2016 CORPORATE SOCIAL RESPONSIBILITY REPORT OF THE KONČAR - ELECTRICAL ENGINEERING INSTITUTE





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I General standard disclosure

KONČAR – Electrical Engineering Institute Inc.

- Founded in 1961, reorganised in 1991
- Headquarters in Zagreb, Fallerovo šetalište 22
- An independent stock company within **KONČAR Group**





Mission

Through application of knowledge and state-of-the-art technologies we develop solutions for efficient energy conversion and power transmission, on the principles of Corporate Social Responsibility.

Vision

To become a globally recognizable partner in the fields of power engineering and rail vehicles, and in that way to contribute to the success of KONČAR Group.

Strategy of Sustainable Development of the Institute

- Permanent increase of productivity with intense investments in the development of new products and services, life-long learning of employees, and construction of new laboratories or upgrading the existing ones
- Business based on sustainable development, fostering and promoting partnership relations with all stakeholders
- Fostering collaboration with academic communities and public institutes through joint scientific-research projects
- To be a scientific organization with status of an independent company within the KONČAR Group, whose owner leaves its entire profit for its further development.

Strategy and analysis

LETTER FROM THE MANAGEMENT

G4-1

Continuous adaptation to new trends, increasingly complex customer requirements, and slowing down economic growth of power industry and transport in the surrounding countries are for KONČAR – Electrical Engineering Institute challenges that are increasing each year. Creation of innovative and competitive technical solutions and services, continuous investment in the development, professional improvement of employees, minimization of environmental impact, and care about the community are the pillars of our sustainable operations.

In 2016 we have surpassed our expectations, and business results were considerably better than in 2015 and then planned. Income from sales was 12,48 million euros, what is 10.8% more than in the previous year. It is especially important that the income from direct export sales has been increasing in the last three years.

The most important products and services that the Institute exports are transformer and bushing monitoring systems and laboratory testing of HV equipment. Machine monitoring systems and the development of rotating machines have also satisfactory results. Income from marine equipment testing for foreign clients is also increasing. Income from KONČAR Group is mostly due to sales of R&D services and transformer monitoring systems to the associated company KONČAR - Power Transformers. In 2016 the negative trend in sales on the Croatian market was stopped, the increase was 20%, but the overall result was considerably lower than in the precrisis period.

Despite intensified efforts on sale of products and services, employees were encouraged to scientific and professional improvement as a precondition for innovative technical solutions competitive on global market. Foundation of Workers' Council was one of positive workers' initiatives. Partnership in solving social and economic issues will contribute to better mutual understanding and creation of new values in the Institute.

Contribution to the community was continued by the investment of 0,95 million euros in long-term assets (0,84 million euros in the equipment and 0,11 million euros in buildings). In 2016 the large 50 m³ climatic chamber was reconstructed, and the design documentation and building permit for the new Laboratory for High Voltage, Power Systems and Drives (LAVESP) provided. LAVESP will be built within the CEKONET project, which is of national interest. Some major investments are planned till 2020 that are mostly connected with CEKONET/LAVESP project: building and equipping the new laboratory, and modernization of the existing laboratory infrastructure. Some activities on equipping the laboratories, i.e. on creation of preconditions for accreditation of new laboratories and methods with a view to entering the world market, were already carried out in the previous two years.

In 2016 Inspection Body for Measurement Equipment was accredited under ISO/IEC 17020, two more laboratories were accredited under ISO/IEC 17025 (Laboratory for Noise and Vibration and Laboratory for Mechanical and Technological Testing), and scope of accreditation of High-Voltage Laboratory was additionally extended. At present, there are seven accredited Laboratories in the Institute, and it is planned to accredit some new test methods in 2017.

Two projects were also successfully completed in collaboration with Faculty of Electrical Engineering and Computing in Zagreb and Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture in Split within the call of the Ministry of Science, Education and Sports "Strengthening capacities for research, development and innovation". The implementation of Horizon 2020 project SafeLog has also begun, in which the Institute is providing research, development and prototyping of a safety vest for work in robotized warehouse systems.

Financial stability and good sales in 2016 are a good basis for achieving long-term objectives. We believe that our clients and partners will recognize our efforts, and that also next year we will be able to express satisfaction with achieved results and efficient collaboration with all stakeholders.

Zagreb, May 2017

Managing Board

Siniša Marijan, PhD President

Samir Keitoue Deputy Member Jamir Keitoue

Raiko Gardiian Member

Organizational profile

G4-3 - G4-8

KONČAR – Electrical Engineering Institute is a stock company engaged in research, development and testing in natural, technical and technological sciences. As one of KONČAR Group companies the Institute is oriented towards applied research, testing and support to development projects of the Group. Besides supporting the Group in power industry and transport, the Institute offers its proprietary solutions and services in the global market. The Institute has the status of an autonomous company wholly-owned by KONČAR – Electrical Industry Inc., which leaves the Institute its entire profit for further development. The Institute has been operating on free market principles for 25 years, and it has been developing its competences for 55 years.

Compliance and diagnostic tests of the equipment installed in power plants and substations, and supervision of their construction are also important activities that ensure our employees a wide range of competences and direct contact with customers.

The Institute is registered in the Register of the Scientific Organisations of the Ministry of Science, Education and Sports. At the same time, being a company specialized in applied research in electrical and mechanical engineering, it has two important roles within the KONČAR Group:

- support to further development of solutions manufactured and sold by KONČAR companies based on contracts and market principles, providing expertise and R&D testing in numerous laboratories of the Institute,
- applied research at its own expense for the development of new solutions compatible to the production programme of the KONČAR Group, for which the Institute bears risks not only regarding the development but also regarding their placing on the market.



ORGANIZATIONAL CHART OF THE INSTITUTE

The organization of the Institute enables an efficient adaptation to the market rules and investment of its own funds in new technologies and applied research for development of new solutions. Such approach results in employees' and customers' confidence and competitive solutions whose characteristics and qualities meet all the customer criteria.

Departments of the Institute as centres of key competences for individual groups of products are profit centres, and the only measure of their business efficiency is value added, which is also the basis for determination of workers' income in departments. The success of individual or team work is rewarded by personal stimulation or one-off payment, depending on contribution to overall business of the Institute or creation of conditions for future successful business.

Business activities of the Institute are carried out by departments, with support of common administrative units. Common services (units) provide support and consolidate the work of the departments, so that their rewards depend on common success of all the departments.

Within the Institute there is the independent, accredited Certification and Inspection Body supervised by representatives of government bodies and consumer associations. Certification Service - SCERT is accredited under ISO/IEC 17065:2013 Conformity assessment – Requirements for bodies certifying products, processes and services, and the Inspection Service for Power and Measurement Equipment under ISO/IEC 17020:2012.

LONG-TERM OBJECTIVES

- To maintain and expand competences for applied research and testing as support to the development of products, technologies and services for transformers, rotating machines, HV switchgear and controlgear, power converters, renewable sources and components of rail vehicles (smart energy and clean transport)
- To be on market principles the key support to other Group companies in product development
- To maintain and expand the status of EU Notified Body (NB) for testing and certification of electric power products and equipment
- To become and/or to remain a recognizable provider of monitoring systems for primary power equipment with proprietary HW/SW
- To become a recognizable provider of embedded control systems for process control in electric power sector and rail vehicles
- To create desirable jobs, whose working conditions, scientific and professional challenges, prospects, and wages will be example to others.

KEY BUSINESS ACTIVITIES

The Institute has 3 major business activities. Income from sales per business activities in the last five years is shown below. In 2016 the income from sales of proprietary solutions rose to 46%.



Key fields of Institute's activities are electric power engineering and transport, where advanced technologies based on smart sensors, ICT, advanced materials and renewable sources are being introduced. It is expected that our own development of specific sensors together with necessary electronic circuits will considerably improve the innovative solutions, quality and competitiveness of all monitoring systems as products with the biggest market potential.

