

WE MEASURE. YOU GROW.

LOTRIČ | METROLOGY

WE STAND FOR EXCELLENCE

Strong partnerships are characterised by trust. In a company, in business and in a family. But we realise that this trust must be earned and warranted.



PRIMOŽ HAFNER

Technical Manager
at LOTRIČ Metrology Ltd.,
Procurator of companies
in the ADRIA region



JURE THALER

R&D manager
at LOTRIČ Metrology Ltd.



**KATJA
LOTRIČ KEJŽAR**

CFO
at LOTRIČ Metrology Ltd.,
Procurator of companies
in Slovenia

Dear Sir/Madam,

In the LOTRIČ Metrology Group, we prove ourselves with measurable actions and results. Because metrology excites us. In the last 30 years, we have steadily grown into a stable European family-owned company. Today, we are proud to work with companies of all sizes, from the smallest ones to the largest global corporations, such as Porsche Slovenija, Hisense Gorenje Europe and Atlantic Droga Kolinska. We cover over 95 percent of the companies' metrology needs, and guarantee a response to all queries within 24 hours. We measure, you grow.

You cannot know if you do not try us out. Accept the invitation. You will always have a reliable, qualified and dedicated professional with you who will not only hear you, but actually listen. With the support of an exceptional team of collaborators, we will find a solution for each of your metrological challenges and celebrate every achievement with you. The measure of any good cooperation and relationship is in the people involved. Our excellence is based on translating our words into actions. The new generation of the Lotrič family is already involved in the business, dedicated and empowered. As a family and a family-owned business we always take the time to reflect on how we impact the world around us through our activities. Responsible, sustainable and reliable. Because we stand for excellence when it comes to business, relationships and the environment. The values of the healthy and successful European group LOTRIČ Metrology direct us on the right path – water, earth, air and fire in the eyes. These four pillars provide us with the stability that is the basis of sustainability.

Our love of metrology guides us, and will ensure you have a reliable partner for decades to come. Sincerely,
Maja Brelih Lotrič, CEO



**MAJA
BRELIH LOTRIČ**

CEO
at LOTRIČ Metrology Ltd.,
PSM measuring systems Ltd.



MITJA LOTRIČ

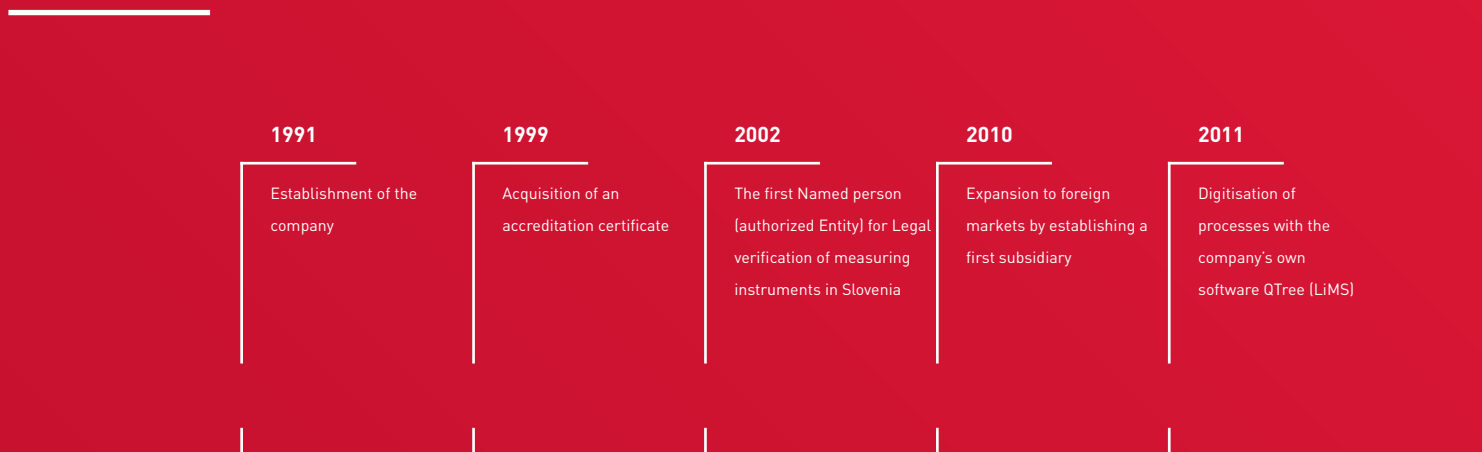
CEO
at LOTRIČ Certification Ltd.,
Procurator of companies
in the DACH region

WE SEE THE IMMEASURABLE AS WELL

The very beginning of our lives connects us to metrology. When a baby is born, it is gently weighed and measured. Extraordinary! At the LOTRIČ Metrology Group, we use that same care and sincere love in everything metrological.

We care about the future. That is why a sustainable strategy is at the core of our operations. Our aim is to leave positive environmental footprints and achieve zero environmental impact.

KEY MILESTONES



With undoubtedly accurate results, we strengthen individuals' trust in medicine, traffic safety, fair purchasing practices and sustainable industry. We are committed to giving society the right result at all times.

3 COMMITMENTS TO OUR CLIENTS

WE UNDERSTAND

The market in which you compete is extremely demanding.

WE GET IT

Your products and processes must be of the highest quality, so only the best is good enough for you.

WE KNOW

To succeed, you need a professional, credible, strong and fast partner who listens and understands you.

Our vision

When you think of measurement, you think of LOTRIČ Metrology.

Our mission

We expand the circle of trust in the devices, services and systems that form part of our daily lives.

Corporate social responsibility

The company, through its philosophy, values, norms and strategy, contributes to the protection of the environment, the preservation of jobs, and the development of companies and the local community.

OUR VALUES



The earth feeds us.

PROFESSIONALISM
HONESTY
PURITY



Water is the source of life.

QUALITY
TRUST
ACCURACY



Air We give the spirit free rein.

INNOVATIVENESS
OPENNESS
INFINITY



With fire in our eyes, we add the fourth element of life.

2012

The Republic of Slovenia Award for business excellence and R4E by EFQM

2015

Focus on the development of our own products – EXACTUM, TRAMES

2017

Signing of the Family constitution

2020

Development of a respirator in response to the social situation

2021

Notified body for respiratory protective device – Filtering half masks to protect against particles

2023

Transfer of leadership to the next generation

YOUR EUROPEAN PARTNER OF EXCELLENCE IN METROLOGY

Companies and national and international organisations entrust us with their measuring needs. With our help, they can focus on their core business.

LEADING PROVIDER OF “ALL-IN-ONE” SOLUTIONS



Every year, the LOTRIČ Metrology Group issues 100,000 certificates based on 5,000,000 measurements, which we evaluate with 4 billion measurement data collected and archived using our own EXACTUM system. We have a responsibility to our partners and the metrology profession, and we make sure to meet and exceed all expectations.

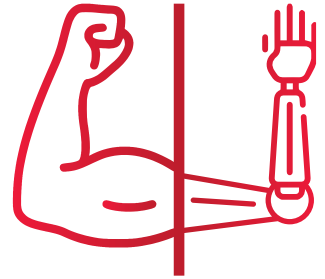
A COMPREHENSIVE MEASUREMENT CENTRE FOR MORE THAN 21,000 COMPANIES

With 464 methods, of which 225 are accredited, we are the leading provider of all-in-one metrology solutions. We cover more than 95 % of all metrological needs for most clients. We represent over 30 renowned providers of measuring and laboratory equipment. With certificates in 52 countries and a QNet network of international partners, we provide services in the EU and beyond. We guarantee the highest level of responsiveness in 24 hours. Our references include the names of more than 21,700 companies.



WE INCREASE PRODUCTIVITY WITH AUTOMATION

We introduce and develop state-of-the-art solutions in the field of process and industrial automation – sophisticated measuring equipment and software to support quality and control the production process. LOTRIČ Metrology solutions significantly improve the productivity and competitiveness of our partners.



WE DRIVE DEVELOPMENT AND INNOVATE SOLUTIONS



We cooperate with 16 research institutes and universities to develop innovative solutions. Together with the Jožef Stefan Institute, one of the most prestigious European research organisations, we developed the iLAB project, an intelligent laboratory system for healthcare. The project received the Taras award, which is given for successful cooperation between industry and the scientific research sphere in the field of innovation, development and technology. We are also a proud co-founder of the NELA development centre for the electrical and electronics industry. We have developed and secured five patents.

