



EMI 50th anniversary publication

Innovation is our tradition



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Letter of the CEO



Ever since it was founded five decades ago, ÉMI's employees have been led by a commitment towards a built environment that provides a sustainable lifestyle, and towards new and reliable technologies.

The efforts of the past five decades, as well as our respect for knowledge as a value and our loyalty towards each other and our work, have all served the purpose of ÉMI becoming an inevitable player in the Hungarian construction industry and a center of professional/intellectual competence. This has been achieved through providing cutting edge, quality services that meet European standards, and active and responsible social engagement.

In the name of all the CEOs of the past five decades I would like to thank all our current and past staff members for their hard and excellent work – without this successful past, we would not be armed for future challenges. And in order for us to be able to respond to these challenges, it is also indispensable to be aware of our present mission, that is, to provide assessment systems and stimulate the spreading of technologies that render our built environment to be lasting, environmentally friendly, energy-saving and livable.

Our activities cover the entire scope of the construction and building material industries. We:

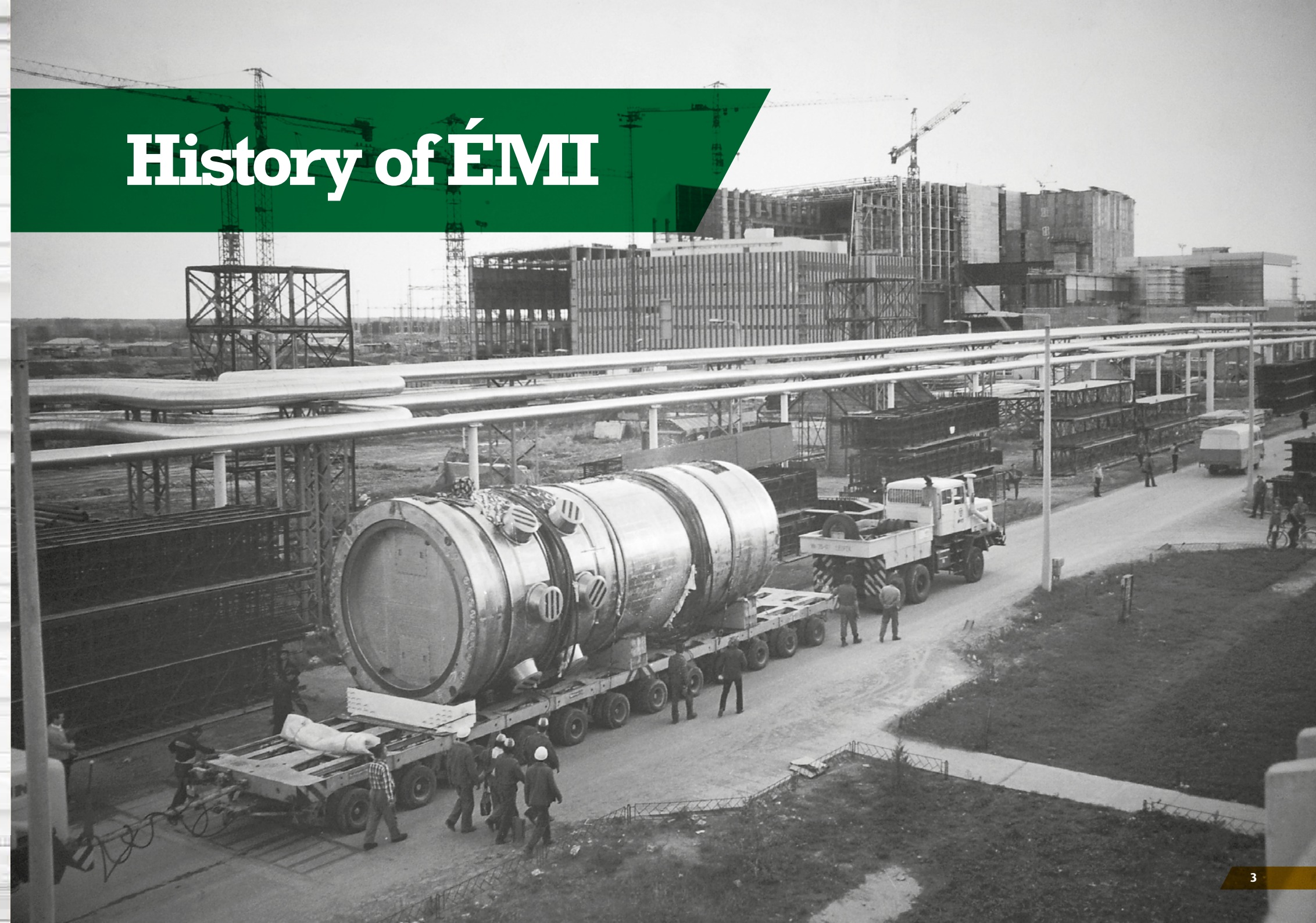
- contribute to attesting the conformity of construction products by providing tests, supervision and certificates;
- support the participants of the construction sector with our expert advice and consulting activities;
- assist construction firms in developing their building products and/or technology through tests and experiments;
- participate in developing professional regulations and preparing public measures;
- have significant experience in the preparation and evaluation of national and international tenders; and
- are known as experts of renewable energy supplies and methods to improve the energy-efficiency of the constructed environment.