RESEARCH AND DEVELOPMENT

The Institute follows trends and invests in research in order to be the leader in application of advanced technologies to the production programme of companies of the KONČAR Group and to improve its proprietary solutions for the global market.



PROPRIETARY SOLUTIONS

State-of the-art technical solutions of the Institute are results of decades of experience and knowledge gained in the field of electric power equipment. Monitoring systems enable enhanced capital asset management and risk control.

Monitoring systems for transformers, rotating machines and switchgears

Control systems for rail vehicles and renewable energy sources

Proprietary HW/SW platforms based on long-life components (including SIL 4 solutions)



DIAGNOSTICS, TESTING AND CERTIFICATION



Besides research and development for the Group and activities on the Croatian market, the Institute builds its business on export of services and solutions such are monitoring systems, laboratory tests, product development and embedded computer control systems.

The business plan includes some changes in marketing and sales activities. In 2016 a specialized website www.koncarmonitoring.com was developed in order to promote monitoring and diagnostics of rotating machines. Redesign of the existing website of the Institute began at the end of 2016. Numerous activities on finding new partners, agents and distributors were intensified. Platforms are used to present directly our strengths on target markets, increase visibility of the Institute, and position on markets with products whose originality and quality exceed that of the competition.

Major companies for the power systems area, telecommunications and transport are the Institute's long-time partners on the Croatian market. The most important customers on the world market are the global companies from Qatar, the Republic of Korea, Sweden, Malaysia, Great Britain, Iran, Canada and Slovenia.

SALES PER MARKETS 2016



MARKET SEGMENTS 2016



STRUCTURE OF EMPLOYEES AT THE END OF 2016

G4-9

- 167 employees
- 82% with faculty degrees and post-secondary school
- 11 with PhD and 4 with MSc degrees
- 54% female executives (Managing Board and heads of departments)
- 50% employees with 10 or less years of service
- Average age 40 years
- Average years of service 15 years



G4-10 G4-11

Rights defined in the Collective Agreement are guaranteed to all the employees. In 2016 92% of them have had permanent employment contracts.

SUPPLY CHAIN

G4-12

Code of Business Ethics is the basis on which the Institute develops its relations with suppliers, business partners and all the stakeholders. Partners in the supply chain, apart from required quality, should also observe the best of human rights and working conditions, occupational health and safety, and environmental and ethical concerns.

Because of very stringent requirements on products and services, the purchasing processes in the Institute are mostly based on agreements and contractual arrangements oriented towards quality, competitive prices, respect and integrity. Choice of suppliers is based on their professionalism and competence, and the purchasing process and choice of suppliers are implemented in an objective and transparent way.

Business activities of the Institute are based on a wide scope of suppliers and business partners mostly from electrical industry, but also from numerous other fields. Most important partners in R&D field are companies from KONČAR Group. Most important markets for diagnostics, testing and certification are the Croatian and EU ones. Proprietary solutions are mostly exported to Qatar, the Republic of Korea, Oman and Slovenia.

MEMBERSHIP IN DOMESTIC AND INTERNATIONAL ORGANISATIONS AND ASSOCIATIONS

- Croatian Academy of Engineering (HATZ)
- Croatian Laboratories (CROLAB)
- Electrotechnical Society Zagreb (EDZ)
- European Committee for Electrotechnical Standardization
 (CENELEC)
- Croatian Chamber of Economy (HGK)
- Croatian Automotive Industry Competitiveness Cluster
- Croatian ICT Industry Competitiveness Cluster
- Croatian Electrical and Mechanical Machinery Industry and Technology Competitiveness Cluster
- Croatian Maritime Industry Competitiveness Cluster
- Croatian Defence Industry Competitiveness Cluster
- Croatian Chamber of Electrical Engineers (HKIE)
- Croatian Chamber of Mechanical Engineers (HKIS)

- Croatian Exporters Association (HIZ)
- Croatian National Committee of the International Council on Large Electric Systems (HRO CIGRÉ)
- Croatian Business Council for Sustainable Development (HR PSOR)
- Croatian Standards Institute (HZN)
- International Conference on Electricity Distribution
 (CIRED)
- International Council on Large Electric Systems (CIGRÉ)

The Institute is a member of Croatian Business Council for Sustainable Development since 2010.



Hrvatski poslovni savjet za održivi razvoj Croatian Business Council for Sustainable Developmer

IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES

G4-17 - G4-22

In identification of material aspects, we regularly follow the principles of Global Reporting Initiative (GRI) G4, what ensures transparency and continual improvement of the reporting process. The process of identification of material aspects is a part of regular activities, and it is implemented through the map of Institute's stakeholders. The procedure for determination of the most important material issues for sustainability includes collecting data related to sustainability, analysis of impacts and priorities, and verification.

Reports of the Institute are based on information obtained from many sources, including feedback from key stakeholders, general information about markets, and contacts with the management, employees and appropriate services.

Various approaches are used for efficient understanding of the needs and priorities of our external and internal stakeholders (polls, interviews, official and unofficial meetings etc.). To ensure a reasonable and balanced presentation of topics that reflect both negative and positive impacts, each topic is considered separately in accordance with its importance in the reporting period. The final defined material aspects are verified by the Managing Board to ensure their compliance with business values and strategy of the Institute.

After completion of analyses, the following topics were found especially important for the Institute and its stakeholders, and identified as material with appropriate qualitative and quantitative indicators.



STAKEHOLDER ENGAGEMENT

G4-24 – G427

Inclusion of stakeholders and taking into account their needs are indispensable preconditions for strategy setting, identification of material aspects, and elaboration and content of each CSR report. To improve additionally the communication with stakeholders, a new website was developed in 2016 to promote monitoring and diagnostics of rotating machines, and also interactive communication through social networks was established.

The existing website of the Institute contains information and contacts for all departments, so that our stakeholders can give us their suggestions or complaints. We have also regular meetings with our main customers to establish their needs with respect to products and services, and to propose possible solutions.

Employees have at their disposal notice boards, mail boxes, e-mail and intranet with information about business events, data bases and other themes that are important for the employees. There are also annual surveys of employee satisfaction, and it is planned to introduce regular annual meetings of employees and the Managing Board.

This Report contains the opinion of the Commission of the Croatian Business Council for Sustainable Development as impartial third party about the report for the current year. Taking into account suggestions given by the Commission we improve the processes of Institute's performance management and monitoring, concentrating on issues of importance both for our business and for wider community.

DIALOGUE WITH STAKEHOLDERS

Business processes in the Institute include various interest groups, often with very different needs and interest. We have tried to find out who key stakeholders are in order to fully understand their expectations, and bring into line our business strategy and objectives with their needs. In that way, we would like to improve our competitiveness, intensify communication and meet the expectations of various interest groups.

We have made a list of stakeholders with whom our departments and services interact in their everyday work, found their problems, frequency of their interactions, communication methods, and their relevance for the Institute in terms of sustainable development.

Stakeholders	Mechanisms of inclusion	Frequency
CUSTOMERS	Survey of customer satisfaction Meetings, workshops, consultations Professional training Solving and analysis of complaints, request and suggestions Fairs, conferences, gathering Official website E-mail Visits to customers CSR report	Annually When necessary When necessary Annually Continuous Continuous Annually Annually
EMPLOYEES	Survey of employee satisfaction Training and professional improvement Intranet/internal services e-mail CSR report	Annually Continuous Continuous Continuous Annually
SHAREHOLDERS AND INVESTORS	General meeting Letters, e-mail CSR report	Annually When necessary Annually
SUPPLIERS AND PARTNERS	Participation at conferences Mutual audits Official website CSR report	When necessary Annually Continuous Annually
BUSINESS AND PROFESSIONAL ASSOCIATIONS	Membership Working groups, working bodies Participation at conferences CSR report	Continuous Continuous When necessary Annually
ACADEMIC COMMUNITY	Scientific and professional papers Seminars and workshops Participation at conferences and gatherings Joint activities CSR report	Continuous When necessary Continuous Continuous Annually
PUBLIC ADMINISTRATION BODIES	Working groups Letters, e-mail Official website CSR report	Continuous Continuous Continuous Annually
LOCAL COMMUNITY	Visits and joint activities Donations and sponsorships Official website CSR report	When necessary Continuous Continuous Annually

After a detailed analysis, eight key stakeholders of the Institute were identified:

REPORT PROFILE

G4-28 – G431

The content of this CSR report follows GRI G4 guidelines, and this year it is in accordance with GRI G4 – Core option.