WE STAND FOR EXCELLENCE AND SUSTAINABILITY

We operate in accordance with the ISO/IEC 17065, ISO/IEC 17025, ISO/IEC 17020 and ISO 9001 standards, and the EFQM Excellence Model. We have received numerous recognitions and awards: *the Republic of Slovenia Award for Business Excellence* and the *5-STAR Recognition Award*, the *Bronze Gazelle Award* for fast growing companies, *the national Golden Thread Award* for employer of the year and the *Family Business Award of Excellence*. We are proud ambassador of Slovenia's green, creative and smart economy.

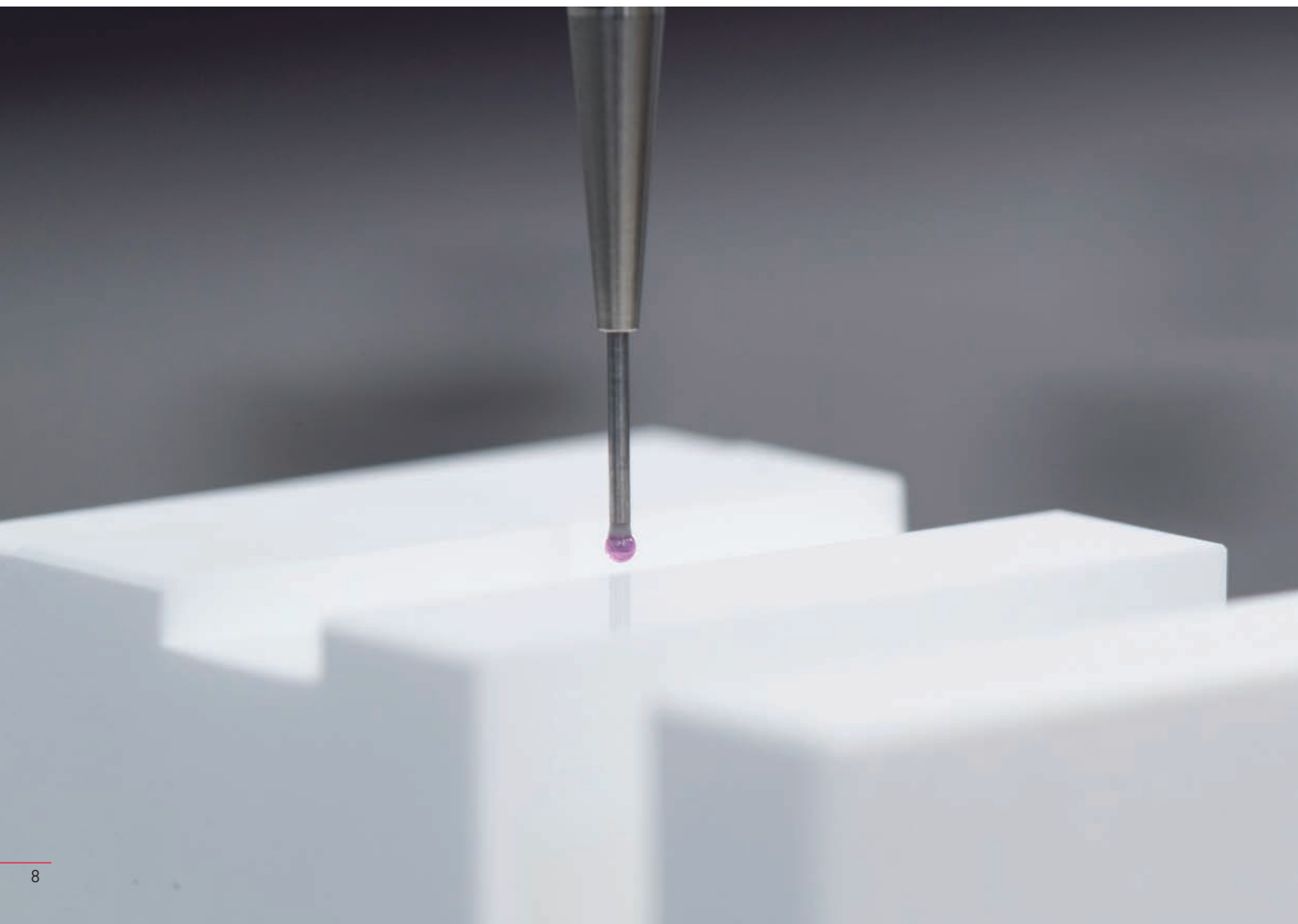


A FAMILY MULTINATIONAL WITH A 100-YEAR-OLD HISTORY



We are a family business that has been developing and implementing metrological solutions over 30 years. We draw on a tradition that began in 1923 with the establishment of the first chemical laboratory. Since then, we have grown into the European Group LOTRIČ Metrology, which brings together more than 180 experts in the field of metrology.

JOINT --- RESPONSIBILITY: --- RELIABILITY AND --- CUSTOMER CARE



Our loyal clients can attest to the quality of cooperation and the constancy of excellent relationships.



»We have been cooperating with the LOTRIČ Metrology Group in calibrations and inspections of measuring equipment since 2010. Within the Centre for Sustainable Logistics, we have expanded our cooperation to vehicles that use alternative fuels, such as compressed natural gas (CNG). With the help of LOTRIČ Metrology, we systematically regulated the field and thus ensured the safety of CNG vehicles, as well as our common safety. We responsibly support projects in the field of green mobility and, together, we successfully bring alternative fuels closer to individuals. We are proud of the supportive business environment we have created and of our ever-lower carbon footprint.«

Danilo Ferjančič
Managing Director
Porsche Slovenija d.o.o.



»The LOTRIČ Metrology Group takes care of all our calibrations and inspections of measures. They improve the condition of our measuring equipment, which is reflected, among other things, in the higher quality of our products and cost optimisation. With their professionalism and a wide range of accredited metrological procedures, they take care of all our metrology needs. They help us with advice and suggestions related to the management of measuring equipment, are always open to possible adjustments and are easily reached in case of doubts, as their experts are constantly present at our location. This makes it easier for us as a company to focus on our core business and pursue the objective of becoming the best in the industry.«

Ivan Masatović
Director of Quality Assurance
Hisense Gorenje Europe d.o.o.



»We have been cooperating with LOTRIČ Metrology for more than 25 years. They ensure regular and timely calibrations and inspections of our measuring equipment, provide us with advice on using it, enable training within the M&Q Academy and introduce innovations, so we can focus on the development and growth of our company without worries or interruptions. They are always friendly, responsive, professional and ready to help, and are among those of our partners that regularly receive the highest ratings in evaluations. Together, we have established a management system for measuring equipment but also a strong relationship based on mutual trust, which is constantly strengthened and reaffirmed.«

Enzo Smrekar
Managing Director
Atlantic Droga Kolinska d.o.o.

WE COVER

ALL METROLOGICAL

NEEDS

PRODUCTS

CUSTOM CONTROL SYSTEMS

More on pages 12–19

- Automation of measuring and control processes: TRAMES
- Measuring machines, systems and devices: TRAMES Unique
- Control and inspection systems: TRAMES Inspection
- Monitoring of environmental parameters: EXACTUM®

REPRESENTATIONS

More on pages 20–23

- Equipment for industrial use
- Supervision and control of production processes
- Equipment for laboratories, pharmacies and medicine
- Dedicated equipment for the pharmaceutical industry
- Equipment for car workshops and MOT inspection stations (roadworthiness of vehicle), tachograph inspection stations and homologation inspection bodies (vehicle conformity assessment bodies)

SERVICES

CALIBRATIONS

List of laboratories, more on pages 24–27

- Mass
- Length
- Pressure and flow
- Thermo
- Electro
- Mechanics
- Coordinate measurements
- Wind turbine
- Health
- Mobility
- The environment

TESTING

List of laboratories, more on pages 30–33

- Analytical chemistry
- Surface protection
- Metals, mechanical examinations and microscopy
- Polymers
- Printed circuit boards
- Clean rooms and masks

