



**MARPOSS**



# GEAR MEASUREMENT & TESTING

# MARPOSS OFFERS MEASUREMENT, INSPECTION AND TESTING SOLUTIONS FOR ALL PRODUCTION AREAS OF THE AUTOMOTIVE INDUSTRY

FUEL  
CELLS

ELECTRIC  
MOTORS

FOR HYBRID AND  
ELECTRIC VEHICLES

SAFETY



QUALITY

RELIABILITY

TRACTION  
BATTERIES

GEARBOX

YOUR GLOBAL PARTNER FOR MEASURING, INSPECTION AND TESTING SYSTEMS



MARPOSS

# TRANSMISSION

## THE DRIVING ELEMENT OF HYBRID AND ELECTRIC VEHICLES



A combination of international regulations and consumer expectations is driving the demand for reduced noise on all drivetrain components.

Further demand is driven by the growing trend towards EVs and HEVs, where noise from ICE is intermittent or no longer present, and the contribution of transmission noise to overall vehicle noise becomes dominant.

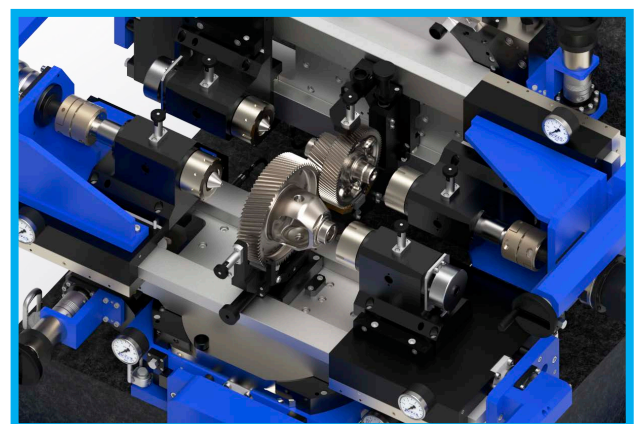
Electrified transmissions are subject to several challenges and requirements. What is true is that the number of gear wheels is significantly reduced in electric vehicles due to the use of one or two-speed reducers instead of the classic manual or twin-clutch gearboxes. In return, these are loaded with torque and rpm not previously found in high-volume production.

The other big shift in the automotive industry, the one towards automated driving, is not setting off any alarm bells for gear manufacturers, either. The idea of selfdriving cars is currently capturing the industry's attention, and while it is actually a fascinating trend to follow, having a computer behind the wheel instead of a person is not likely to affect the gears side of the industry too deeply.

The high rotational speed associated to the electric motors (up to 20,000 rpm) implicates the need to take some factors into account when designing a transmission, in order to reduce power losses, ensuring the highest efficiency and, at the same time, control the noise generated. The tolerances of a

transmission for electric vehicles must be very tight, giving special attention to gear teeth geometry and mechanical design regarding assembling and manufacturing, in order to guarantee top quality and superior performance.

Decades of experience combined to the continuous innovation make Marposs the best partner in the transmission industry market.



Marposs Single Flank system for use in the Laboratory to test prototyping parts with the purpose of feedbacking the gear design process. The system has the capability of testing either part vs master gear or part vs the conjugate gear as in the real transmission (reducer). The operator even has the possibility to adjust both center distance and angle of inclination of the axis in order to obtain the configuration leading to the minimum noise contribution.

# GEAR MEASUREMENT & TESTING

## GEAR MANUFACTURING PROCESS MONITORING

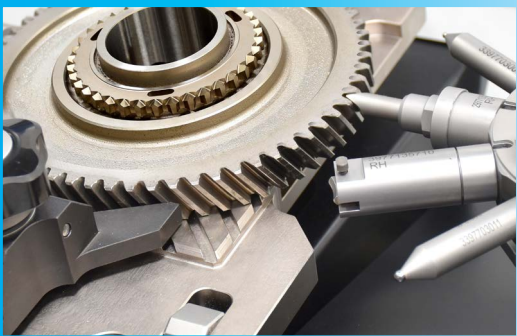
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The monitoring systems are designed to detect minimum variations in the physical sizes during the grinding operations, allowing for an extremely precise control of the feed speed when the grinding wheel touches the part or the dresser. These systems are particularly useful in preventing collisions and detecting any machine or tool faults, splinters on grinding wheels and defects of the dresser.