This is the 10th CSR report of the Institute made in accordance with internationally recognized methodology of Global Reporting Initiative (GRI). It is published annually, and each report contains the results from the previous calendar year, and provides a balanced and reasonable presentation of the effects of Institute's sustainability.

Last report was published in May 2016, and it is planned to publish the next one in April 2018. Besides topics relevant for sustainable development, this report also presents business activities based on new technical solutions and services which the Institute offers on the market or is currently developing. External assurance of the report was not made

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GOVERNANCE STRUCTURE AND COMPOSITION

G4-34

KONČAR – Electrical Engineering Institute is a joint stock company fully owned by KONČAR – Electrical Industry Inc. Companies within KONČAR Group are independent legal entities. The parent company monitors, strategically directs and supports the Institute through supervisory boards and meetings of shareholders in accordance with the Croatian Companies Act and Articles of Incorporation of both KONČAR – Electrical Industry and KONČAR – Electrical Engineering Institute.

Supervisory Board of the company appoints and dismisses the Managing Board, and decides about the number of its members and duration of their term of office. Supervisory Board has five members, three of them are elected at the annual general meeting, one member is appointed by employees, and one by the majority shareholder. The length of term of members of the Supervisory Board is four years.

In accordance with the Companies Act and Articles of Incorporation, the Managing Board manages the business of company on their own responsibility. In doing so, the Board is obliged and authorized to make decisions necessary for successful management of the company. There are certain kinds of decisions prescribed by Articles of Incorporation that require approval by the Supervisory Board. The basic organisational structure of the Institute is set down by the Managing Board and approved by the Supervisory Board.

ETHICS AND INTEGRITY

G4-56

Within its sphere of influence the Institute supports and implements all the measures and obligations prescribed by law and international standards for the areas of business ethics, workers' rights, occupational health and safety and environmental protection.

The Institute observes and protects intellectual property rights of other parties, and confidentiality of information of its customers.

Our values reflect our goals, priorities and convictions that guide us. By adhering to fundamental values and ethical standards we can focus on sustainability.

OUR FUNDAMENTAL VALUES

Reliability

One of our fundamental values, inherent to all we do. It is ensured by building trust with our customers based on our correct expertise and up-to-date technical solutions.

Excellence

Our goal is to constantly make improvements, plan future activities, and forecast challenges, keeping excellence, quality and sustainability.

Tradition

Decades of experience in applied research and laboratory testing are the basis for stability and success of our business in the future. There are intense investments in the development of new products and services, training of employees, and construction of new laboratories and refurbishment of the existing ones.

Knowledge

Successful business is based on knowledge and skills of our employees, superior expertise, professional competence, and correct and impartial assessments.

Responsibility

We are aware of social and environmental impacts of our actions. We take greatest possible care of environmental protection, human rights and occupational health and safety.

CODE OF BUSINESS ETHICS



The Institute is a signatory of the CODE OF BUSINESS ETHICS of the Croatian Chamber of Economy.

The Code defines ethical behaviour and standards we observe in our work. In our business practice, we follow the highest ethical standards, and build our reputation on expertise, trust and reliability. All our employees are obliged to treat all the stakeholders with due care and attention.

All employees are encouraged to follow the Code in their work and everyday activities, and the Code covers rules and procedures, guidelines for decision making and examples of potential ethical dilemmas related to business activities.

Aspect: Anti-corruption

G4-SO5

The Institute as a company that accepts democratic values, innovativeness, and fair business relations has recognized the need and responsibility to follow contemporary trends in fight against corruption by implementing the Code of Ethics and defining rules for reduction of risk from bribery and corruption in the Institute to the minimum.

Anti-corruption policy of the Institute is implemented by doing the entire business in accordance with laws, international regulations and rules of profession in an honest, fair and ethical way, with zero tolerance to bribery and corruption. No case of corruption has ever been noticed in the Institute.

Aspect: Anti-competitive Behaviour

G4-SO7

Code of Business Ethics defines our obligations related to laws and regulations not obeying of free market competition. The Institute is also committed to creating a fair and transparent competition in all the fields and business activities. So far no cases of not obeying of free market competition have been found in the Institute.

INTEGRATED MANAGEMENT SYSTEM

The market competence of the Institute and its recognisability in social community are based on the Integrated Management System which covers quality management system (ISO 9001), environmental management system (ISO 14001), occupational health and safety management system (OHSAS 18001), system for management of testing and calibration laboratories (ISO/IEC 17025), and system for management of certification bodies (ISO/IEC 17065).

In this way we ensure application of principles of corporate social responsibility together with balanced relation to customers, employees, owners, suppliers and social community. Through application of Integrated Management System the Institute defines roles and responsibilities, organization and processes that are important for achievement of high level of quality of our products and services. Through such processes the Institute communicates with customers and other stakeholders, realizes products, achieves goals, learns, and makes continual improvements.



ISO 9001:2008 Valid till 02.04.2018



Valid till 02.04.2018



Valid till 02.04.2018

Quality Management System (QMS)

Objective and impartial external auditing of our ISO 9001 Quality Management System guarantees quality products and services, and ensures our recognisability and reliability in market completion. At the same time it also improves the quality of everyday work and motivation of employees.

Environmental management system (EMS)

In accordance with our commitment to quality services and continual improvement, we have established ISO 14001 Environmental Management System audited by a third party. It is our tool for continual guality management and improvement and reduction of environmental impacts with the view to achieving our objectives

Occupational health and safety management system (OHSMS)

It is our greatest obligation to provide a safe and healthy working environment for employees and thus improve our global competitiveness. The Institute is persistent in implementation of risk control, legal compliance and internal audits for the purpose of continual improvement all the aspects of OHSAS 18001.

Aspect: Indirect economic impacts

G4-EC8

Research and development

Applied and development research is directed towards acquisition of new knowledge that helps to solve advanced requirements on power equipment:

- Reduction of energy consumption (losses)
- Increased dynamics (frequent starts, variable speeds...)
- Equipment condition monitoring (sensors and monitoring)
- · Controllability of equipment (measurement of process variables)
- Ultra-high-voltage transformer insulation research
- Research of HVDC insulation systems
- Research of new environmentally friendly insulation
 materials
- · Investigation of power and instrument transformer failures



 Research and applied solutions in the field of mechanisms of switching apparatus as well as kinematic and dynamic analysis of components



• Up-to-date computation tools, simulation and physical models, and prototyping are all used to improve characteristics of standard and special purpose electrical machines



Electromagnetism Machine loss disposition calculations Specific purpose analyses Optimization of active machine parts

Heat transfer Machine temperature distribution analyses Computation of fluid dynamics (CFD) Optimization of heat transfer









Mechanic Varying load vibration calculation Determination of material fatigue Stress analyses

Physical models Determination of precise characteristics Concept verification Prototype manufacturing





Proprietary solutions

INTEGRATED MONITORING SYSTEM OF ELECTRIC POWER PLANTS (IMS)

- Integration of transformer, machine, bay monitoring systems, and busbar and HV cable monitoring systems:
- Centralized monitoring and protection of capital equipment in a power plant (generator, turbine, transformer, circuit breakers, ...)
- Higher availability of equipment
- Higher safety of a power plant
- Better asset management
- Reduced cost of maintenance predictive instead of periodic equipment maintenance
- Possible connection with other smart grid components



TRANSFORMER MONITORING SYSTEM (TMS)

Končar TMS enables on-line monitoring and diagnostics of all vital parts of power transformers and reactors. It detects incipient faults, so that user can prevent failure by timely intervention.