VERIFICATIONS, INSPECTIONS, QUALIFICATIONS

More on pages 34–37

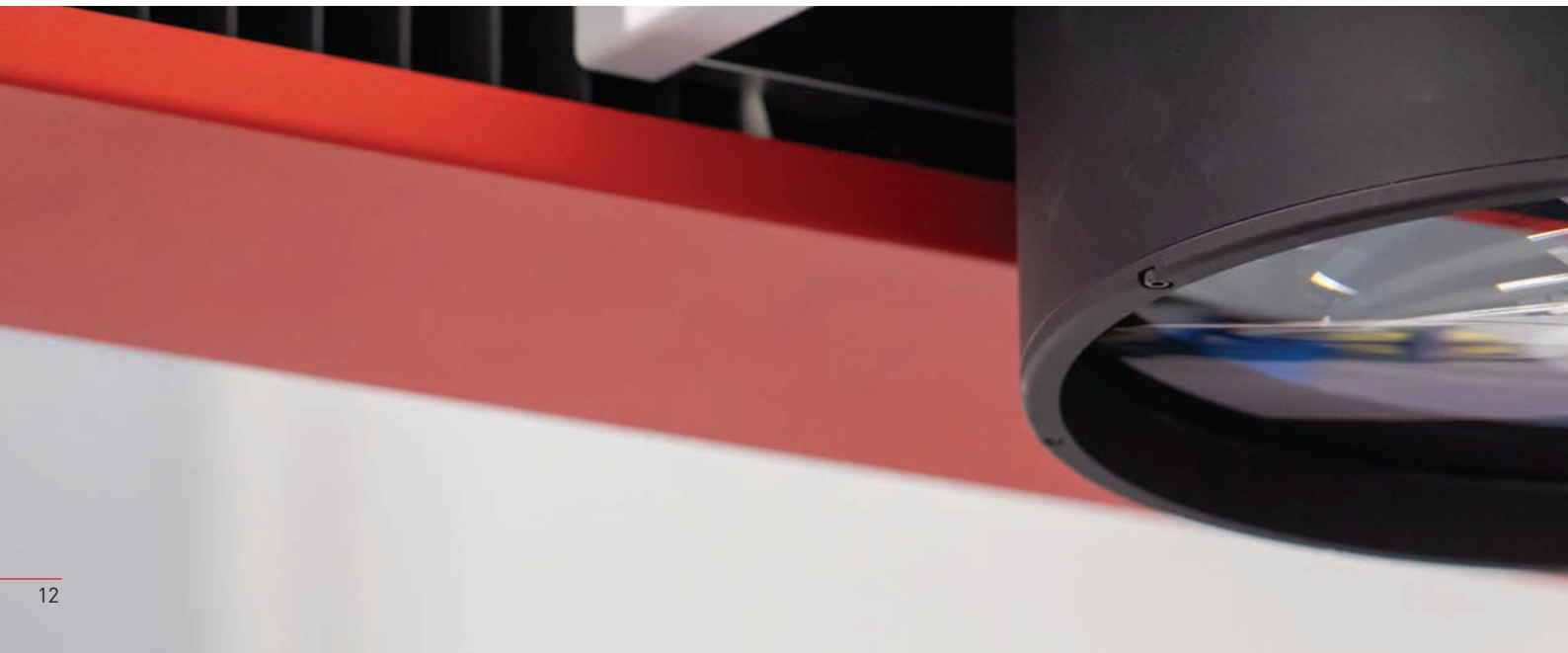
- Legal verification
- Pressure Equipment compliance
- Sterilization process compliance
- Vehicle compliance
- Equipment qualification
- Process validation

CERTIFICATION

More on pages 38–41

- Products

CUSTOM SYSTEMS
AND SOLUTIONS:
UNDER OUR
WATCHFUL EYE

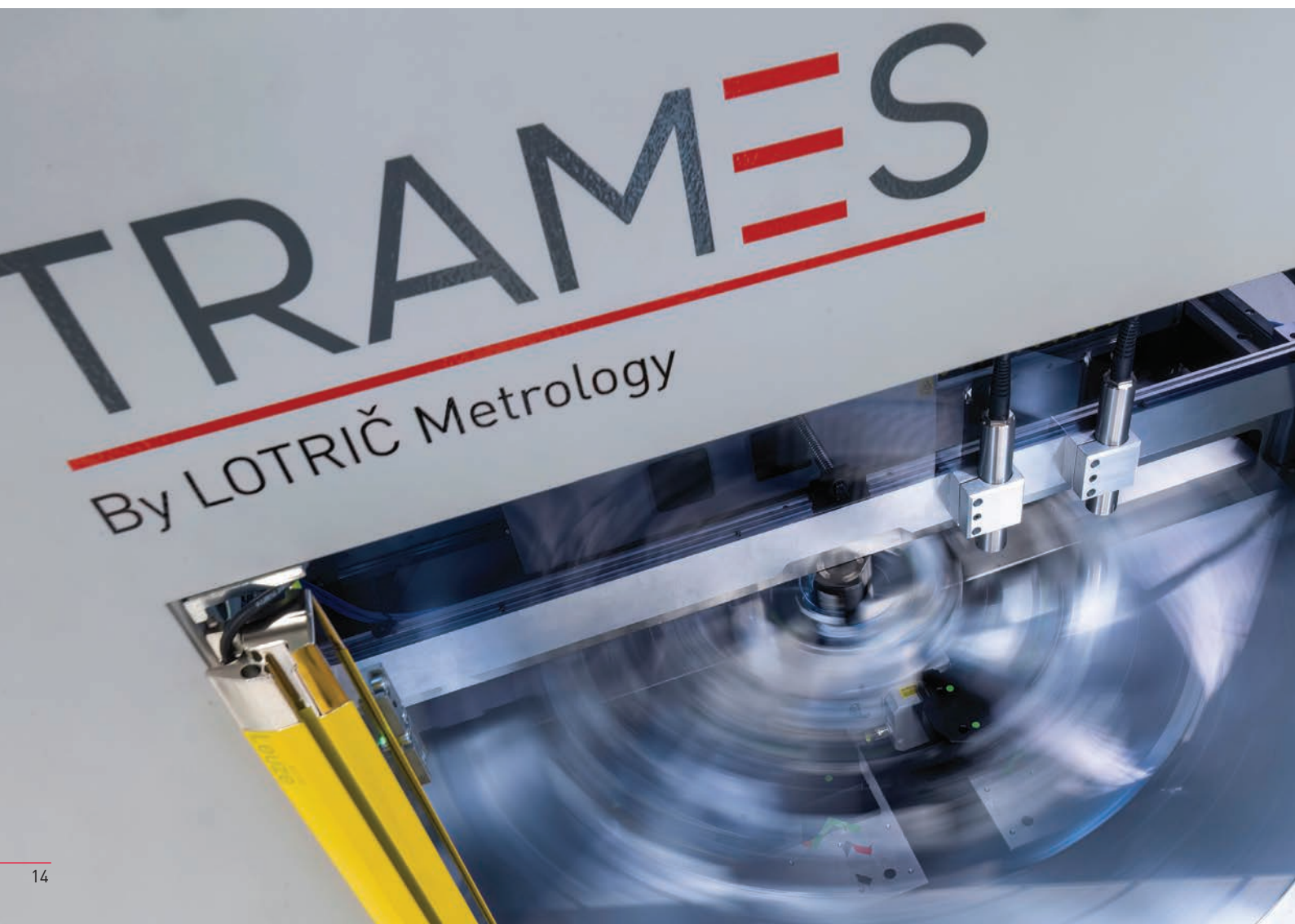


The quality and safety of products or facilities is not self-evident. It is the result of strict quality control throughout the entire chain, from raw materials to the user.

The LOTRIČ Metrology Group helps you establish or automate over product quality control, environmental parameters and production processes, or set up remote control and regulation of technological facilities. We develop state-of-the-art products and solutions, which are the result of our own knowledge and professional development of LOTRIČ Metrology experts.



PROCESS AUTOMATION: TRAMES SYSTEMS



Market quality expectations, customer requirements and standardisation are constantly changing and intensifying. Automation of measuring and control processes allows you to keep up with the requirements and improve process efficiency and product quality. This requires advanced engineering expertise, experience and the ability to cooperate with the clients and listen to their needs.

In the LOTRIČ Metrology Group, we develop and manufacture fully customised measuring systems for the purpose of:

- Incoming quality control
- In-process quality control
- Outgoing quality control

MEASURING MACHINES, SYSTEMS AND DEVICES: TRAMES UNIQUE

TRAMES Unique are machines for measuring product dimensions that are fully tailored to the client's needs. If you cannot find a suitable measuring machine, system or device on the market, we design and manufacture the TRAMES Unique measuring machine based on 30 years of experience in metrology. It can be a stand-alone device or a unit that is part of the production line or other devices.

