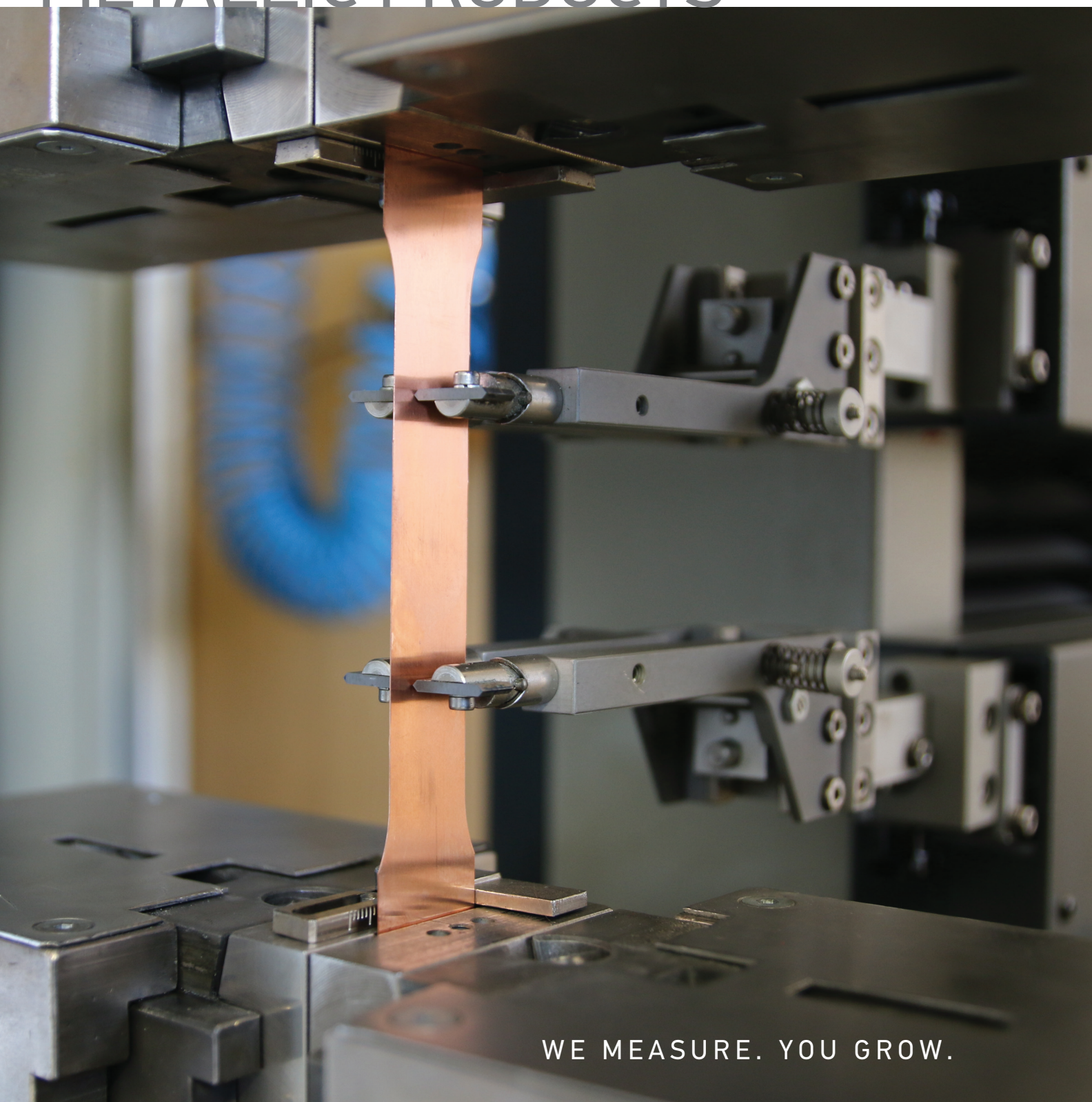


TESTING OF METALLIC PRODUCTS



WE MEASURE. YOU GROW.

PRODUCT QUALITY INFORMATION YOU CAN RELY ON.

**WORKING TOGETHER WITH THE ACCREDITED LABORATORY LOTRIČ METROLOGY MEANS
COMPLETE AND RELIABLE SERVICE: YOUR CUSTOMERS WILL TRUST IN THE QUALITY OF YOUR PRODUCTS.**

- Independent tests based on international standards or non-standard tests for your specific products.
- Verify how suitable the technology in use is for achieving the desired quality.
- Determine the causes of error in case of complaints.
- Help of experienced professionals in solving technological challenges.



