Summary

WHO WE ARE ........................................................................................................................................... 2
HOW WE WORK ............................................................................................................................................. 2
OUR CUSTOMERS ........................................................................................................................................... 2
HOW TO CONTACT US ................................................................................................................................... 3
EXAMPLES OF OUR PRODUCTS .......................................................................................................................... 4
  Test equipment for Fiat Poland ............................................................................................................................ 5
  Test equipment for Volkswagen: .......................................................................................................................... 6
  Test equipment based on Video camera probe ........................................................................................................ 7
  Functional gauge for aeronautic .............................................................................................................................. 8
  Dimensional test-equipments ................................................................................................................................ 9
  Functional and dimensional test-set for working operations .................................................................................. 10
  Metrological test set ............................................................................................................................................. 11
  Dimensional test-set ............................................................................................................................................. 12
  Functional gauge used in military aircraft (bomb support) ...................................................................................... 13
  Master for gear production ................................................................................................................................ 14
  Dimensional gauges (G/NG test) .......................................................................................................................... 15
  Tooling equipment: Boring mask ........................................................................................................................... 16
  Tooling equipment for Gleason gear cutting machine .......................................................................................... 17
WHO WE ARE

Rosfer is a small enterprise operating in the area of precision mechanical manufacturing since 1969, supplying several top-quality Customers in Italy and abroad.

Rosfer has two main areas of business:

- **Design and manufacturing of test equipment for metrological evaluation of mechanical components**: Dial gauges and electronic indicators for checking of dimensions, shape and position for:
  - **motor components and compressors** such as crankshafts, camshafts, cylinder heads, engine blocks, connecting rods, pistons, valves and other.
  - **gearboxes’ components and transmission cases’ components** for automotive and aeronautical use, such as gearing, sleeves, planetary gears, main shafts, countershafts and other.
  - Dimensional check of components used in a wide variety of industrial applications, like brake disks, brake shoes, armatures and stators for electric motors, etc.

Our activity includes definition of metrological measurement strategies, design and drawing of full system, manufacturing of the assembly, development and testing of control and measurement SW, evaluation of metrological performance (parameters like incertitude of measurements, R&R, process capability etc.).

- **Manufacturing of high precision components and assemblies in accordance with Customers’ drawings and plans**
  - Tool guide bushings, revolving bushings, locators, dowels, spring collets, spindles, complete fixtures for part positioning during the machining or inspection stages.

Rosfer complies with certification schemes ISO 9001.

HOW WE WORK

High precision components and assemblies in accordance with Customers’ drawings

<table>
<thead>
<tr>
<th>CUSTOMER DOCUMENTS</th>
<th>ROSFER SUPPLY</th>
<th>DELIVERY TIMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawings - plans</td>
<td>• Components</td>
<td>2-6 weeks from order (depending on the complexity of the pieces to be manufactured)</td>
</tr>
<tr>
<td></td>
<td>• Results of dimensional checks</td>
<td></td>
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Design and manufacturing of test equipment for metrological evaluation of mechanical components

<table>
<thead>
<tr>
<th>CUSTOMER DOCUMENTS</th>
<th>ROSFER SUPPLY</th>
<th>DELIVERY TIMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Drawings of components; Components to be checked; Calibration masters</td>
<td>• Drawing and specification of the proposed system; Systems with relevant certification ad documentation; statistical studies (R&amp;R – uncertainty of measurements)</td>
<td>• system specifications and design: 4-6 weeks from Request of proposal; full system: 4 – 24 months from order (depending on the complexity of the pieces to be manufactured)</td>
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</tbody>
</table>
OUR CUSTOMERS

HOW TO CONTACT US

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EXAMPLES OF OUR PRODUCTS

In the following pages some of our products designed and manufactured in the last years are presented.

These products only are a sample of our capabilities.