## GEAR GAUGING

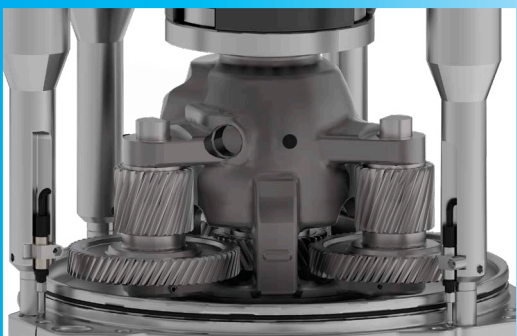
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Marposs gear product line includes a large variety of measuring instruments for dimensional and functional inspection of multiple types of gears including gauges for DOB (MdK) check, dual flank and single flank gear rollers as well as systems for the measurement of dimension, form and geometry parameters.

## SHIM SELECTIVE ASSEMBLY

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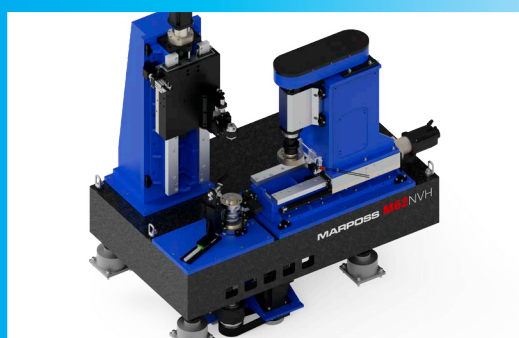


The process of assembling a high-speed gearbox normally requires the determination and verification of the correct shims for the assembly in order to prevent any issue that may lead to noise or incorrect functioning of the transmission. The selective shim assembly process is mainly performed either for adjusting the preload of a set of tapered bearings or adjusting the backlash of a couple of mating gears.



## NVH TESTING OF INDIVIDUAL GEARS

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Evaluating NVH at component level represents a benefit than making the analysis directly on the final assembly because identifying defects (like tooth macro-geometry errors) on the individual component could avoid the issues at the assembly stage, when it might be too late to recover the whole assembly unit.

## LEAK TEST

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Marposs offers tailored-made leak testing solutions for gear box transmission housing to fit all requirements of the industry, manual or fully automatic machines with a wide range of available options.



# ONE PARTNER MANY SOLUTIONS



worldwide present in

**34**  
countries

offices worldwide

**80**

exports

**94%**

more than

**3,500**  
employees

**1,314**  
Italy

**1,040**  
Asia

**820**  
Europe

**330**  
Americas

**26**

key acquisitions since 2000

**8%**

resources invested in R&D

Marposs was founded in 1952 and since then has provided shop-floor solutions for the quality control in the production environment. Marposs' solutions include gauging equipment of mechanical components, before, during, and after the production process, monitoring solutions on machine tools, assembly, and testing systems, automatic machines, and checking stations for production lines.

Marposs is one of the main suppliers of the top automotive manufacturers, but operates as well in the aerospace, biomedical, hi-tech, and glass industries.

Marposs Group's employees are more than 3500, located around the world, with presence in thirty-four countries with more than eighty sales offices.



**MARPOSS**  
[www.marposs.com](http://www.marposs.com)

*For a full list of address locations, please consult the Marposs official website*

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**Marposs has an integrated system to manage the Company quality, the environment and safety, attested by ISO 9001, ISO 14001 and OHSAS 18001 certifications.**