TRAMES Unique enables:

- Measurement of dimensions in 1D, 2D and 3D space
- Measurement using contact and non-contact sensors
- Different levels of automation and metrological capabilities
- A wide range of upgrades
- Operation in the most demanding production conditions



»In order to maintain a high level of quality, we pay special attention to dimensional accuracy. The LOTRIČ Metrology Group has provided us with a metrology solution that is fully adapted to the measurement of aluminium extrusion tools, while the M3 software ensures the traceability of all our tools before and after use.«

Boštjan Tomažič
Head of Tool Technology
PCP d.o.o., Impol group

CONTROL AND INSPECTION SYSTEMS: TRAMES INSPECTION

TRAMES Inspection is an Inline or Offline systems that developed according to your specific requirements. By using machine vision, it enables complete control based on advanced algorithms and improves the stability and repeatability of the production process.

TRAMES Inspection enables:

- Detection of defects and damage
- Identification and classification of products
- Surface scanning
- Detection of geometric irregularities
- Assembly control

FROM A METROLOGICAL CHALLENGE TO AN ADVANCED SOLUTION

The need to develop fully customised measurement and control systems is growing in all industries. In the LOTRIČ Metrology Group, development takes place according to a predetermined process.

1. DETERMINATION OF INPUT PARAMETERS

After a detailed overview of your measurement challenge, we determine key requirements, such as measurement parameters, metrological performance, degree of automation, environmental conditions, specific requirements of standards and other requirements.

- Optional: Issuance of DQ (*design qualification*) documentation.

3. DEVELOPMENT AND MANUFACTURE

When the modelling and programming of mechanical, electronic and software components is complete, the device is manufactured and tested. The whole process can take from a few weeks to a few months, depending on the complexity of the solution.

5. CALIBRATION, TRAINING, PROFESSIONAL AND TECHNICAL SUPPORT

We only complete and hand over the project when your team is able to operate the system on its own, and when we have completed the on-site calibration. We provide technical assistance, regular maintenance and calibrations throughout the operation life of the device.

5 STEPS TO DEVELOPING A SOLUTION

2. CONCEPTUAL DESIGN AND FEASIBILITY STUDY

Based on the input parameters, we develop the concept idea and perform a feasibility study. We adapt the conceptual design to the point where all your requirements are met. Studies are conducted in our laboratories on real samples.

4. PREPARATION OF DOCUMENTATION AND PRODUCT COMPLIANCE

After the completion of the development phase, we prepare the technical and technological documentation, which ensures that the TRAMES systems are in accordance with good metrological practice:

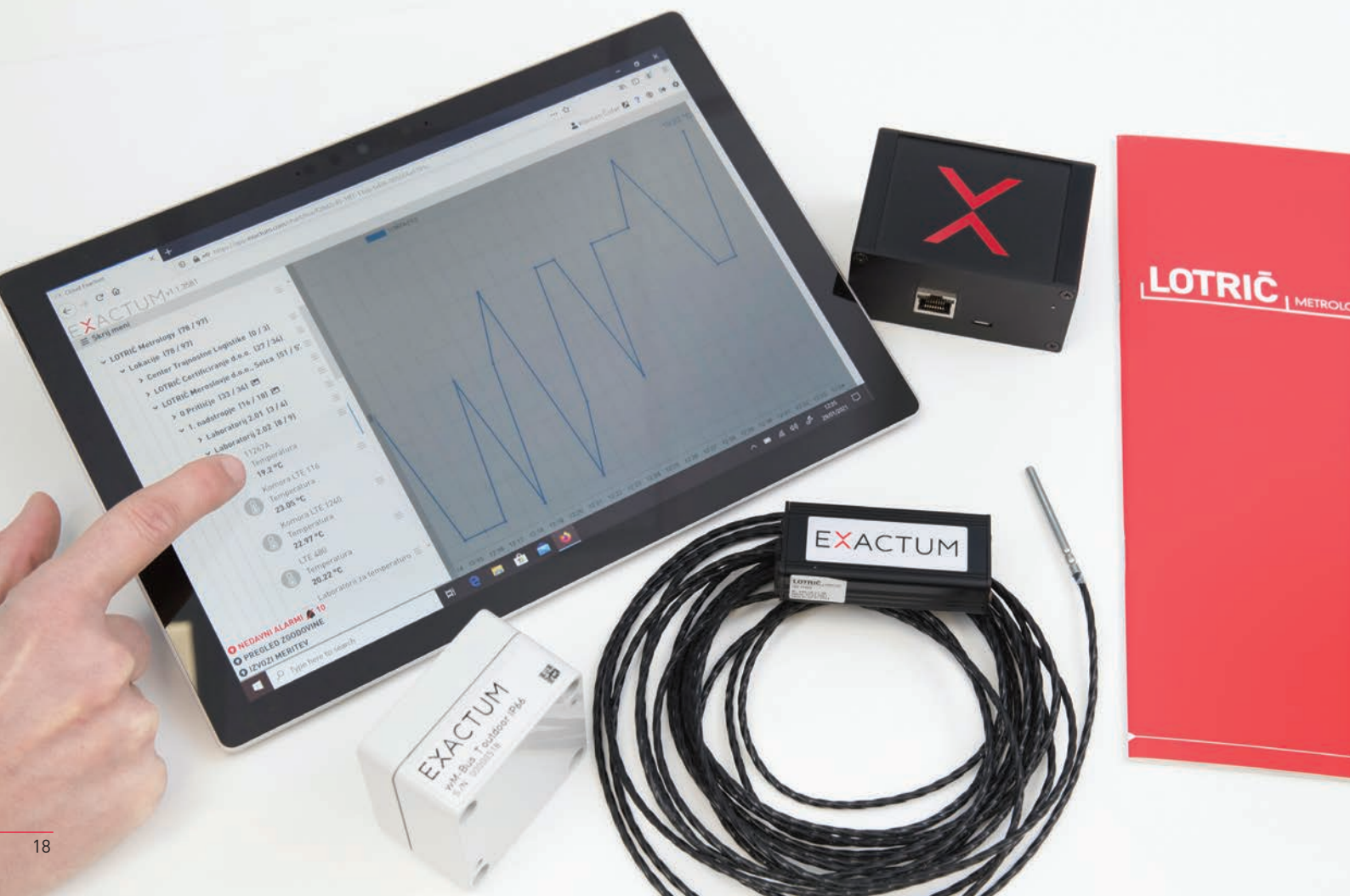
- IQ – Installation Qualification
- OQ – Operational Qualification

LOTRIČ METROLOGY



Unique 3D

PROCESS PARAMETERS AND ENVIRONMENTAL PARAMETERS: EXACTUM[®] MONITORING SYSTEM



Why risk the consequences of unmonitored, inaccurate or incomplete measurements of environmental conditions? The cost of these can quickly rise to several thousand euros. And why bother with parameter records at multiple locations and in different archives, which according to empirical estimates takes up to 11 % of your time?








Use an efficient system for automatic parameter monitoring. The state-of-the-art EXACTUM® solution automatically protects your processes and products, and helps you meet the necessary regulations and standards. The advanced solution enables efficient monitoring and recording of temperature, humidity, pressure, illumination, CO₂ concentration and other parameters.

How does it work?

EXACTUM® automatically captures and stores the measured values of measuring sites equipped with sensors and alerts you in the event of exceeded thresholds. The system is easy to use.

The system complies with the requirements of GXP, CFR 21 part 11, EU GMP Annex 11, calibration according to ISO/IEC 17025.

EXACTUM® enables:

-  Real-time measurements
-  Setting of limit values, delays and alarm recipients
-  Alert via SMS and/or email
-  Access via web browser
-  Sensors with wireless connection
-  Automatic export of reports
-  Audit trail

EXACTUM Cloud: easy access to data

All you need to access the data is internet access and a smart device such as a phone, tablet or laptop. EXACTUM Cloud can be accessed by an unlimited number of users, each of whom has assigned access rights and personal settings for different locations. Each user can also set personalized alarms. The system is updated automatically and allows the export of data in .xlsx, .pdf or .png format. The data is protected in accordance with international standards.



»The basic task of the Agency of the Republic of Slovenia for Commodity Reserves is to ensure the supply of food and non-food products that are essential for human life. In order to maintain the quality of stored goods, it is necessary to provide special storage regimes and manage environmental conditions. The EXACTUM® system solution makes this possible. Over 600 sensors provide central control over eight dislocated locations within the Agency, making it the largest system of its kind in Slovenia. In addition to central monitoring, the system enables the administrators of individual locations to have a detailed overview of measurements and set alarms for each location according to their needs.«

M.Sc. Andrej Kužner
Director

Agency of the Republic of Slovenia for
Commodity Reserves



NETWORK OF

THE BEST:

WE REPRESENT THE

WORLD'S LEADING

MANUFACTURERS



We select and represent over 30 providers of measuring devices and laboratory and pharmaceutical equipment of the highest quality just for you.