In the construction industry – similarly to other sectors of production and the economy – technology has an ever-increasing role to play. Today, besides shaping the environments of our communities, sustainability and environmental awareness are also becoming increasingly important for the construction industry. Nice ideas are not enough - they must be put into practice as well. It is especially important to achieve substantive improvement in the areas of pollutant emission and energy consumption. This, however, cannot happen without a continuous dialogue and active cooperation among the players of the knowledge industry and other parts of the economy.

In a changing environment, facing new challenges, we have to keep on providing excellent performance through high quality labor. We, the professionals working at ÉMI, believe that through our dedicated, persistent and disciplined work, and our love for our profession, together we shall succeed in meeting the challenges of the upcoming years.

Dr. Károly Sárközi
CEO of ÉMI Non-Profit Ltd.

History of ÉMI





Dr. György Deák



Building
Construction
Quality Testing
Institute



Imre Borbély

Dr. József Kádár



Building Science Innovation Ltd.
merges into ÉMI Public Limited
Company for Quality Control
and Innovation in Building



György Karikás

- Cement, concrete, mortar and reinforcing steel ringtests
- On-site air permeability tests using the Blower-Door measurement method
- Theoretical considerations of combustion product evacuation devices of closed combustion chamber gas appliances, and analysis of technical regulatory options
- Comparison of damage scaling theories of reinforced concrete floor structures and new structures to prevent puncture
- Causes of color change in thin plasters



- Using the Probabilistic Safety Assessment method in expert examination of buildings built with concrete containing bauxite cement, large panels or open-hearth slag)
- Determination of the thermal coefficient of windows and doors
- Ringtest of flexural, tensile and compressive strengths of dry mortar

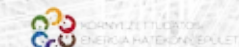


- Work plan development for the Hungarian Construction Technology Platform
- Development of sealing requirements for integrated construction timber
- Elimination of Legionella infection in domestic hot water supplies
- Methods for determining the properties of construction and demolition waste and proposed use

ÉMI Non-Profit Limited Liability Company
for Quality Control and Innovation in Building



Attila Vida



Research of environmentally friendly
and energy efficient architectural solutions.



Leading the project consortium of BUILD
UP Skills Hungary for further education
in building energetics.



Participation in the BUILD YOUR ENGLISH
project to improve the communication skills
of actors in the construction process.

1963

1968

Dr. Lóránt Tobiás



1974

1996

ÉMI Public Limited Company
for Quality Control and
Innovation in Building

Zoltán Gereben



1991

2000

ÉMI Non-Profit Company
for Quality Control and
Innovation in Building



1998

2003

2004

- Development of systems for microscopic identification
- Design and manufacture of variable-temperature and constant-pressure fatigue testing devices for thermoplastic pipes, multilayer pipes and pipe fittings



2006

- Determination of technical requirements for plastered complex external thermal insulation composite systems
- Development of (sample) energy certificate
- Design of test equipment to test the resistance of plumbing equipment to temperature change



2007

2008

- Economic impact of airtightness in lightweight construction buildings (loft conversions) on their cost of operation
- Testing of face recognition biometric identification
- Fire protection aspects of historic renovations
- Development of application directives for windows and doors
- Design, manufacturing and commissioning of BCA abrasive machine
- Integrated wind and solar panel experimental system pilot application in panel buildings, Phase I
- Economic analysis of the operation of heat pump heating systems

2009

2010

Dr. Tamás Bánky



2011

2012

Dr. Károly Sárközi



2013



Performing the tasks set in the framework
of the CA ESD II. project for monitoring
the implementation of the Energy Services
Directive 2006/32/EC in Hungary.



