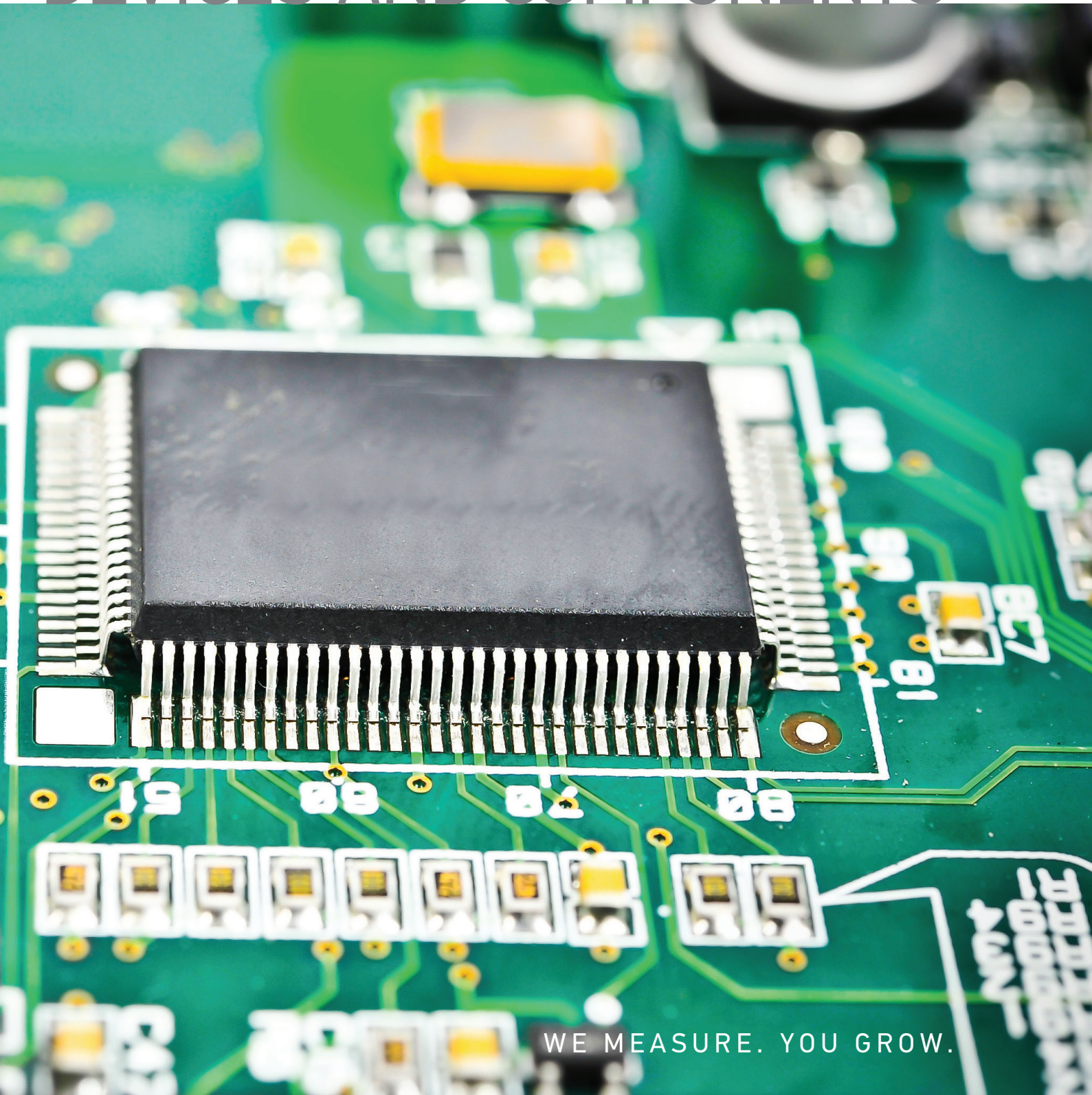


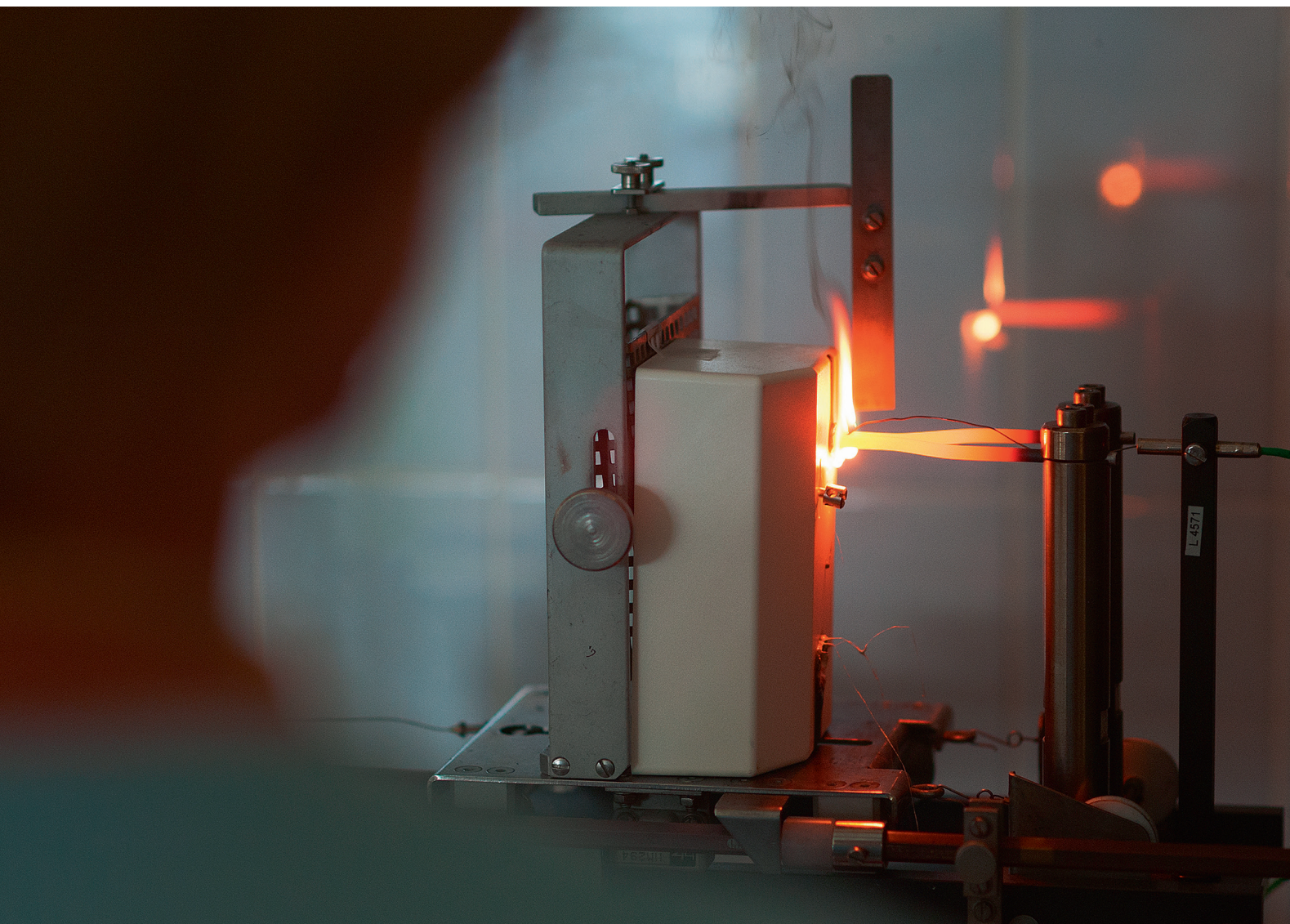
TESTING OF ELECTRICAL DEVICES AND COMPONENTS



SAFE DEVICES AND COMPONENTS, READY FOR THE MARKET.

WE KNOW THAT THE DEVELOPMENT OF YOUR PRODUCT IS IMPORTANT TO YOU. COOPERATING WITH LOTRIČ METROLOGY GIVES YOU ALL THE SUPPORT YOU NEED TO BE A SUCCESSFUL DEVELOPER.

- Help with meeting legal requirements and demands of the market for your innovation.
- Renting of laboratory and expert help with technical challenges.
- We approach your product as a whole - from soldering to casings.
- One stop for all your testing.