Modular design enables simple adaptation to user requirements and specific features of each transformer (type, size, redundancy), i.e. better asset management and residual life assessment.



REFERENCES

More than 400 TMSs for substations and power plants delivered to more than 20 countries worldwide.





EXPERT SYSTEMS FOR MACHINE CONDITION MONITORING AND FAULT DETECTION

Features:

- On-line systems
- Applicable to all kinds of machines
- Modular and upgradable systems for new as well as for the existing machines
- Long-term data storage and important events tracking (trends, waveform, alarms ...)
- Local and remote data access



REFERENCES

More than 70 monitoring systems delivered in 18 countries worldwide





Shaft Current and Voltage Protection Relay – SCVP

Expert Motor Condition Monitoring – EMCM

EMBEDDED CONTROL SYSTEMS FOR RAILWAY APPLICATIONS

After successful development of embedded control systems for locomotives and trams, the Institute has developed and delivered train control and management systems for new Croatian electric and diesel trains. Almost all components of these systems are based on modular and sustainable platform which is a product of years of in-house development. The platform comprises numerous hardware and software components which enable configuration of different control systems for various purposes and of various levels of complexity. TCMS set is composed of train main computer, man-machine interface, gateway, intelligent controller, energy metering system.



AUTONOMOUS POWER SUPPLY SYSTEM FROM RENEWABLE ENERGY SOURCES



Base station on the island of Žut

A self-contained system with power 0.5 to 50 kW integrating:

- various devices for generation of electricity from renewable sources (wind turbines, photovoltaic cells, fuel cells for the production of electricity from hydrogen),
- energy storage in batteries,
- measurement and control systems for control of the entire autonomous system
- protection and monitoring systems
- communication with remote users, and monitoring of various parameters, warnings and alarms.

CATEGORY: SOCIAL SUB-CATEGORY: PRODUCT RESPONSIBILITY Aspect: Customer health and safety

G4-DMA

Laboratories of the Institute accredited under ISO/IEC 17025

The Institute has 13,000 m² of business and laboratory spaces. Eight laboratories have accreditations under ISO/IEC 17025, what is a proof of their independence and competence in conducting on-site and laboratory tests of products in accordance with standards and technical specifications using up-to-date test and measurement equipment.

High-quality services

Advantages of our laboratories



LABORATORIES OF THE INSTITUTE (ACCREDITATION NO.: WWW.AKREDITACIJA.HR/ REGISTAR)

- High-voltage Laboratory (1035, 2465) High Power Laboratory (1139) EMC and Safety Laboratory (1129) Calibration Laboratory (2057) Laboratory for Physical and Chemical Testing (1174)
- Laboratory for Mechanical and Technological Testing (1515) Laboratory for Noise and Vibrations (1529) Environmental Laboratory (1129) Laboratory for Rotating Machines Power Electronics and Electrical Drives Laboratory

LABORATORY TESTING

- High voltage tests
- Short-circuit thermal and impulse withstand tests
- EMC and safety tests
- Calibration of electrical equipment
- Physical and chemical tests

- Mechanical and technological tests
- Environmental tests
- Noise measurements
- Electric motor drive (EMD) tests



High voltage testing of electric power equipment

- Power-frequency voltage tests
- Impulse voltage tests
- Tests in artificial pollution conditions
- Partial discharge measurements
- Calibration of high voltage measurement systems

Electric power equipment testing in High Power Laboratory

 Short-circuit withstand tests of switching devices, switchgear and controlgear, instrument & power transformers

Safety testing for household and professional gas appliances (tests with

butane (G30), propane (G31) and natural gas (G20)

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- Breaking & making capacity tests
- Temperature-rise tests
- Voltage drop tests





Electromagnetic compatibility and safety

- Radio Frequency Spectrum Measurement and Analysis
- EMC tests of equipment
- Safety tests of equipment

Gas safety checking



Calibration laboratory

- Calibration of DC and AC measuring instruments
- Measurements of multipurpose instruments
- Calibration of electronic measuring equipment

Physical and chemical testing

- Insulating oil testing
- Testing of properties of insulating oil
- Testing of other materials





Mechanical and technological testing

- Testing of mechanical and technological properties of metallic and non-metallic materials
- Metallographic and fractographic analyses
- Corrosion protection tests of metallic materials

Environmental testing

- Climatic tests
- Verification of mechanical strength and ability of components and equipment to withstand specified vibrations (sinusoidal, random, shock)
- IP and IK protection testing





Noise measurement

- Testing, measurements, analyses and research of vibroacoustic characteristics of machines, electric apparatus, installations, plants and devices in anechoic chambers and on site
- Determination of acoustic power of sound source by measurements of acoustic source pressure and strength
- Usage of acoustic camera for noise emission investigation

Electric motor drive testing

- Embedded computer system and power converter testing
- Rotating machine testing
- Electric motor drive testing



ON-SITE TESTS OF POWER EQUIPMENT AND SYSTEMS

- Transformer and HV equipment diagnostics
- Rotating machines diagnostics
- Acoustic diagnostics

- Energy efficiency tests
- Power quality tests
- LF and HF electromagnetic field measurements

Transformer and high-voltage equipment diagnostics

Expert knowledge of HV equipment diagnostics reduces the risk of faults to the lowest level and enhances the availability of electric power equipment. The Institute has 4 mobile test stations for diagnostic tests of HV electric power equipment. Our test engineers use calibrated measuring instruments for assessment of the condition of power and instrument transformers, wind turbines, rotating machines, HV circuit breakers and GIS equipment.





Rotating machines diagnostics

Diagnostic tests are comparative measurements of machine parameters to assess whether they are correct. By timely and periodical machine condition assessment it is possible to make extraordinary savings and improve reliability of the machine and the plant.

The following is performed:

- Visual inspection
- Tests and diagnostics
- Condition prediction



Acoustic diagnostics

With special measuring instruments (acoustic camera) we provide R&D services and diagnostic noise measurements, and solve acoustic problems of noise source detection and sound propagation.

Noise is a proven hazard to both health and environment. Its reduction requires continuous research, source analyses and knowledge of its characteristics variables.

Energy efficiency and power quality

Energy efficiency is a set of measures to change the existing method of using energy in industry and buildings in order to reduce the overall energy costs, without affecting the normal course of technological processes and the user's comfort.

- Verification tests of energy efficiency of products
- Solving power quality problems due to energy efficiency measures
- Energy certificates
- Energy audits (even of large companies)
- Measurements of savings in energy consumption



LF and HF electromagnetic field measurements

- Measurements of non-ionizing radiation from the magnetic resonance devices
- Measurements of 50 Hz frequency in households and business objects near power lines or power substations
- High frequency electromagnetic field measurements of GSM base stations
- Assessments, calculations and measurements of electromagnetic fields for obtaining construction permissions.





Notified body and product certification body accredited under ISO/IEC 17065

KONČAR – Institute is a Notified Body NB 2494 of the European Commission for the following directives, i.e. areas:

- EMC (2014/30/EU)
- machinery (2006/42/EC)
- noise emission in the environment by equipment for use outdoors (2000/14/EC)
- gas appliances (2009/142/EC (ex-90/396/EEC))
- radio equipment (2014/53/EU)
- welding procedures of pressure equipment (97/23/EC)
- measuring instruments (2014/32/EU)



KONČAR – Electrical Engineering Institute, as a Notified Body (NB), assists manufacturers in conformity assessment and certification of their products in accordance with European standards and directives, before CE marking and placing on EU market.

KONČAR – Electrical Engineering Institute as a Product Certification Body performs conformity assessment of LV and HV equipment, corrosion or IP/IK protection, ecological design, energy labelling, welding procedures for metal materials, and signalling and traffic regulation equipment. It is also equipped for assessment of product conformity to climatic conditions and noise and vibrations.