Hungarian national coordinator of the PIME'S
project which aims at designing and con-
structing community-scale buildings that are
energy efficient and involve the integrated
use of renewable energy sources.

Color codes used in the text

- Change of company name
- Change of CEO
- Research and Development

Professional and Community Events

Knowledge Center
The construction of the ÉMI Knowledge Center begins (2012)



Maintaining Relations with Higher Education
Presentation of Éva Törökné at Miklós Ybl College (2011)



Jurying architectural technicians
SzakmaSztár (Profession Star) Festival



Holidays
ÉMI employees and their relatives can spend their holidays in ÉMI's holiday resort in Orfű.



Bus excursions
ÉMI organizes excursions to Hungarian sights, as well as foreign sights that once belonged to Hungary.



Hungarian HVAC Day
ÉMI has participated as an exhibitor since 2012.



January

February

March

April

May

June

July

August

September

October

November

December

Anniversary of ÉMI's establishment in February 1963
The headquarters of ÉMI in Budapest



Regular visits by university students to the ÉMI laboratories



Participation in the Construma Exhibition (since 2004)
ÉMI conference at Construma



The stand of ÉMI at Construma



ÉMI Family Day
First organized in 2011, the ÉMI Family Day is meant to create a tradition. A cheerful day spent together with collective activities brings the staff of ÉMI together.



ÉMSZ Football Cup
We have participated in this football tournament (organized by ÉMSZ) for decades.



Pensioners' get-together
We are also glad to meet up with our former (retired) colleagues.



Professional conferences
The professionals of ÉMI are regularly invited to give presentations at different professional events.

ÉMSZ Regional Professional Days (2011)



ÉMI Santa Claus celebration
The Santa Claus celebration is a jolly tradition that is thoroughly enjoyed by the children of ÉMI staff members.



Year Closing Dinner
In ÉMI we have a 15-year tradition of celebrating the achievements of the year and close it together at a lunch or a dinner reception.



Values

Vision

Our mid- and long-term goal is to become a key player in the renewing building and construction industry, both on the national and international level. Through providing cutting edge, quality services that meet European standards, and active

and responsible social engagement, ÉMI aims to become an inevitable player in the Hungarian construction industry and a center of professional/intellectual competence.

Global issues that affect the building industry, such as sustainability and energy efficiency, are playing a decisive role in ÉMI's future activities, primarily in the following areas:

Safety

Health

Energy Efficiency

Social Needs

Scientific excellence on the national, European and international levels

Research

Scientific and technical competence in the fields of innovation and future requirements

Expertise

Dissemination and teaching of scientific achievements to a wide range of professionals

Dissemination

Assessment/
Technical
Evaluation

Reliable, objective and independent partner for economic players and public authorities

Expertise and objectivity

Since its establishment ÉMI has serviced the construction and building material industries as a base for independent assessment that provides technical specifications and technically unified assessment documents for different products. Besides heading national standardization work, in the 1960's, 70's and 80's ÉMI was directly connected to regional and international standardization (ISO) efforts as well. In preparation for the EU membership this work was continued in the 2000's too, as the European Union required us to actively participate in the determination of European standards.

ÉMI's scientific and assessment activity is not linked to private interests or any stakeholders - it is always designed to meet professional standards.

Besides complying with the requirements of the industry, ÉMI has, through its high level internal research system, regularly reviewed and developed its own assessment system to respond to the new challenges imminent in the construction industry.

ÉMI's staff consists of highly qualified professionals who cover a wide range of the construction industry and have several years - even decades - of experience in research and practice in Hungary and abroad. They regularly attend and speak at professional conferences, and their research results are published in professional journals and publications. At the same time, their knowledge is passed on to the next generations through their teaching activities at different universities.

Decision makers often rely on the expertise of ÉMI in case of changes in the regulatory environment, prior to drafting legislation, or when expertise is needed in judicial procedures (like in case of the West Balkan tragedy, the housing estate fire in Miskolc, or the Kolontár red mud dam failure).



Mortar airpore-content measuring equipment



MATERIAL TESTING LABORATORY – Tonitechnik breaking and bending machine 300/10kN

Research and innovation

We not only want to keep pace with technological development, but intend to shape it as well. The development and market introduction of new products and services and the complete satisfaction of the customers' needs in a constantly changing market economy environment are essential for ÉMI.