TESTING OF ELECTRIC AND ELECTRONIC COMPONENTS AND DEVICES

ELECTRIC SAFETY ACCORDING TO LVD DIRECTIVE

Insulation resistance test
High voltage and impulse test
Short-circuit testing
Electrical fault simulation
Leakage current measurement
Fast transient measurement

ELECTROMAGNETIC COMPATIBILITY

Immunity: surge, burst, conductive disturbances, electrostatic discharge
Emission: conductive emission
Network quality: dip simulation, swell simulation, total harmonic distortions (TDH), flickers, interruptions in electric network

RoHS TESTING FOR RESTRICTED SUBSTANCES

Content of elements (Cr ⁶⁺ , Cd, Hg, Pb, PBB, PBDE)	IEC 62321, EN 15205
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MECHANICAL PROPERTIES

Mechanical durability (life-time) of electrical devices and switches	
Vibration resistance	
Mechanical strength of cases	EN 60947
IK test	IEC 62262
Testing of terminals, connectors and mounting screws	
Strength and pull out force of electronic components	
Recording transient occurrence with high-speed camera	

BURNING BEHAVIOUR, TEMPERATURE

Glow-wire test	EN 60695-2-11*
Flame resistance	UL 94
Burn rate	TL 1010*, ISO 3795, FMVSS 302, DIN 75200
Temperature measurement with infrared camera	

INGRESS PROTECTION (IP) TESTING

Protection against dripping water, sprayed water and splashed water	IP X1-4
Effect of immersion	IP X7-8

ENVIRONMENTAL TESTING AND ACCELERATED AGEING

Temperature and relative humidity (optional with electrical connection)	
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*

PRINTED CIRCUIT BOARDS (PCB) AND SOLDER MATERIAL

Measurement of thickness of metal coating	(SnPb, Sn, Au, Cu in Ni)
Microscopic examination of PCB	
Determining the chemical composition of the solder materials and components	
Solderability	DIN IEC 60068-2-20 DIN IEC 60068-2-58
DSC - glass transition temperature	ISO 11357-2*
DSC - determination of melting temperature	ISO 11357-3*

TECHNICAL CLEANLINESS

Ultrasonic cleaning
Particle mass
Particle size classifications
Determination of metal and non-metal particles

SWITCHES AND FUSES

Electrical durability (life-time)
Thermal testing up to 2000 A
Testing switching reliability of contactors

ENAMELLED WIRES

Dimensions, elongation, spring properties	IEC 60851-2,3
Bending test	IEC 60851-2,3
Porosity	JIS C 3003
Electrical resistivity	IEC 60851-5
Withstand voltage	IEC 60851-5
Heat shock	IEC 60851-6
Cut through	IEC 60851-6

CLEAN ROOMS

Classification of air cleanliness	ISO 14644, US FED 209E
Air speed and flow	ISO 14644
Air flow visualization	ISO 14644
Permeability test and filter classification	EN ISO 14644, EN 1822
Air temperature	ISO 14644
Relative humidity	ISO 14644
Pressure difference	ISO 14644
Recovery test	ISO 14644, EN 1822

ELECTROSTATICS

Protection of electronic devices from electrostatic phenomena	ISO EN 61340-5-2
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RESISTIVITY

Surface resistivity
Volume resistivity

DEVELOPMENT APPROACH AND CONSULTING

Technology advice from experts

We perform the tests according to numerous other standard and non-standard procedures, which are tailored to your requirements and/or the requirements of your customers.

*Accredited testing methods. Read more about the accredited procedures in the accreditation documents no. LP-004 and no. LP-099 (<http://www.slo-akreditacija.si>).

EXPERTS OPINION



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®



EXTRAORDINARY COMPETENCE FOR FASTER DEVELOPMENT

LOTRIČ Metrology group performs chemical and mechanical testing of various materials as well as environmental testing and chemical etching of small components. With their competences which they have developed and built on over the years they help us to develop our products faster. Their employees are known for their expertise, quick response time and precision so we are always glad to do business with them.

Dieter Brunner, CEO ISKRAEMECO d. d.

ISKRAEMECO +