Accredited certification schemes of KONČAR – Institute enable conformity assessments and certification of products intended for markets other than EU that are made in accordance with ISO and IEC standards or manufacturer specifications.

Product conformity assessment

Well-equipped laboratories and a wide range of accreditations, authorisations and notifications of the Institute enable numerous and diverse services:

- Type testing of products in our test laboratories
- Expert supervision of tests in external laboratories
- Assessment of completeness of technical documentation
- Conformity assessment of technical documentation
- Assessment of product design
- Type examination of products for certification purposes
- Certification
- Auditing compliance with the type of product



Certification service (SCERT)

Product Certification Service – SCERT is an independent unit within KONČAR - Institute that impartially certifies products.



II Specific standard disclosures

CATEGORY: ECONOMIC

Corporate Social Responsibility (CSR) of the Institute is based on a set of measures of business policy aimed at creation of an environment favourable for creativity and innovativeness as well as correct and stimulating relations between all the stakeholders involved in business processes

Aspect: Economic performance

G4-EC1

	EUR million
Component	2016
Direct economic value generated	12.58
Sales	12.48
Financial income	0.05
Asset income (rental and sales)	0.04
Direct economic value distributed	11.41
Suppliers of materials and services	4.95
Education & training	0.11
Services of academic community	0.07
Other costs	0.49
Salaries & allowances	3.31
Taxes, contributions, insurances	2.47
Donations	0.01
Retained earnings	1.17

The Institute is doing business entirely with its own funds and it is not exposed to interest rate risk, credit risk and liquidity risk. Its short-term assets are 7.2 times bigger than its current liabilities. Financial assets make 60% of short-term assets, which guarantees business stability in the following period considering outstanding liabilities at the end of the year.

In 2016 income from sales was 12,48 million euros, wherein direct export was 20.8% or 11.9% more than in the previous year. The increase of direct export is a result of more intense marketing and global recognisability of some products and services of proven quality and competitiveness.

OPERATING INCOME, EBITDA MARGIN



Operating income was 5.6% higher than in 2015, and EBITDA margin was 14.59%.



TRENDS IN INCOME, VALUE ADDED* AND NUMBER OF EMPLOYEES



^{*} Value added = Costs of employees + pre-tax profit

In 2016 the Institute had an average of 167 employees. 11 new employees joined the Institute, and 12 left it. Five of whom retired, and the rest cancelled their employment contracts.

11 employees attend postgraduate doctoral studies at three faculties of the University of Zagreb, and 4 attend postgraduate specialist studies. The Institute has 18 researchers registered in the Register of Researchers, 6 of them with the status of research associate. In 2016 18 employees attended domestic and international conferences, and 9 papers were published in various kinds of publications. 8 employees attended courses in various foreign languages: English, German, Arabic, Spanish and French.

G4-EC4

In 2016 the Institute was granted financial assistance from the Government in the amount of 52,461 euros in the form of income tax reduction (aid for education, training and R&D). Research-development projects were co-funded with 170,001 euros by the European Regional Development Fund (international, market-oriented research and innovations) and by Horizon 2020 (a programme for research and innovations). Also, a part of the investment in energy efficiency in the amount of 34,797 euros was co-founded by the Environmental Protection and Energy Efficiency Fund (EPEEF).

Aspect: Market presence

G4-EC5

In 2016 the average monthly gross wages in the Institute were 2.2 times higher than the average gross wage in Croatia, or 36% higher than the average in the scientific-research sector per the data of Croatian Bureau of Statistics.

Aspect: Indirect Economic Impacts

G4-EC7

In 2016 the investments in non-current assets were 0,95 million euros – 0,84 million euros in equipment and 0,11 million euros in buildings. Investment maintenance of equipment and buildings was 0,11 million euros.

EUR mil									
	2012	2013	2014	2015	2016				
Investments in equipment & refurbishments	0.85	1.21	0.21	1.71	0.95				
Investment maintenance	0.05	0.04	0.14	0.05	0.11				
Investments in R&D	1.24	0.99	0.56	0.32	0.80				
Education	0.21	0.16	0.10	0.11	0.11				

In 2016 total investments in R&D were 0,80 million euros. 0,48 million euros were Institute's own investments, and 0,32 million euros came from national or EU funds for R&D and innovation projects.

Costs of professional training (including scholarships, diverse fees, reference literature, business trips etc.) were 0,11 million euros. Software licence and maintenance costs were 0,13 million euros.

Project documentation was completed, and construction permit obtained for the new Laboratory for High Voltage, Power Systems and Drives (LAVESP) which is a part of CEKONET project. Croatian Electrical and Mechanical Machinery Industry and Technology Competitiveness Cluster has given the project PNI (= Project of National Interest) status. Within the project Strategy of Research and Development was developed.

Further investments are planned in the equipment for the existing and the new infrastructure, what will increase the scope of competences and applied R&D for power industry and transport.

Major results of product and service development in the last two years

- Extended scope of applications of transformer monitoring system due to proprietary HW/SW components;
- Laboratory tests of bushings of various voltage levels;
- Advanced systems for monitoring and diagnostics of specific conditions of rotating machines;
- Extension of the platform of proprietary embedded computer systems with new HW/SW components;
- Proprietary central PV inverter KonSol-200;
- Implementation of thermal cycle tests (TCT), i.e. of thermal cycling of all types of bars and coils for HV machines;
- Introduction of new accredited laboratory methods.

CATEGORY: ENVIRONMENTAL

The Institute is not a manufacturing company, and therefore it does not contribute much to pollution, and neither it can help much in reducing emissions and carbon footprint. But our solutions help others to do so: e.g. to reduce faults, losses, breakdowns, and thus improve life, reliability and safety of operation of equipment

Products have impacts on the environment during their manufacture, use and after expiration of their life. Increased awareness of the need to protect the environment, together with requirements of applicable standards and technical regulations, motivate producers to create devices with lowest possible environmental impact. New requirements are related to e.g. reduction of exhaust gases, effluents, losses, electromagnetic emissions, use of recyclable and degradable materials etc.

The Institute implements continual and systematic activities for environmental protection in accordance with Croatian laws and regulations, and systematically monitors potentially strong environmental impacts. Environmentally friendly materials and procedures are used in the design and manufacture of our products. Constant attention is paid to rational utilisation of energy and other natural resources. Potential incidents are recognized and prevented. Awareness of employees is fostered, and they are trained for efficient environmental protection. At the same time there is also active collaboration with local community and stakeholders on environmental protection.

Aspect: Energy

G4-EN3

Business activities have direct impact on energy consumption, and therefore all major deviations are monitored, analysed and adjusted to the needs of business processes. In 2016 consumption of energy and fuel for vehicles was reduced. Increased consumption of thermal energy is in accordance with climatic conditions in 2016.



Energy costs 2016 were 3.2% value added

INDIRECT ENERGY CONSUMPTION

CONSUMPTION OF ELECTRICITY

	2012			2013			2014			2015			2016	
MWh	GJ	t CO ₂ *	MWh	GJ	t CO ₂ *	MWh	GJ	t CO ₂ *	MWh	GJ	t CO ₂ *	MWh	GJ	t CO ₂ *
694	2501	192	537	1936	149	515	1854	143	693	2494	192	631	2272	175
* Specific (CO2 emiss	sion per pro	oduced kW	/h of heat i	s 269 39 [c	ı/kWh] Ero	m the Mar	ual for Ene	erav Consu	Itants UN	DP			

HEAT CONSUMPTION

						2014			2015			2016	
MWh GJ	t CO ₂ *	MWh	GJ	t CO ₂ *	MWh	GJ	t CO ₂ *	MWh	GJ	t CO ₂ *	MWh	GJ	t CO ₂ *
1412 5082	380	1404	5054	378	1231	4433	332	1281	4612	345	1350	4858	364

* Specific CO2 emission per produced kWh of heat is 269.39 [g/kWh]. From the Manual for Energy Consultants, UNDP.