Our team of experts regularly checks the global offer and metrological innovations, and carefully selects representation to complement the comprehensive offer of products and solutions.



EQUIPMENT FOR INDUSTRIAL USE

- Callipers and micrometers
- Dial gauges
- Height gauges
- Optical 2D measuring machines
- 3D coordinate measuring machines
- Universal 1D measuring machines
- Plug and ring gauges (plain, tread, taper)
- Roughness testers
- Hardness testers
- Moisture analysers
- Thermometers
- Weighing instruments (balances) and weights
- » Position, displacement, angle, force, pressure, torque and flow sensors
- » Measurement axes, force and torque transducers
- » Indicators, amplifiers and process equipment for sensors
- » Modular interfaces for connecting measuring equipment to computers
- » Programmable force tension and compression testing machines
- » Programmable torque testing machines
- » Hand-held force and torque gauges
- » Penetrometers
- » Servo cylinders
- » Thread inspection devices
- » Resistance meters
- » Calibration and production equipment for measuring electrical quantities

Which product groups and their manufacturers do we represent in Slovenia?

- LOTRIČ Metrology Ltd.
- » PSM measuring systems Ltd.



SUPERVISION AND CONTROL OF PRODUCTION PROCESSES

- » RQM software, IDOS
- » Torque, force, displacement and resistance sensors and process equipment
- » Weighing sensors
- » In-line and portable industrial printers for printing on various materials
- » Steel cable force monitoring system
- » Permanent mechanical marking machines (engraving and stamping)
- » Lifts and elevators monitoring systems
- » Cylinder evenness load monitoring systems
- » Testing equipment for packaging
- » Equipment for testing food and product texture
- » Laser marking machines
- » Equipment for press operation monitoring
- » Record verification: barcode, QR and Data Matrix scanners

EQUIPMENT FOR LABORATORIES, PHARMACIES AND MEDICINE

- Autoclaves
- Centrifuges
- Moisture analysers
- Pipettes, dispensers and consumables
- Refrigerators, freezers, deep freezers – ULT
- Weighing instruments
- Weights and materials for cleaning, handling and storage
- Thermometers and hygrometers
- Blood pressure monitors
- » Sensors for monitoring the strength of patients

DEDICATED EQUIPMENT FOR THE PHARMACEUTICAL AND COSMETIC INDUSTRIES

- Suppository penetration tester
- Suppository disintegration tester
- Tapper density tester
- Granulate flow tester
- Disintegration testers
- Abrasion and friability testers
- Dissolution testers
- Blister/packaging testers
- Tablet hardness (diameter and thickness) testers
- All-purpose equipment (mixing, kneading, grinding, filling and polishing)
- Tablet press machine

CAR WORKSHOP AND MOT INSPECTION STATION EQUIPMENT, TACHOGRAPH AND HOMOLOGATION INSPECTION BODY EQUIPMENT

- Manometers
- Tire depth gauges
- Length gauges (tape measures, micrometers, callipers)
- Light transmittance (tint meters) and reflectance meters
- Thermometers and humidity meters
- Stopwatches
- Torque wrenches
- Brake fluid boiling point testers
- Gas leak detectors
- Steering wheel protractors
- Roller brake testers
- Suspension and chassis control test plates
- Deceleration and acceleration meters



MEASURES: --- ORDERLY AND --- ACCURATE



In the LOTRIČ Metrology group, we perform calibrations for the widest range of your requirements. Our trained experts use modern equipment to calibrate both at your location and in the laboratories of the LOTRIČ Metrology Group.

You will receive a Calibration certificate after each calibration. The certificate ensures the traceability of your measuring instruments, tabular and graphical accuracy and precision results with measuring uncertainty. The calibration certificate complies with the necessary international standards, technical guidelines and your specific needs.





ALL CALIBRATIONS IN ONE PLACE

MASS & PRESSURE

- Weighing instruments
- Weights and masses of any objects
- Pressure gauges (manometers, barometers, vacuum gauges, pressure transducers)

VOLUME & DENSITY

- Pipettes, burettes, dispensers and titrators
- Automated liquid handling systems (pipetting robots) – ALHS
- Graduated cylinders and bottles
- Density bottles – pycnometers
- Volume vessels
- Air entrainment meters – porosimeters
- Hydrometers
- Body volume and density

CHEMICAL QUANTITIES

- pH and conductivity meters
- Gas detectors and analysers
- Salinity meters

FLUID & AIR FLOW & VELOCITY

- Gas flow meters
- Fluid flow meters
- Volumetric dosing systems
- Anemometers

ELECTRICAL QUANTITIES

- Multifunctional instruments – multimeters
- Multifunctional testing instruments – multitesters
- Current meters – amper meters
- Current clamps
- Voltage meters – voltmeters
- Resistance meters – ohmmeters
- Power and energy meters – wattmeters
- Chargers

OPTICAL QUANTITIES

- Illuminance meters – luxmeters
- Light transmittance (smoke) meters – tint meters
- Glossmeters
- Headlight centring devices – reglosopes
- Light reflectance meters – reflectometers
- Refractometers

TIME & SPEED & ACCELERATION

- Timers (stopwatches)
- Tachometers
- Vehicle speed testers (speedometers)
- Acceleration and deceleration meters – decelerometers

TACHOGRAPHS

- Indoor rollers and outdoor testing facilities
- Calibrators (manual and static units)
- Timers – Clock testers

FORCE & TORQUE

- Force gauges (dynamometers)
- Force measuring machines
- Position of crosshead (extensometers)
- Concrete testing machines
- Torque wrenches and screwdrivers
- Torque rotary power assembly tools (electric, pneumatic, hydraulic)
- Roll brake testers
- Calibration levers for roll brake testers
- Wheel balancing machines

TEMPERATURE & HUMIDITY

- Thermometers with indicators
- Liquid- in-Glass thermometers
- Clinical thermometers
- Radiation thermometers
- Resistance thermometers and thermocouples
- Resistance thermometer and thermocouples indicators and simulators
- Relative humidity meters – hygrometers
- Climatic chambers (rooms, refrigerators, baths, ovens, dryers, sterilisers)
- Dry calibrators – thermoblocks
- Material moisture meters

ACOUSTICS & VIBRATION

- Sound level meters (phonometers)
- Acoustic calibrators and microphones
- Accelerometer calibrators
- Vibration meters
- Artificial mastoids
- Seismic activity meters

ANGLE & INCLINATION

- Angle gauge blocks
- Protractors and squares
- Sine bars
- Clinometers

HARDNESS & ROUGHNESS & TOUGHNESS

- Hardness testers and hardness blocks (Shore, IRHD, VLRH, Rockwell, Brinell, Vickers, Leeb)
- Roughness testers and roughness reference standards
- Pendulum impact machines (Charpy testers)

LENGTH & SHAPE

- Gauge blocks and gauges
- Plug and ring gauges (plain, tread, taper)
- Callipers and height gauges
- Micrometres and micrometers and dial gauges clocks
- Tape measures and rulers
- Laser distance meters
- Ultrasonic and magnetic thickness gauges
- Coordinate measuring machines (3D)
- Optical measuring machines (2D)
- Linear measuring machines (1D)
- Measuring plates and rulers
- Test sieves

YOUR MEASURES: WE TREAT THEM AS IF THEY WERE OUR OWN

In the LOTRIČ Metrology Group, we handle each measuring instrument you entrust to us for calibration with the utmost care. We properly protect them in order to extend their service life – in some cases by 200 %!

We carefully clean all measures in the process, and properly temper them for accurate measurements. After performing the calibration, we check the records not only using computer algorithms, but personally as well. In this way, we ensure the highest accuracy of measurements and a standard of excellence for all the services provided by the LOTRIČ Metrology Group.

