

As technologies have progressed, car manufacturers have had to ensure the precision production of parts and casing to ensure the smooth running and ultimate performance they strive to achieve, whilst keeping production costs down.

Using 120 probes integrated using the Orbit® 3 Network, the interior geometry of the two main cases of a transfer/differential system could be measured at one time in an off-gauge station.

The casings of the transducer/differential system need to be as precise as possible to ensure the system functions efficiently once the gears, shafts and seals are assembled within the system. A lack of efficiency can lead to lash, vibration and wear, resulting in poor performance, including power loss, lower fuel efficiency, noise and premature failure.

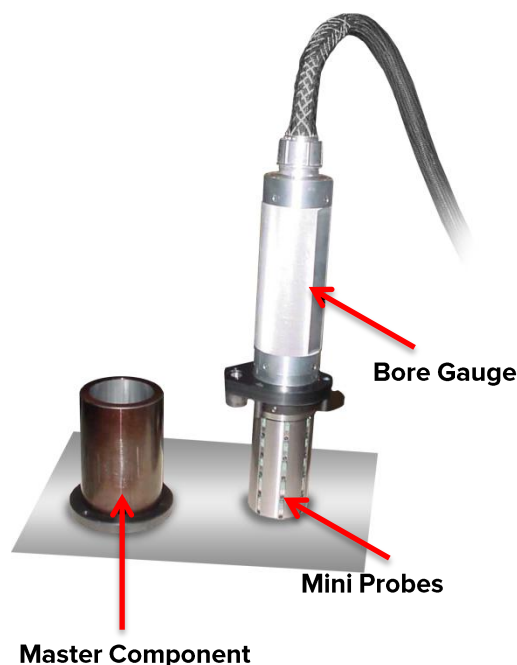
Two parts were required to be measured at one time by one PLC and one software package with as fast a cycle time as possible. Measurements to be taken included flatness, roundness, concentricity and perpendicularity, alongside various other geometric requirements.

The Solution

Solartron Metrology's Orbit® 3 Network was perfectly suited to this application, enabling the use and integration of up to 150 probes, with one gauging software through one Interface Module to one PC. 120 Digital Probes (DP) were in direct contact with the cases, which allowed the use of just one mean master; the AX system.

An alternative option would be to use LVDT or Half-Bridge analogue gauging probes alongside several multi-channel signal conditioning electronics boxes. However the high number of conditioning units needed to support 120 analogue probes would lead to cost inefficiencies, elevating the cost of production.

Using Solartron's Orbit® 3 Network and Digital Probes provided a reduced cost of production alongside a faster cycle time, mastering sequence and gauge set-up.



United Kingdom - Head Office

Solartron Metrology
Steyning Way
Bognor Regis
West Sussex
PO22 9ST
Tel: +44 (0) 1243 833333
Fax: +44 (0) 1243 833322
Sales.solartronmetrology@ametek.com

France

Solartron Metrology
Rond-point de l'Espine des Champs
Buroplus - Bat. D
Elancourt 78990
Tel: +33 (0)1 30 68 89 50
Fax: +33 (0)1 30 68 89 59
france.solartronmetrology@ametek.com

Germany

Ametek GmbH
Solartron Metrology Division
Rudolf-Diesel-Strasse 16
40670 Meerbusch
Tel: +49 (0) 2159 9136 500
Fax: +49 (0) 2159 9136 505
vertrieb.solartron@ametek.de

Brazil

Ametek do Brasil, Ltda
Rod. Eng Ermenio de Oliveira Penteado, Km 57, SP75
Bairro Tombadouro
13337-300, Indaiatuba, SP, Brazil
Tel: +55 19 2107 4126

India

Ametek Instruments India Private Limited
1st Floor, Left Wing
Prestige Featherlite Tech Park
Plot #148, EPIP II Phase
Whitefield, Bengaluru 560 066
Karnataka, India
Tel: +91 80 6782 3200
Fax: +91 80 6782 3232

USA

Solartron Metrology
USA Central Sales Office
915 N. New Hope Road, Suite C
Gastonia, NC 28054
Tel: +1 800 873 5838
Fax: +1 704 868 8466
usasales.solartronmetrology@ametek.com

China

AMETEK Commercial Enterprise (Shanghai) Co. Ltd
No. 155 Puhui Road
Ju Ting Economic Development Zone
Shanghai 200131, China
Tel: +86 21 5763 2509
Fax: +86 21 5866 0969 Ext. 261/262
china.solartronmetrology@ametek.com



Solartron Metrology

Precision Driven

Offices worldwide
Agent and distributor details
available at
www.solartronmetrology.com



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