Aspect: Water

G4-EN8

In 2016 there was a considerable reduction of water consumption as a result of more rational consumption and introduction of a new technological method of electric equipment testing in climatic chamber.

In 2016 water consumption was 9 m³ per employee



Aspect: Emissions

G4-EN16

Total direct and indirect g	greenhouse ga	s emissions p	per weight
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	Fuel CO ₂ (t)*	Electricity CO ₂ (t)*	Heat CO ₂ (t)*	Flights CO ₂ (t)*	Emissions total CO ₂ (t)*
2012	103.8	192.2	380.3	42.0	718.3
2013	96.1	148.8	378.2	36.1	659.2
2014	79.9	142.5	331.7	23.8	577.9
2015	92.7	191.7	345.1	28.4	658.0
2016	82.5	174.6	363.6	36.0	656.6

*From the Manual for Energy Consultants, UNDP.

Direct and indirect emissions include fuel consumption of company-owned vehicles, fuel consumption of privately-owned vehicles used for business purposes and fuel consumption of planes are also included. Annual fuel consumption of vehicles and planes is directly dependent on business activities and increased number of travels and diagnostic tests on site (transport of measuring equipment and test engineers). However, to rationalize fuel consumption in the long term, all the new vehicles that were bought have diesel engines with less consumption than others.

Renewable energy sources



Following the strategy of industrial development, the Institute has recognized new trends in the growth of energy generation from renewable sources. It gained expert knowledge over many years of research in this area, and integrated it in its proprietary solutions for utilisation of wind and solar energy, autonomous power supply systems based on renewable sources, systems for renewable source monitoring (wind turbines, photovoltaic plants and batteries). The Institute also offers expertise and complete management of projects relating to renewable energy sources.

Within the project Subsystem for monitoring the sea frontier of the Republic of Croatia (the so-called "blue boarder"), the Institute has designed and put into operation six autonomous supply systems on the islands of Grpašćak, Korčula, Mljet, Palagruža, Sestrica Vela and Sušac. The purpose of the system is to provide uninterruptible supply of radio-communication equipment, radars and cameras necessary for monitoring maritime boarder traffic.

Energy efficiency

In the last three years the Institute has invested 0,61 million euros in energy efficiency. Direct benefits are rational utilization of energy, reduction of CO₂ emissions, lower costs and further improvement of energy efficiency in adaptations and refurbishments. A part of that investment was financed by the Environmental Protection and Energy Efficiency Fund.

Aspect: Effluents and Waste

G4-EN23

Since introduction of Environmental Management System (EMS) in 2002, waste has been disposed in the Institute in accordance with Croatian laws and regulations. Our work processes generate waste that requires special disposal methods including recognition of hazardous waste, collecting, temporary storage, disposal by the authorized waste disposal contractors, keeping prescribed records and delivery of data about waste. So far the Institute has had no complaints on EMS functioning either by local community, inspectors or other services.



WASTE TYPE	2012	2013	2014	2015	2016
Municipal waste (mixed) (m ³)	163	168	160	133	61
Hazardous waste (t)	2.35	3.29	3.54	3.73	4.44
Non-hazardous waste (t)	10.24	6.01	5.34	12.98	5.22

With the aim to improve the waste disposal and collection system, in 2015 the waste disposal contractor was changed, an area for collection of non-hazardous waste was established, and the waste collection method was upgraded. As a result, in 2016 there was a considerable reduction of mixed municipal waste in comparison with earlier years. However, the quantity of waste metal and cardboard is directly influenced by business processes, i.e. by increase of purchases, deliveries and investments in the current year.



USABLE, NON-HAZARDOUS WASTE



Aspekt: Overall

G4-EN31

Environmental protection expenditures

Praćenjem troškova zaštite okoliša stvoreni su preduvjeti za poboljšanja i racionalizacije u tom područjuThe monitoring of environmental protection expenditures has created preconditions for improvements and rationalisation in this area

In 2016 the environmental protection expenditures were 1.65% value added.

>	Fees for water regulation & municipal services	13%	
>	Waste disposal	1%	
>	Landscaping	26 %	
>	Cleaning of premises	50 %	
>	Maintenance of	10%	





CATEGORY: SOCIAL

Sub-category: Labour practices and decent work

The Institute pays great attention to education and motivation of employees and occupational health and safety. In research, development and testing the employees are supported by the information-documentation service (INDOK) and its library.



INDOK has more than 20,000 printed professional books, and more than 800 scientific and professional journals in the fields of electrical engineering, electronics, energy, transport and natural sciences. Users can access databases of scientific and professional e-books, e-proceedings, e-papers, PhD, MSc and BSc theses.

Special attention is given to purchase of new equipment and software for development and testing. For efficient communication, process control and monitoring there is an intranet-supported information system that is constantly upgraded.

Team work and knowledge gained by work on R&D tasks together with other KONČAR companies or in partnerships on domestic and international projects are the greatest strength of the Institute. All employees have the possibility of continuing personal and professional development through educational and professional programmes. Motivation of employees for scientific and professional improvement and advancement and focus on the fields of Institute's interest are an enormous drive for technical creativity and competition on global level.

Successful application of knowledge, ability to communicate and loyalty are the main criteria for promotion, and attained results are the measure of personal income.

Aspect: Employment

G4-LA1

In the last ten years 93 employees left the Institute, and 118 were hired.

NUMBERS OF EMPLOYEES 2006 TO 2016

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
New employees hired	13	22	19	13	10	10	8	7	9	9	11
Employees who left the Institute	12	9	8	6	14	6	12	14	7	5	12
Total number of employees on 31 December	142	155	166	173	169	173	169	162	164	168	167

Criteria for new employments ensure that the most suitable persons have been chosen for each job on the basis of their qualities and experience, whereas equal chances are given to men and women.

G4-LA2

Additional benefits create a positive atmosphere that favours the climate of unity and cohesion in the Institute, despite differences in monthly wages that are related to the success of performance of each department:

- Educational and professional programmes for improvement of knowledge and skills
- Paid business trips and participation in international conferences
- Christmas and Easter bonuses, holiday cash grants
- Jubilee financial rewards for 10, 15... years of service in the Institute
- Money reward for completion of graduate and

postgraduate studies

- Financial aid in the case of sick leave exceeding 90 days
- Allowance in the case of death of immediate family
 member
- Allowance for each new-born baby
- Regular medical check-ups
- Leisure time recreation
- Mobile phone

There are special bonuses for each successfully completed job. Corporate loyalty is fostered and each employee who wishes to improve their knowledge in the areas that are of interest for the Institute will have paid expenses of such training or education.

Employee inclusiveness and satisfaction

Employee satisfaction survey is an important tool with which employees point to possible progress and improvements. Strong employee inclusiveness is essential for a successful long-term business of the Institute and quality of products and services it offers.

Once a year employee satisfaction surveys are carried out since 2011. In them employees grade their agreement with offered statements, and in that way areas are detected which are important for improvement of the efficiency and the atmosphere at work.

The survey performed in 2016 shows that employees have positive attitude towards their work in the Institute. 80% of them are satisfied with their jobs and working conditions. About 75% feels they are respected by their peers, and 74% think that the collaboration with their immediate superiors is good, and 86% are satisfied with job safety, what is their best motivation for good work.

Communication could be improved in the areas of professional advancement and taking into account suggestions given by employees. Approximately half of the employees who took part in the survey are not convinced that the management takes into account their comments and suggestions, and 38% of them feel that independent and creative work is not rewarded. Also 38% think that their good work is neither noticed nor commended.

Aspect: Occupational health and safety

G4-LA5

Occupational health and safety are very important elements of work conditions, and as such are monitored by a third party through the certified Occupational Health and Safety Management System complying with OHSAS 18001.

The Institute continually and systematically identifies hazards, and assess and monitors risks that can influence the health and safety of employees and third parties as prescribed by Croatian legislation. It also continually and comprehensively plans, implements and assesses the competence of all the employees in the area of safety at work.