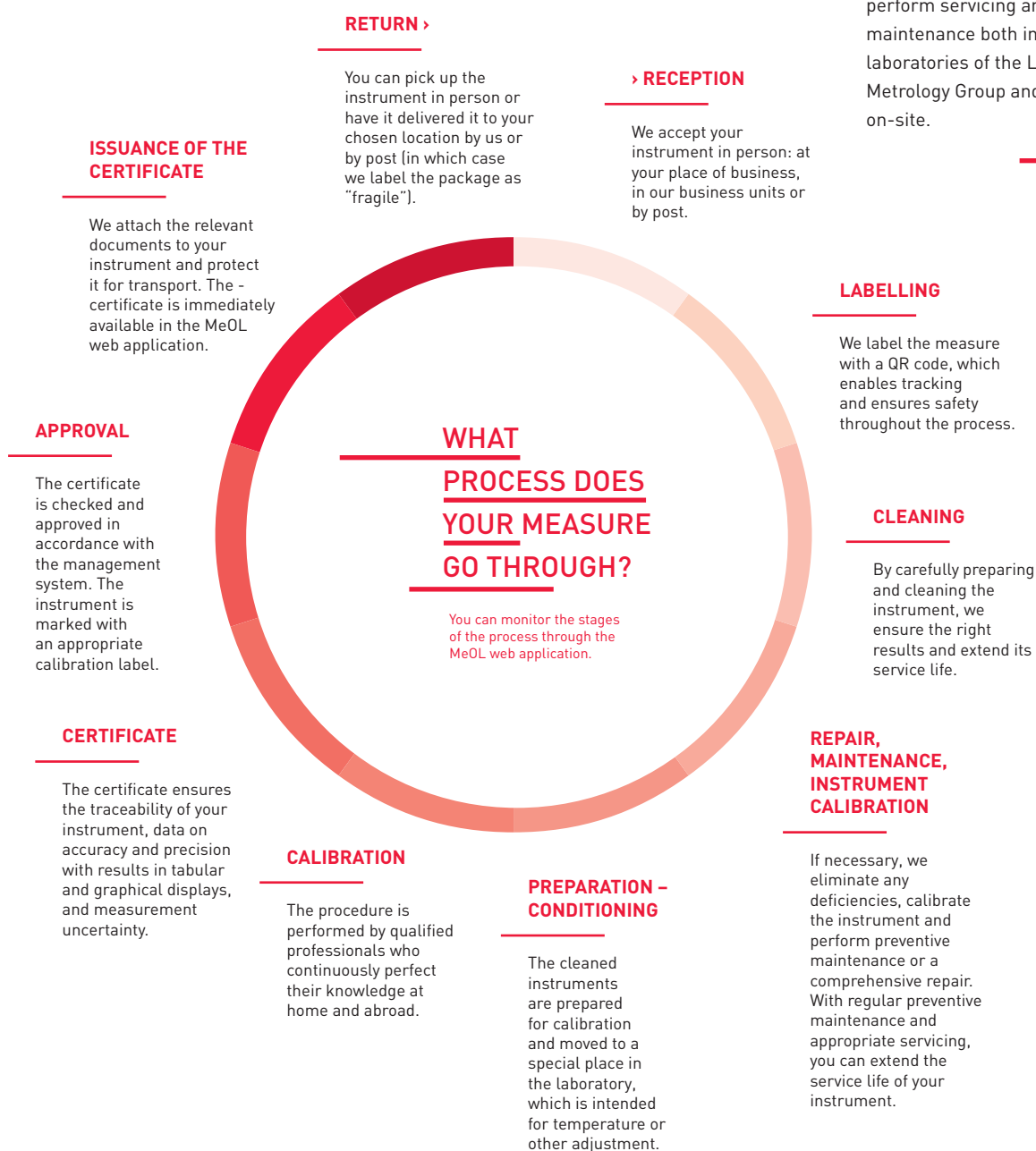
When the process is completed, you receive a calibration certificate that complies with the necessary standards, technical recommendations and your specific needs. Through the MeOL web application, you can check at which stage of the process your measure is.

During the calibration process we guarantee:

- Metrological traceability at a national and/or international level
- Protection of data and methods
- Longer service life of the measures
- Measure cleanliness

MEASURE REPAIR AND PREVENTIVE MAINTENANCE

Measuring instruments require maintenance even when they are not defective, as their components age. Over time, the long-term stability of the measures deteriorates. You can extend their service life with regular preventive maintenance and appropriate servicing. We perform servicing and maintenance both in the laboratories of the LOTRIČ Metrology Group and on-site.



THE QUALITY
OF THE PRODUCT
IS BASED
ON THE INPUT
MATERIAL



We perform testing according to international standards and in accordance with the requirements of your customers. We work with you to develop test procedures and adapt to your requirements.

Based on the obtained test results, we professionally advise you on how you can improve your processes.

Regular quality testing reduces the risk of complaints. With that you:

- ensure customer satisfaction,
- maintain a good business name and reputation,
- improve economic efficiency.

In case of complaints, we join forces and find a suitable solution to optimise your processes or examine the non-compliance of the delivered goods.

LABORATORY FOR THE AUTOMOTIVE INDUSTRY

Vehicles are changing faster than ever, forcing OEMs and their suppliers to find new ways to test quality. The LOTRIČ Metrology Group offers full support in assessing if materials and components are compliant with customer requirements.

- Testing according to the requirements of leading car manufacturers: BMW, Citroën, Mercedes-Benz, General Motors, Renault, Scania, Volkswagen, Volvo.
- Technical cleanliness: determination of technical cleanliness of components and suitability of the manufacturing process according to ISO 16232 and VDA 19.

We are an approved test laboratory for the automotive industry by the Volkswagen Group.

