Model of R&D and innovation in the holding company

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Basic data of the KONČAR Holding

- 1921 – Founded as ELEKTRA Inc. Zagreb
- since 1991 – KONČAR – ELECTRICAL INDUSTRY Inc.

Today:

- Holding of 18 companies and one affiliated company
- PRODUCTION PROGRAM
  - Energy – power generation, transmission and distribution equipment and plants
  - Transport – electrical locomotive, tram and commuter train
  - Industry – electrical equipment and systems in industrial plants
- 4000 employees
Corporate values

- Own research and development
- Skilful employees with University degrees
- Customer individual approach
- Excellence
- Tradition
- Social responsibility
Single products

- Generators and Motors
- High Voltage Switchgear
- Medium Voltage Apparatus
- Distribution and Special Transformers
- Instrument Transformers
- Electronics and Informatics
- Metal Structures
- Small Electrical Machines
- Low Voltage Switchgear & Circuit Breakers
- Power Transformers
Complex products, plants and services

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RDI process for a single product
Research & Development Institutes

• In-house research and development institute
Key business activities of the Institute

- Research and Development
- Laboratory Testing & Product Certification
- Specific Products
Research & Development

• Applied research: transformers, rotating machines, HV and MV switchgear, power converters, wind turbines, components of rail vehicles, HW/SW, ICT
Laboratory Testing & Product Certification

1. High Voltage Laboratory
2. Laboratory for Rotating Machines
3. Laboratory for Noise and Vibrations
4. High Power Laboratory
5. Electronics & Electromotive Drives Laboratory
6. EMC and Safety Laboratory
7. Calibration Laboratory
8. Laboratory for Mechanical & Technological Testing
9. Laboratory for Physical & Chemical Testing

All laboratories hold EN 17025 accreditation.
Specific products

- Products which are not in production program of other daughter companies
- Components for low-volume complex products
Specific products (examples)

- Modular hybrid autonomous power supply integrating: solar energy, wind energy, fuel cell (hydrogen), battery bank, diesel gen-set
- Applications: telecom, gas, oil, rural areas

Off-grid power supplies

HW and SW components of embedded control system (safety control platforms)

KONČAR
Electrical Engineering INSTITUTE

More system
Monitoring systems

- Transformers
- Rotating machines
- Bay/Switch yards
- Monitoring systems
RDI process for a complex products

The Management Board of KONČAR has set the following strategic areas of development:

- Transformer Stations
- Power Generation
- Renewables
- Smart Grids and Communication Technologies
- Traction Vehicles
- Information Technologies
Strategic RDI objectives

• To harmonize strategic RDI projects with objectives of the Holding

• To accelerate strategic RDI activities by rational use of resources

• To stimulate RDI of long-term projects and new research areas
Strategic RDI activities - definitions

• **Coordination Leader Company** – a company appointed by the Management Board of KONČAR for the coordination of RDI within the strategic area

• **Area Coordinator** – a person appointed by the Management Board of KONČAR for coordination in the strategic area

• **Strategic Development Council** – advisory body of the Management Board of KONČAR for strategic and long-term development issues
Bylaws and agreements between companies

- Trade secret rulebook
- Agreement for managing research and development in KONČAR strategic areas
- Contract regulating research and development services in strategic area
- Agreement for mutual cooperation and exchange of business and technical data in strategic area
Launch of strategic RDI projects

*In line with the Company’s Article of Association and the Rules of Procedure for the Supervisory Board*
Project acceptance

Participants
Project leader (Director)

RDI PLAN AND PROGRAM

Management Board of KONČAR – Electrical Industry Inc.

Supervisory Board

Decision by MB
Acceptance of the RDI project financing plan and program

Participants' MBs

Decision by MB
Adoption of the RDI plan and program and consent to agreements with other participants

Participants' SUPERVISORY BOARDS
Funding sources

• Daughter company’s allocated resources for funding own activities (statutory and other reserves, free depreciation funds, from current operations)

• Daughter company’s allocated resources for funding agreed activities with other Holding companies (agreements between two or more companies)

• Recapitalization
  – by cash
  – by tangible asset
  – by intangible asset

• Other specific purpose funds (national and EU funds)
Project supervision

Project leader (Director)

TECHNICAL, COMMERCIAL AND FINANCIAL REPORT

Management Board
Participants' MBs

Project supervision body
(Participants & Area Coordinator)

Strategic Development Council
Case studies

Metal clad gas insulated switchgear 145 kV

Digital traction substation
Centre of excellence for transformers

Scientific research programs

Postgraduate specialist study (at the Faculty of Electrical Engineering and Computing & Faculty of Mechanical Engineering and Naval Architecture)

Scientific-Professional Colloquium
Scientific research program

- Dedicated scientific research projects from the area of power and instrument transformers
- In cooperation with the academic community
- Funded by the companies within KONČAR Holding
- Supported by Croatian and international funds
Postgraduate specialist study

- Postgraduate international interdisciplinary specialist study in transformers
- 3 university terms; 60 ECTS credits (European Credit Transfer System); lectures in English
- Total of 6 courses, 40 hours each
- Lectures are organized one week per month; 3 months per university term
International Colloquium „Transformer Research and Asset Management”

- Every 2,5 years
- Main topics:
  - Transformer Numerical Modeling
  - Materials, Components and New Technologies
  - Transformer Life Management
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