Employees are also sent to regular periodical medical check-ups. Physical and chemical factors and installations in premises, machines and devices with increased safety risk are also checked. Individual awareness and understanding of employees' obligations is enhanced, and their active participation in establishment, review and improvement of safety at work are fostered.

EXPENSES OF OCCUPATIONAL HEALTH AND SAFETY IN 2016

Expenses of occupational health and safety were 1.7% value added





Aspect: Training and education

G4-LA9

Programme for new employees and trainees makes them familiar with by-laws of the Institute, management systems, safety at work and basic principles of corporate social responsibility and sustainability.

Personal development and improvement of each employee is very important for the Institute, because business operations and development are based on expertise and innovativeness i.e. on good knowledge of problems and their solutions based on new technologies. Expertise and innovativeness are enhanced by additional training of employees and active participation at international conferences and exhibitions, creating competitive advantage of the Institute and improving the development of new products and services.

Employees have the possibility of permanent professional education and attending courses in foreign languages, IT, quality, environmental, and occupational health and safety management systems. New knowledge is acquired through post-graduate doctoral and specialist studies, and through work on R&D projects in teams with employees of other KONČAR Group companies, on seminars and active participation at international conferences and exhibitions. Creativity and managerial skills of employees as also stimulated.

In 2016 59% of employees attended various forms of trainings in approximate duration of 65 hours per employee.

Category	Average hours of training in 2016
The Managing Board (Top management)	54
Heads of departments (Middle management)	34
Heads of laboratories and sections (Lower management)	20
Employees	73
Average hours of training	and education in 2016
Males	78

The difference in number of hours between males and females is due to the fact that in 2016 trainings were organized for work mostly performed by males (operating forklifts, hydraulic platforms, cranes).

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Doctoral thesis

Females

Robert Sitar has successfully defended doctoral thesis "Determination of Local Temperature Rise in Structural Parts of Power Transformers" at the Faculty of Electrical Engineering and Computing in Zagreb, and received for it KONČAR Award for outstanding scientific achievement in electrical engineering with industrial applications.

Progressive education for managers

G4-LA10

To develop independence in work and leadership skills of candidates under 35, there is a special programme of training in management (FBA – Fundamentals of Business Administration) that will render them capable of applying modern management methods. The purpose of this programme is to render the candidates capable of independent work, and also to create a base of potential young managers. In 2016 there was also a cycle of advanced education with a view to stimulating business thinking and developing specific managerial competencies. The programme has been attended so far by 12 candidates from the Institute.

Aspect: Diversity and Equal Opportunity

G4-LA12

Due to specific business activities of the Institute most employees are male. Percentage of female employees is almost the same for many years, and it is 23 to 25%. However, the management structure has been largely changed. Ten years ago there were 23% female managers, while in 2016 it reached the high 54%.

COMPARISON OF PERCENTAGES OF FEMALE EMPLOYEES IN THE MANAGING BOARD AND MIDDLE MANAGE-MENT IN 2006 AND 2016



PERCENTAGE OF FEMALE EMPLOYEES PER CATEGORIES AND TOTAL NUMBER OF EMPLOYEES

Female employees in:	2006	2010	2016
The Managing Board and middle management (heads of departments)	23%	15%	54%
Lower management (heads of laboratories and sections)	10%	12%	12%
Employees	25%	24%	23%

In the last ten years also the age structure has been essentially changed. In 2006 the average age of the employees was 45, and in 2016 it was 40. This is a result of systematic "rejuvenation" of the Institute, however taking care to transmit and preserve knowledge of older generations for the new ones. Also, since 2010 the structure of the top management has almost completely changed, so that now the average age is 43 (in 2010 it was 58).

AVERAGE AGE

Average age:	2006	2010	2016
The Managing Board and middle management (heads of departments)	52	58	43
Lower management (heads of laboratories and sections)	49	44	44
Employees	45	40	40

SUB-CATEGORY: HUMAN RIGHTS

Aspect: Non-discrimination

G4-HR3

In the reporting period there was no incident of discrimination in the Institute.

Aspect: Freedom of Association and Collective Bargaining

G4-HR4

All employees enjoy freedom of association and collective bargaining. At the end of 2016 there were elections after which Workers' Council was established. Through the Council employees take part in decision making relating to their economic and social rights and interests. The Managing Board has rated positively this initiative, because joint decision making is mutually beneficial.

SUB-CATEGORY: SOCIETY

Aspect: Local communities

G4-SO1

New employees of the Institute are mainly young highly educated people, who are stimulated to additionally improve their knowledge and education in the field of technical sciences. Knowledge, skills and capabilities of employees are focused on solving complex technical problems in order to constantly and innovatively improve the existing products and services. Business activities of the Institute are supported by its connections with the academic community and joint work on scientific-research projects co-funded by the Croatian and EU funds.

COLLABORATION WITH ACADEMIC COMMUNITY

Collaboration of the Institute with academic society has been fostered for a number of years, and is constantly improving. Connecting economy with academic society is also strongly supported by the European Commission with a view to transferring new technologies and knowledge from faculties to industry, and thus improve the existing hightechnology products and services and develop new ones.

By connecting with academic community the Institute tries first of all to acquire new knowledge through additional training of employees and scientific research in order to solve complex technical problems related to development of new products, and also to inform wider society about the achieved results. Such collaboration results in new knowledge and skills that lead to original solutions of complex technical problems applying scientific approach. The costs are partly covered by the European and national funds, which reduces the expenditures for research. By joint work on R&D projects the Institute and academic community share the risks regarding the results of such projects, oblige themselves to observe the terms of completion and application of project results, and are equally responsible for the development of the economy and society.

Knowledge, skills and their application are the key factors in the development of the Institute, and multifaceted collaboration with scientific community provides inflow of new knowledge and skills through post-graduate doctoral and specialist studies and joint R&D projects.

	2012	2013	2014	2015	2016
R&D projects approved by Ministry of Science, Education and Sports (MSES)	7	7	6	0	1
Co-financed projects with academic community	0	0	2	2	3
Junior researchers financed by Ministry of Science and Education	5	2	2	2	0
Published papers	40	46	27	31	9
Attendants of postgraduate doctoral studies	26	24	22	21	11
Defended PhD theses	2	2	2	0	1
Members of the Institute teaching at faculties	10	10	9	10	12

Practical training

In 2016 about 15 pupils and students successfully completed practical training. Under the guidance of expert mentors they had the opportunity to acquire practical knowledge and skills. Mandatory training give them the opportunity to take part in solving concrete every-day problems, and their teachers get feedback on knowledge and skills which the contemporary market expects from future engineers, what in turn enables better adaptation of the curriculum to current needs of industry and technology trends.

Visits of pupils and students

In 2016 the Institute hosted numerous groups of students and pupils from Croatia and surrounding countries. In laboratories of the Institute they got familiar with production processes and up-to-date laboratory equipment. Practical knowledge and concrete solutions are the most important segments of successful training especially in engineering.

ELEKTROBOJ – Student competition

The Institute has been supporting for four years the student competition ELEKTROBOJ - a competition of students in the development of HW/SW solutions. Its objective is to stimulate students to independent work on extracurricular activities, thus improving their creativity and technical competences. The Institute is included in the jury of experts, and during the competition students visit laboratories, have lectures on product certification, and take part in testing under EU directives and standards.

Donations and sponsorships

The Institute builds up partnership with the academic community, develops and supports both professionally and financially organisation and participation at scientific meetings, conferences and symposia that enable exchange of experiences and development of science, and also awards best students at three faculties of engineering.

For a number of years the Institute has been financially supporting the Lifetime Achievement Award "The Power of Knowledge". This award is given by the Croatian Academy of Engineering to outstanding scientists for their entire R&D work in engineering/biotechnical sciences and for life-long contribution to the progress of profession, with special emphasis on application of results of research work.