OVERVIEW OF METHODS ON METAL MATERIALS

DIMENSIONS, ANGLE AND ROUGHNESS

Measurements of surface roughness	ISO 4288
Measurements on coordinate measuring machine (CMM)	ISO 1101
Microscopic measurements	
Confirming dimensional and geometric characteristics and tolerances according to drawing	ISO 14253-1, -2

MECHANICAL PROPERTIES

Tensile strength	ISO 6892-1
Compression strength	ISO 4506, ASTM E9
Bending strength	ISO 7438, ASTM E296-14
Hardness (Vickers)	ISO 6507*
Hardness (Brinell)	ISO 6506
Hardness (Rockwell)	ISO 6508
Bending test (sheet metal and wires)	IEC 60851
Deep drawing test (Erichsen)	ISO 20482
Impact strength (Charpy)	ISO 14556

FORCE, TORQUE AND PRESSURE

Standard and nonstandard measurement of forces	
Torque measurement	
Tightness of pressure and vacuum systems	
Mechanical aging	

METALLOGRAPHY

Macro and micro examinations	
Analysis of the crystal structure	
Analysis of crystal grain size	ISO 643
Analysis of the size and distribution of the graphite in cast iron	ISO 945
Analysis of porosity	ISO 10049
Depth of the heat-cured layers (cementation, nitriding)	ISO 2639, ISO 3754
Examination of welds	
Coating thickness measurements	ISO 1463*

HEAT TREATMENTS

Annealing of components	
Optimization of annealing technologies	
Hardening temperature studies	
Determination of optimal annealing temperature	

ANALYSIS OF DEFECTS AND DAMAGES

Breakdown analysis and analysis of defects in material	
Assessment of the suitability of the material and of technologies	

MATERIAL ANALYSIS

Material identification and content of chemical elements	
LECO analysis of sulphur and carbon content in steel	

FASTENERS

Strength class of standard fastening elements	ISO 898-1
Torque forces of fasteners, shafts	
Pull out test	

ENVIRONMENTAL TESTING

Temperature and relative humidity	
Cyclic climatic tests	
Neutral salt spray – NSS	ISO 9227*
Acetic acid salt spray – AASS	ISO 9227
Copper accelerated acetic salt spray – CASS	ISO 9227*
Industrial climate (SO ₂)	DIN 50018*
Constant condensation	ISO 6270-2*
Damp heat, cyclic	IEC 60068-2-30*
UV light	IEC 60068-2-5
Cold	EN 60068-2-1*
Dry heat	EN 60068-2-2*

QUALITY OF GALVANIC AND OTHER INORGANIC COATINGS

Metallographic determination of surface protection	
Coating thickness	ISO 1463*
Coating hardness	
Metallographic examination of surface protection failure	
Chemical determination of impurities on the surface	
Mass and thickness of phosphate coating	
Degree of corrosion	ISO 10289*
Corrosion testing of zinc coatings	DIN 50961*
Corrosion testing of copper and nickel coatings	ISO 1456*

QUALITY OF ORGANIC COATINGS

Coating thickness	ISO 2178, ISO 2360
Degree of corrosion	ISO 4628-3*
Filiform corrosion resistance	EN 3665
Degree of blistering	ISO 4628-2*
Delamination and corrosion around a scribe	ISO 4628-8*
Degree of cracking	ISO 4628-4
Cross cut test	ISO 1520, ISO 2409
Cupping test (Erichsen)	ISO 20482
Gloss determination	DIN 67530
Colour determination	
Coating hardness	
Chemical analyses of paints and varnishes	
Resistance to liquids	ISO 2812
Stone -chip resistance	DIN 559961-1

PAINTS, BATHS AND RINSING WATERS

Analysis of galvanic, degreasing, activation, passivation and phosphate baths and rinsing waters	
Content of metallic elements and salts	
Temperature, pH, electrical conductivity, oxygen content, hardness, dry matter content	
Content of microorganisms	
Chemical analyses of paints and varnishes	

RoHS

Content of elements Cr ⁶⁺ , Cd, Hg, Pb	IEC 62321, EN 15205
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TECHNICAL CLEANLINESS

Technical cleanliness of products	VDA 19, ISO 16232
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EXPERTS OPINION



THEY ALLOW CUSTOMERS TO FEEL SECURE ABOUT OUR PRODUCTS

Our company is a producer of small electrical motors and fans. We always strive to develop and provide high quality products. LOTRIČ Metrology conducts periodical checks of equipment for leakage tests of fans housings for our new project of manufacture of fans for gas furnaces. The clients thus feel secure in our product. LOTRIČ Metrology helps us to obtain the required certificates with reliable results, supported by expert advice and counselling on how to improve our products further. I can best describe LOTRIČ Metrology group with the words professional, adaptable and open for new common projects. The location of their laboratory is another advantage as we can hand over and pick up samples 24 hours a day.

Peter Frim, quality manager at YDRIA MOTORS d. o. o.

YDRIA
MOTORS



TOGETHER WE REALISE OUR GOALS

The LOTRIČ Metrology group offers reliable service of technical cleanliness of our products - in the development phase for samples and for yearly requalification, where results of purity are compulsory. The proximity of the laboratory, their responsiveness and the issue of certificates which are clear and comprehensible also to our clients in the automotive industry are the key advantages of cooperating with LOTRIČ Metrology laboratory - they help us achieve our goals.

Miro Šmid, director of quality at DOMEL d. o. o.

DOMEL®