The products can be classified as:

- mechanical and electronic test-sets
- high precision mechanical parts (mainly tooling equipment)
- precision gauges
Test equipment for Fiat Poland

PROBLEM
Dimensional check of engine block (Diesel multi-jet 1300 cc)

FEATURES
- Check of 6 quotes at the same time, without moving the piece
- Test time: 30 sec
- Built-in masters
- Tolerance ± 0.01 mm on 400 mm length
- Design: ROSFER

Rosfer designed and produced test equipment for all operations in production line.
Test equipment for Volkswagen:

**PROBLEM**

Dimensional check of turbo-compressor body

**FEATURES**

- Very complex shape
- Evaluation of different metrological values (distance, perpendicularity, parallelism) with simultaneous multi-point measurements
- Dimension evaluated with one single operation: 37
- ISO tolerance of dimension to be checked: IT 7
- Measurement process capability: Cgk > 2 – % Bi < 5
- Integration of mechanical probes with electronic for data acquisition and analysis
- Measurement strategy: ROSFER
- Design: ROSFER
Test equipment based on Video camera probe

**PROBLEM**

Dimensional check of holes in crankshafts

**FEATURES**

- Very fast inspection time
- No contact between metrological probe (video-camera) and component to be analyzed
- Incertitude of measurement: ± 10 µm
- Repeatability: < 5 µm
- Integration of mechanical probes with electronic for data acquisition and analysis
- Measurement strategy: ROSFER
- Design: ROSFER
Problem

Assembly checking of air-condition system for civil airplane

Features

- Assembly check in only one step for the four holes
- Test time: 20 sec;
- Tolerance 0.005 mm
- Customer: MICROTECNICA
- Design: MICROTECNICA
**Dimensional test-equipments**

**PROBLEM**
Control of chamfer on cylindrical gear

**FEATURES**
- Fast check of left and right semi-angle, height of the chamfer related to the tooth; symmetry
- Electronic data acquisition with 4 LVDT (Linear variable differential transformer) probes
- SPC analysis
- Tolerance: 0.01 mm
- Gauge resolution: 0.0001 mm
- Customer: FIAT
- Design: ROSFER
Functional and dimensional test-set for working operations

Problem
Dimensional and functional check after drilling operation in engine head production line

Features
- Checks for mountability and dimension at the same time
- Tolerance: 0.02 mm on 400 mm (tolerance of the piece under measurement: 0.4 mm)
- Gauge resolution: 0.01 mm
- Final customer: PEUGEOT
- Design: ROSFER
Metrological test set

PROBLEM

Dimensional check of engine gear-box:
- Run-out of tooth lateral surfaces perpendicular to axis
- run-out perpendicular to axis

FEATURES

- ➣ Run-out tolerance of piece under control: 0.01 mm
- Test time: 30 sec
- Gauge resolution: 0.001 mm
- Customer: GETRAG GmbH
- Design: GETRAG GmbH
Dimensional test-set (Pneumatic)

PROBLEM
Dimensional check of connecting road.
To be used on dirty pieces

FEATURES

- Pneumatic probe
- Electronic output
- Time test: 5 sec
- Tolerance of connecting road: 0.005 mm
- Gauge resolution: 0.0005 mm (half micron)
- Field of application: (compressor for refrigerators)
- Customer: ZANUSSI ELECTROLUX
- Design: ROSFER
Functional gauge used in military aircraft.

PROBLEM
Structure (Aluminium) in which the bush are to be inserted (tolerance IT3)
Very difficult to measure the dimensions in the metrological room.

FEATURES
• Tolerance: ± 0.002 mm between holes total length 600 mm.
• Customized package
• Dimensional test report
• Total production: 11 pieces
• Design: ALENIA AERONAUTICA

*Alenia told us that Rosfer was the only company accepting to make a prototype.*
Master for gear production

FEATURES

- Tolerance < 0.005 mm
- Customized package
- Dimensional test report
- Customer GETRAG GmbH
Dimensional gauges (G/NG test)

**FEATURES**

- Customized dimensions
- Delivery times: 2 weeks from order
- Dimensional test report according to ISO 9001 – ISO/TS 16949 requirements
- Tolerance: 0.005 mm
Tooling equipment: Boring mask

PROBLEM
Boring mask for military vehicle

FEATURES
- Positioning error 0.01 mm in the length of 400 mm
- Design: Customer
Tooling equipment for Gleason gear cutting machine

FEATURES

- Tolerance (Total) 0.005 mm on diameter

Master for Gleason machine

- Tolerance ± 0.003 mm on the length of 300 mm (from sphere to the basis)
- Customer: AGUSTA WESTLAND
- Design: AGUSTA WESTLAND
- Delivery time: 3 weeks
- Very high precision