Each year the Institute participates in awarding best students of three faculties: the Faculty of Electrical Engineering and Computing in Zagreb (Josip Lončar Award; the Institute provides the award money), the Faculty of Mechanical Engineering and Naval Architecture in Zagreb (Davorin Bazjanac Award; the Institute provides the award money), and the Faculty of Chemical Engineering and Technology in Zagreb (Vjera Marjanović-Krajovan Award).

Fostering cooperation of industry and science

EU programmes – HORIZON 2020

SAFELOG

In the beginning of 2016 the Institute joined the implementation of the Horizon 2020 project **"Safe human-robot interaction in logistic applications for highly flexible warehouses**" (abbr. **SafeLog**). Project coordinator is Karlsruhe Institute of Technology. Apart from the Institute, other partners are Fraunhofer IML, Czech Technical University of Prague, Swisslog and Faculty of Electrical Engineering and Computing in Zagreb. Activities of the Institute are related to research, development and prototyping of a safety vest for warehouse personnel and its certification.



PROJECTS CO-FUNDED BY EUROPEAN REGIONAL DEVELOPMENT FUND

CEKONET

The Institute has applied for the project **CEKONET - Centre of competence for advanced power equipment** launched by the Ministry of the Economy, Entrepreneurship and Crafts and co-funded by the European Regional Development Fund. CEKONET project has the PNI (= Project of National Interest) status, and its main aim is to improve competencies and strengthen the infrastructure of primary and secondary power equipment.

As project coordinator the Institute has gathered 12 partners: Faculty of Electrical Engineering and Computing in Zagreb, Faculty of Mechanical Engineering and Naval Architecture in Zagreb, Faculty of Chemical Engineering and Technology in Zagreb, KONČAR – Power Transformers, KONČAR – Instrument Transformers, KONČAR – Generators and Motors, HEP -Generation, Croatian Transmission System Operator (HOPS), Eltra-MG, MG servis and Elektroinstalacijska tehnika.

R&D activities will be implemented in the form of six R&D projects, through efficient collaboration and joint utilization of resources. Each of the six projects will result in an innovative or improved product, what will considerably increase the competitiveness of CEKONET partners and the entire Croatian power engineering sector. The precondition for successful implementation is the construction of a new Laboratory for High Voltage, Power Systems and Drives (LAVESP) and extension of the existing R&D and test facilities of the Institute.



It is planned to ensure co-funding by the European Regional Development Fund within the Call for Proposals by the Ministry of the Economy, Entrepreneurship and Crafts, which will have 2 stages. In February 2017 CEKONET project met the requirements for the 1st stage, and qualified for the 2nd stage announced for the 2nd quarter 2017. The total indicative value is EUR 18,961,241.

SAFETRAM

In 2016 the Institute has applied with the SafeTram project ("System for increased driving safety in public urban rail traffic") within the Call for Proposals "Increase of the development of new products and services which supervene from research and development activities". Faculty of Electrical Engineering and Computing in Zagreb is the project partner, and positive evaluation is expected in the 2nd quarter 2017.

AWARDS AND SOCIAL RECOGNITIONS IN 2016

Gold Medal was awarded to the development team of KONČAR – Electrical Engineering Institute for the innovation **"Central PV Inverter KonSol-200**". Innovations are ranked according to four key criteria – creativity, commercial value, technical and technological level, and possible impact on the environment and human health and safety.

KonSol-200 is a high-power power electronics converter with flexible (modular) construction, advanced photovoltaic field monitoring and smart grid capabilities.









Robert Sitar, PhD, received the traditional **KONČAR Award** for the doctoral thesis "Determination of Local Temperature Rise in Structural Parts of Power Transformers", which is given for outstanding scientific achievements in electrical engineering with industrial applications.

External Assurance

REVIEW OF THE INSTITUTE'S CSR REPORT 2016

Independent Commission of the Croatian Business Council for Sustainable Development (HR BCSD) has reviewed the new CSR Report of Končar – Electrical Engineering Institute Inc. for 2016. This is the 10th report, which unifies all the most important business information and nonfinancial impacts presented in accordance with Sustainability Reporting Guidelines of Global Reporting Initiative (GRI). – G4. We confirm that this CSR Report meets the requirements of Core option. Its contents, quantity of information and interpretation of issues important for achieving goals of the Institute are a comprehensive and detailed source of information about key impacts.

The role of the Institute in sustainable development is unquestionable because of the nature of its products and solutions. Innovations in power facilities, energy efficiency, and renewable energy sources are the Institute's direct contributions to energy efficiency and consequently to sustainable development. Apart from continuous contribution to improvement of impact on whole social environment, the Institute stands out in its contribution to the development of knowledge and scientific community in general. Number of highly educated employees who collaborate with academic community thus contribution to the progress of the entire education system in the Republic of Croatia seems to be an immeasurable contribution to creation of the society we aspire to and which is a precondition for sustainable development. Apart from sustainable development, this contribution also represents a contribution to sustainability of future business of the Institute.

A proof that the development strategy of KONČAR – Institute is successful is the increase of the share of export in total income from sales, what means that demanding markets have recognized the possibilities and knowledge the Institute possesses. The success is also that in the last two years the Institute has developed a range of additional solutions and services: extension of monitoring system applications, testing of bushings with various voltage levels, diagnostics and monitoring, new accreditations for laboratory services etc.

In the CSR Report it is pointed out that there are a large number of women in the management, and an increasing number of young employees and managers. All these are positive trends and guarantee of positive contribution to the development of the society and viability of the Institute.

It is also evident that there is a thorough and systematic implementation of environmental protection. Although the Institute is not a manufacturing company and therefore has no significant environmental impact, it is nevertheless measured and controlled, so that there are positive results in energy saving, reduction and separate disposal of waste, smaller water consumption etc. The Institute has also acquired certificates that guarantee that Institute is well managed, among other things also in the environmental aspect.

The Report has an interesting and exceptional transparency. The results of employee satisfaction survey show that they have positive attitude towards their work in the Institute. 80% of them are satisfied with their jobs and working conditions, 75% feel respected by their peers, and 74% think that collaboration with their immediate superiors is good. However, it is also stated that 38% feel that independent and creative work is not rewarded, and the same percentage think that their good work is also not rewarded, and that the management do not take into account their comments and suggestions.

The Report gives a good survey of Institute's business, its activities and products. It also presents Institute's long-term objectives, which indicate trends in future business. It would be interesting to see the connection of Strategy of sustainable development of the Institute with, if possible, quantitatively defined goals, schedules and resulting activities, as well as realisation of goals from the previous period or year on year.

Since KONČAR – Electrical Engineering Institute has knowledge and experience in sustainability reporting, integration of financial and nonfinancial reports is a challenge whose realization would improve the value of the report and stress the importance of sustainable business in the Institute.

We commend KONČAR - Institute for years of systematic and consistent reporting about nonfinancial impacts, and thank for persistent contribution to the development of socially responsible business, giving example to other companies how to take responsibility. We hope that the Institute will continue giving us successful reports for many years in the future.



Commission of the Croatian BCSD Board

Hrvatski poslovni savjet za održivi razvoj Croatian Business Council for Sustainable Development

Global Reporting Initiative G4 Content Index – CORE OPTION

Global Reporting Initiative (GRI) Guidelines are a globally accepted tool for sustainability, i.e. corporate social responsibility reporting. They are periodically revised to enable companies to communicate most appropriately the impacts of their economic, environmental, social and governance performance.

Guidelines of the 4th generation (G4) emphasize additionally the orientation of companies to the issues that are most important for attainment of their goals and control of social impact.

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KONČAR - Electrical Industry Inc.

ENERGY AND TRANSPORT	INDUSTRY AND TRADE	SPECIAL ACTIVITIES	REPRESENTATIVE OFFICES
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GENERATORS AND MOTORS	SMALL ELECTRICAL MACHINES	INFRASTRUCTURE AND	BOSNIA AND HERZEGOVINA
HIGH VOLTAGE SWITCHGEAR	LOW VOLTAGE SWITCH.	SERVICES	SERBIA
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