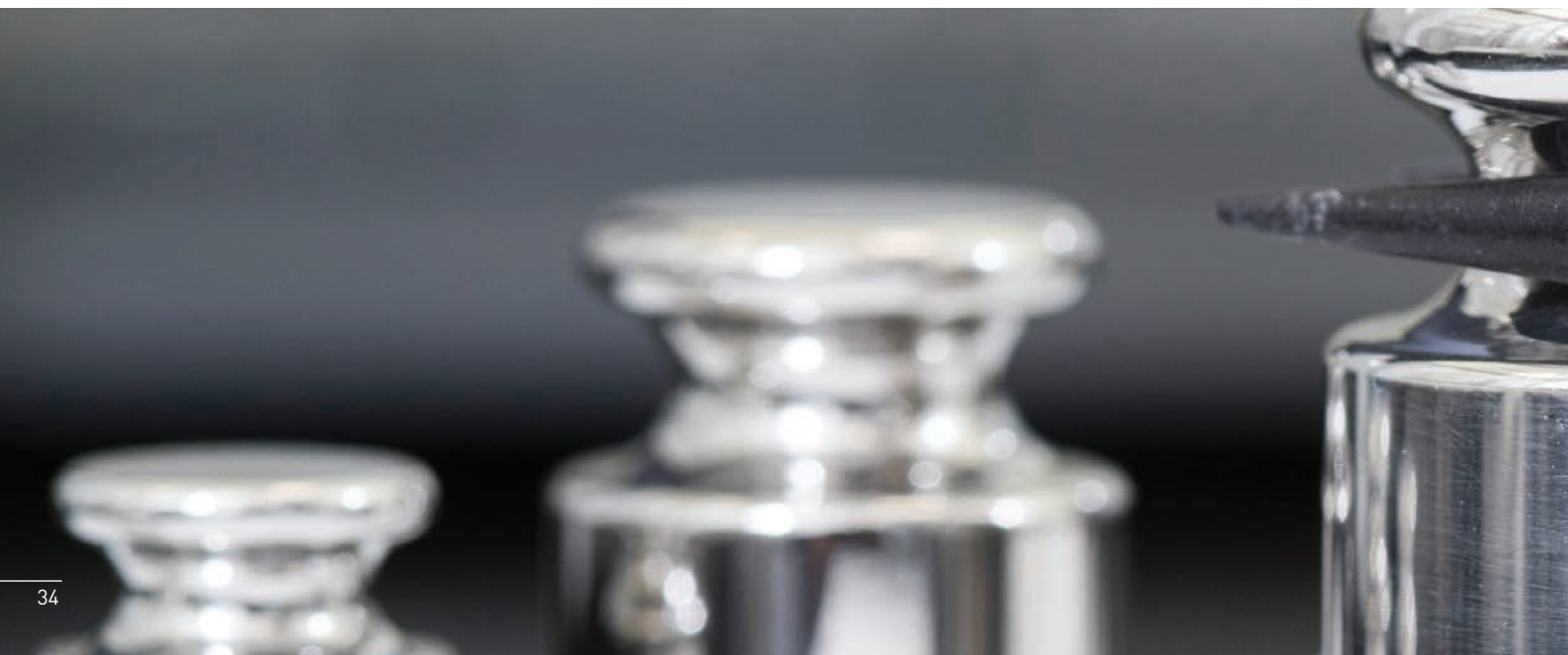




TESTING OF PRODUCTS AND MATERIALS

AREA		TYPE OR METHOD OF TESTING
Analytical chemistry	Technological waters	FTIR, UV VIS, ICP-OES, AAS, titration, oxygen content, conductivity, density, viscosity (capillary and Brookfield), index of refraction, viscosity number, pH
	Emissions	VOC / FOG, Fogging, Odor test, formaldehyde content, total carbon content, presence of 1,3 - butadiene
	Composition of materials	XRF, ICP-OES, SEM-EDS, content of C, S etc.
	Oils and lubricants	Viscosity, XRF, flash point, FTIR, pH, foaming, saponification, water content (Karl-Fischer method)
Identification of materials	Polymers, fillers, greases, oils	FTIR spectroscopy, content of inorganic residue
	Carbon footprint calculation	For production, product or event
Mechanics	Hardness	Hardness according to HR, HV, HB, Shore A and D, IRHD
	Strength	Tensile, compressive, flexural, shear stress
	Impact toughness	Measurement with Charpy and Izod machine
	Force	Measurements of braking force at force load
	Torque	Measurements of braking forces at torque load
Microscopy	Metallography	Porosity, coating thicknesses, determination of surface treatment, determination of heat treatment, identification of cross-sectional defects, depth of cemented and nitrided layers, analysis of microstructures
	Printed circuit boards (PCB)	Soldering analysis, measurements of galvanic coating thicknesses and Cu in boards, dimensional measurements
Thermal properties	Thermal properties of polymers	Glass transition temperature, crystallization and melting point of polymers (DSC), thermo gravimetry (TGA), softening temperature (VICAT)
	Flammability	Glow wire test, self-extinguishment, burning rate
Cleanliness	Clean rooms, fume hoods and microbiological safety cabinets	Cleanliness, air velocity, airflow, temperature, relative humidity, pressure difference, illuminance, ventilation efficiency, filter permeability, sound pressure (noise level), microbiological analysis
	Technical cleanliness	Pressure and ultrasonic washing, particle size analysis, determining the mass of impurities and content of metallic and non-metallic particles
Artificial aging	Surface	Exposure of samples to environmental conditions by simulation in climatic (°C, % RH), cyclic/shock climatic, pressure (bar), condensation, salt (NSS, CASS, cyclic NSS, S02 – industrial climate) and UV-light cabinets
	Surface resistance	Resistance to abrasion, to impact, stone-chip resistance. Resistance of material surfaces to various media (cleaners, oils, greases etc.)
	Metals	Microscopy, chemical analysis
Dimension	Dimensions and angle	Sample measurements with 1D, 2D and 3D measuring machines
	Roughness	Stylus-type or optical (microscopic) method
Electrical properties	Electronic devices	Insulation resistance, current heating, breakdown strength, surface and volume resistance, leakage currents, earth resistance

VERIFICATIONS,
INSPECTIONS,
QUALIFICATIONS:
COMPLIANT OR
NON-COMPLIANT



We help you operate in accordance with the necessary standards and the expectations of your customers.

In the LOTRIČ Metrology group, we assess compliance on a large scale:

- With legislative regulations at national and European levels
- With harmonised and other standards
- With the requirements of the manufacturers





LEGAL VERIFICATION

Initial, subsequent and extraordinary legal verifications of measuring instruments

- Legal verification of weighing instruments
- Legal verification of weights
- Legal verification of exhaust gas analysers
- Legal verification of blood pressure monitors
- Legal verification of tire pressure manometers
- Legal verification of roll brake testers
- Legal verification of length measures

INSPECTION

PRESSURE EQUIPMENT COMPLIANCE

- Inspection of pressure equipment: fired or otherwise heated equipment, pressure vessels, protection equipment (safety valves)

STERILIZATION PROCESS COMPLIANCE

- Functional inspection of sterilization process according to EN 285 or EN 13060

VEHICLE COMPLIANCE

- Inspections of vehicles under the Agreement on the International Carriage of Perishable Foodstuffs and on Special Equipment to be Used for such Carriage (ATP)
- Inspections of vehicles that use compressed natural gas (CNG) – UN/ECE R110

QUALIFICATIONS AND VALIDATIONS

- Qualification of laboratory, medical, pharmaceutical and measuring equipment: design qualification (DQ), installation qualification (IQ), operational qualification (OQ), performance qualification (PQ)
- Validations of laboratory processes, test lines

DOCUMENTATION PREPARATION AND CONSULTING

- Making a risk assessment
- Preparation of standard operating procedures – SOP
- Development of calibration and test procedures
- Development of control and certification procedures

PHARMA CERTIFICATE

- Compliance of vehicles with the requirements of Good Distribution Practice (GDP)

In order to deliver competitiveness, quality and safety we need to control the elements that significantly impact the quality of the distribution channel.

Certificate holder and vehicle owner demonstrate that the inspected vehicle complies with:

- Guidelines of the Good Distribution Practice (GDP),
- Requirements of national rules relating to the transportation and distribution of medicinal products,
- Requirements of European Pharmacopoeia, Ph. Eur.,
- Requirements of the United States Pharmacopeia (USP),
- Recommendations of the World Health Organization (WHO).

CERTIFICATION:
GUARANTEE BY AN
INDEPENDENT
AUTHORITY



Product certification is a clear signal to the customer that the product is safe for use and harmless to health.

We are a notified body (NB) with number 2897. In our modern laboratories, we offer comprehensive services in one place and are always available for your questions.





NOTIFIED BODY

PRODUCTS

PERSONAL PROTECTIVE EQUIPMENT

Protective masks

- Respiratory protective devices – Filtering half masks to protect against particles (EN 149)
- Conformity assessment procedure – EU type-examination – **Module B**, (REGULATION (EU) 2016/425)
- Conformity assessment procedure – conformity to type based on internal production control plus supervised product checks at random intervals – **Module C2**, (REGULATION (EU) 2016/425)
- Conformity assessment procedure – conformity to type based on quality assurance of the production process – **Module D**, (REGULATION (EU) 2016/425)

CERTIFICATION BODY

PRODUCTS

PRODUCTS OF CATEGORY I PERSONAL PROTECTIVE EQUIPMENT

Clothing

- Protective clothing (EN ISO 13688)
- Protective clothing – Protection against rain (EN 343)
- Protective clothing – Garments for protection against cool environments (EN 14058)

Gloves

- Protective gloves (EN ISO 21420)

MEDICAL DEVICES

Medical masks

- Medical face masks (EN 14683)

ELECTRICAL AND ELECTRONIC EQUIPMENT

- Compliance of electrical and electronic equipment with the RoHS directive

OIL LAMPS

- Decorative oil lamps (EN 14059)

PARKING EQUIPMENT

- Vehicle parking control equipment (EN 12414)

DOCUMENTATION PREPARATION AND CONSULTING

- Assessment of the medical device management system in connection with medical masks (ISO 13845)
- Assessment of the risk management to medical devices for medical masks (ISO 14791)
- Implementation of ISO 9001 – industrial facilities, production, laboratories, shops, service companies
- Implementation of ISO/IEC 17020, ISO/IEC 17025, ISO/IEC 17065 – calibration and testing laboratories, control, and certification bodies

MASKS TESTING LABORATORY AND CERTIFICATION DEPARTMENT

We are a notified body for personal protective equipment (PPE) and we carry out the certification process for FFP protective masks.

- Testing is key to determining the conformity of products or meeting the technical requirements of standards. After the test, a test certificate is issued, based on which the conformity of the tested product type is confirmed.
- Certification is a process in which the product's compliance with the legislative framework is assessed, and all related requirements are checked with the product type. After obtaining the appropriate certificate of conformity, the manufacturer can affix the CE mark and place the product on the EU market. The manufacturer obtains the possibility of using the CE mark.
- In the development phase of your product, we can offer you testing of mask prototypes, as well as filters and materials intended to produce final products.

A DOCUMENT TO PROVIDE YOUR QUALITY



We are recognised as a reference partner that has been working in the field of calibrations, testing, inspection and qualifications for decades. Simultaneously with the development of services, we also developed a certificate based on the wishes, needs and in-depth cooperation of our partners.

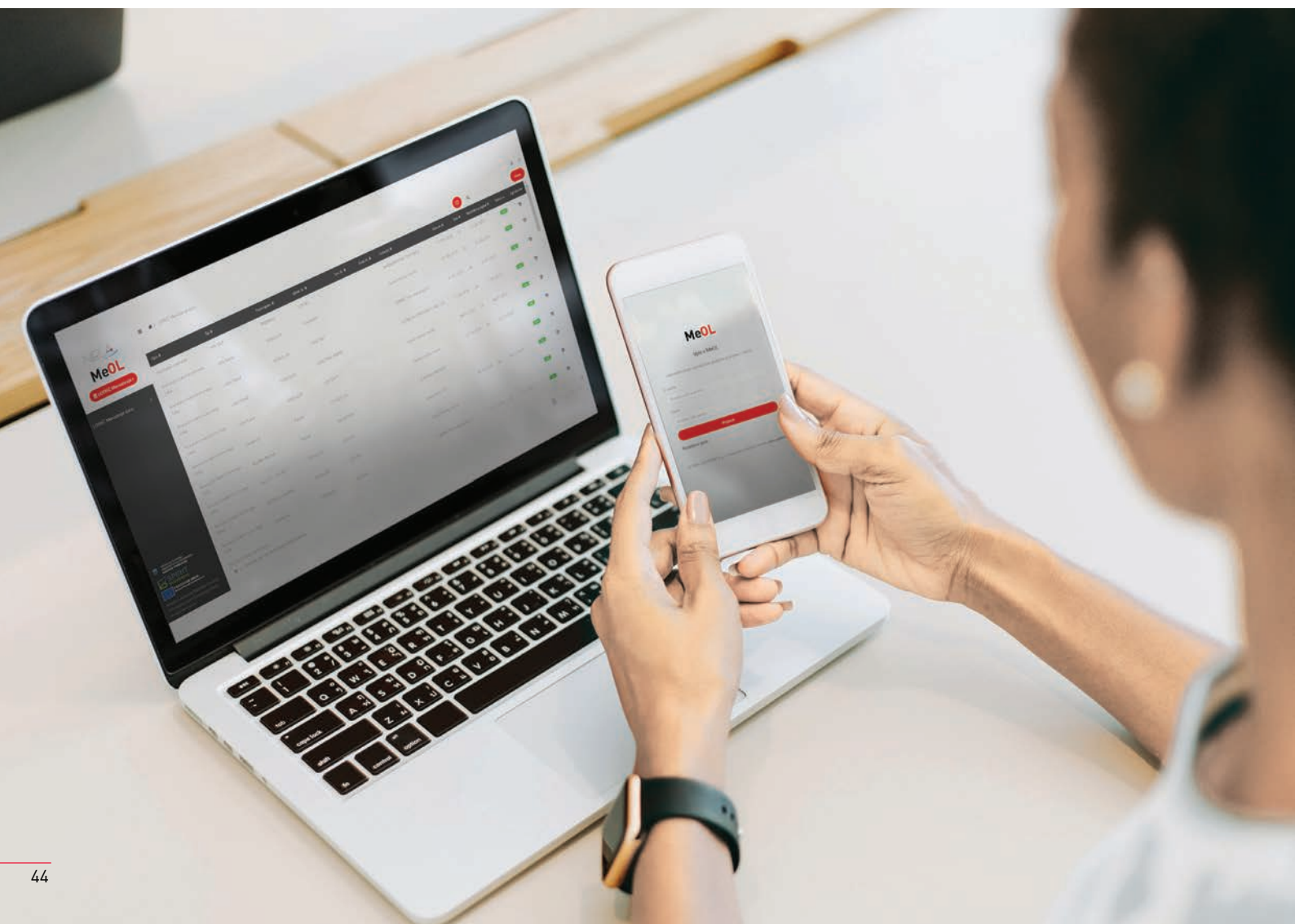
Personalised certificate:
An internationally valid
certificate is issued in two
languages of your choice.

You will receive the desired sample identification numbers on the certificate. The Statement of Conformity is made according to the standards or requirements of your process.

Graphic display: Tables, graphs and photos offer a quick and easy overview of the results and the relevance of the sample.

E-signature: Enables easy verification of the authenticity and integrity of the document and identification of the certificate signatory.

INSTRUMENT MANAGEMENT APPLICATION



In LOTRIČ Metrology group we issue e-certificates, which are accessible via the MeOL web application.

With electronic certificates in one place and a comprehensive overview of the state of the measuring equipment, managing a quality system has never been easier.



ORDERLY RECORDS

Just a few clicks separate you from the entire history of your measuring equipment and all the issued certificates in one place.



AVAILABILITY 24/7

Certificates and sample history are available anytime, anywhere; you will no longer have problems with sample records and searching for certificates.



ALARM ACTIVATION

The system automatically alerts you to the expiration date of measuring equipment examination.



SUPERVISION

In the MeOL web application, you can check which phase of the process your sample is currently in.

MEOL – INSTRUMENTS ONLINE

Scan the QR code and fill out the contact form on the website, or contact us via e-mail, and we will send you a username and password for free demo



access to your database of measuring equipment.



»Regular calibration and verification of measuring instruments is extremely important in our work. The MeOL application makes it easier for us to trace the instruments, and warns us about the appropriate moment when the instruments need to be sent for calibration. Since Avto Krka has 29 business units throughout Slovenia, and more than 500 employees, one of the important functionalities of MeOL for us is the fact that it enables easy determination of users and their rights. Each of the instruments has a specific trustee, who oversees the quality of the instrument in the specific location. The rights of access are then hierarchically arranged, which facilitates central control over the instrument.«

M.Sc. Simona Felser
Area manager
Avto Krka d.o.o.



»With its simplicity and transparency, the MeOL application has significantly facilitated our work and completely replaced our own database of measuring instruments. We currently operate with more than 1,000 instruments, and they are all listed in MeOL. In addition to standard functions, the application also allows us to control measuring instruments which are already written-off, and which have the status of inactive in the database. Due to the nature of our work and the large range of instruments, many changes take place, such as in the location of the instruments. Employees of LOTRIČ Metrology are always ready to help us, and they take care of all our wishes and needs.«

Alojz Kosi
Quality Control
Farmtech d.o.o.

KNOWLEDGE HUB: KEEPING PACE WITH THE PROFESSION AND TRENDS



**Humanity produces 2.5 trillion bytes of data every day.
Technological development is exponential. Each day, a new
innovation enriches the field of metrology.**

We share our knowledge, progress and metrological developments with you. We organise practical training, which makes your work easier and helps you on the way to accurate measurement results.

PROFESSIONAL TRAINING: IN PERSON AND ONLINE

The “*Everything you need to know about ...*” training introduces important professional content to the participants. This makes it possible for you to use modern expertise and the most effective approaches in your work. With M&Q training, you can keep up with the profession and current trends.

In short and dynamic educational “*Everything you need to know about ...*” meetings, you learn about the individual areas of metrology:

- Temperature and relative humidity,
- Weighing,
- Pipetting,
- Length,
- Geometric dimensioning and tolerance,
- Roughness,
- Hardness,
- Pressure,
- Control bodies management system (ISO/IEC 17020),
- Laboratory management system (ISO/IEC 17025),
- Equipment management,
- Internal calibrations,
- Internal audit,
- Certificates interpretations,
- Measurement uncertainties,
- Equipment management in healthcare.

You can find the dates of the training at www.lotric.si/en.

We also organise custom professional training according to your needs and basic knowledge.

GENERAL EDUCATION

During the practical part of the training, you can visit accredited metrology laboratories, test of measuring instruments, and perform measurements by comparing your results and the results of an expert. All training sessions encourage open discussion in a pleasant atmosphere, which includes an exchange of opinions and experiences. After completing the training, you will receive a certificate of technical competencies and an invitation to contact us in case any questions arise.

PROFESSIONAL MEETINGS

Every year, we participate in numerous round tables, professional lectures and metrology days, where we widen the understanding of metrology. We pay special attention to young people as well and strive to raise the quality of technical education in schools.

We organise business breakfasts with international experts from various fields of metrology and quality: laboratories, industry, mobility, healthcare, the pharmaceutical industry.

BUSINESS EXCELLENCE CONSULTING

We are a licensed consultant for the EFQM Excellence Model. The EFQM model will help your organisation on the path to success and give you information on how to achieve sustainable value in your creations. It will help you understand gaps, provide possible solutions, allow you to progress, and significantly improve the performance of your organisation.

If you are on the path to excellence, contact us and we will help you implement the EFQM model.



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