Since our merging with the Building Research Institute (Építéstudományi Intézet, ÉTI) in 1998, ÉMI's Research and Development and Innovation activity has entered the international arena (particularly the European Union). R & D & I mainly in the field of applied research and experimental development is backed by a national network of laboratories with modern equipments. The results thus achieved are used in the form of publications, conference presentations, and university courses.

Getting involved in international research gave a further incentive to our research and development, in part with EU grants now becoming available to us, and in part by joining the ranks of cutting edge international science.

The international research activity started in 2000 is growing and encompassing an increasing number of specialized areas. To date, ÉMI is participating in European calls for proposals as a cooperative or consortium partner for several Western European associate research institutes.

In addition to research and development funded through grants, ÉMI does a wide range of RDI work based on requests of partners and clients. Half a century of knowledge our company has accumulated, and a well-equipped laboratory background provide an excellent basis for applied research and experimental development.



MATERIAL TESTING LABORATORY (CHEMISTRY)
Xenofest-Beta
wheatearproofing-testing equipment



MATERIAL TESTING LABORATORY (CHEMISTRY)
Rumed climate chamber



MATERIAL TESTING LABORATORY (CHEMISTRY)
Atlas UV climate chamber

Linking Science to Practice



Complexity

With the contribution of around 100 highly qualified experts and its accredited laboratories ÉMI is engaged in conformance and product testing, providing expert advice, R&D, and performing quality control of construction projects in the following special fields:

- Building constructions and load-bearing structures
- Building services engineering
- Building physics
- Mechanics
- Chemical and application technology
- Fire safety
- Nuclear facilities
- Underground engineering, soil mechanics
- Linear objects

Besides the scientific activities, the company is tightly connected to practical solutions as well. The employees of ÉMI play an active role in the life of professional organizations, technical and scientific associations, and teach at different professional and academic courses.



Hot gas generator testing chimneys



CHEMISTRY LABORATORY – Calibration puffer tincture

Material tests, construction products tests

Using more than 1000 accredited testing methods ÉMI defines the product features and characteristics that make a construction product suitable for (given it is properly installed and used) rendering a building in which it is installed to meet all basic - mostly safety, health and environment related - requirements throughout the entire planned lifespan of the product.

Providing expert advice and engineering expertise for construction works, on-site inspection

- Testing of construction materials and technologies
- Technical inspection and control of specific work processes in building implementation
- Revision of complex tasks
- Compilation of project quality control plans and the documented implementation of inspection and control
- Identification of construction defects and recommendation of technology for improvement
- Giving opinion on planning solutions
- Application technology issues relating to products
- Status survey documentation to pave the way for construction projects
- Building diagnostics of existing buildings, post-damage diagnostics
- Advice on improving building energetics



Other activities

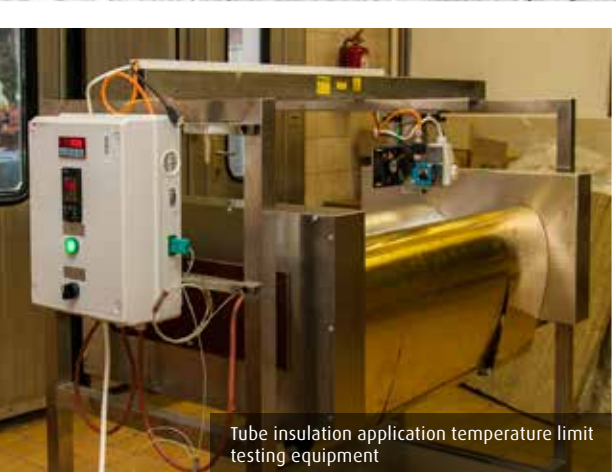
- Elaboration of testing methods
- Experimental tests and measurements
- Researching technical literature, monitoring of trends
- Regulation, standardization and legislative preparation
- Certification of construction enterprises
- Tender management



Instrumentation and laboratories

The testing methods of the 1960's, 70's and 80's relied on the technical background of the era and were used for testing the building materials of the time. With time, testing methods and equipment developed as the materials used for construction changed.

The measuring and test equipment of ÉMI consists of nearly 1000 devices. As we consider the continuous development of our instrument pool and raising the quality of the analyses we perform to be very important, the monitoring of the instrument pool is carried out by a specialized department dedicated to this sole purpose. Outstanding elements of our instrument pool are the INSTRON universal materials testing device with 1500 kN measuring range, the modern infrared thermal imager and climate cabinets, and the isotopic soil density meter.



Tube insulation application temperature limit testing equipment



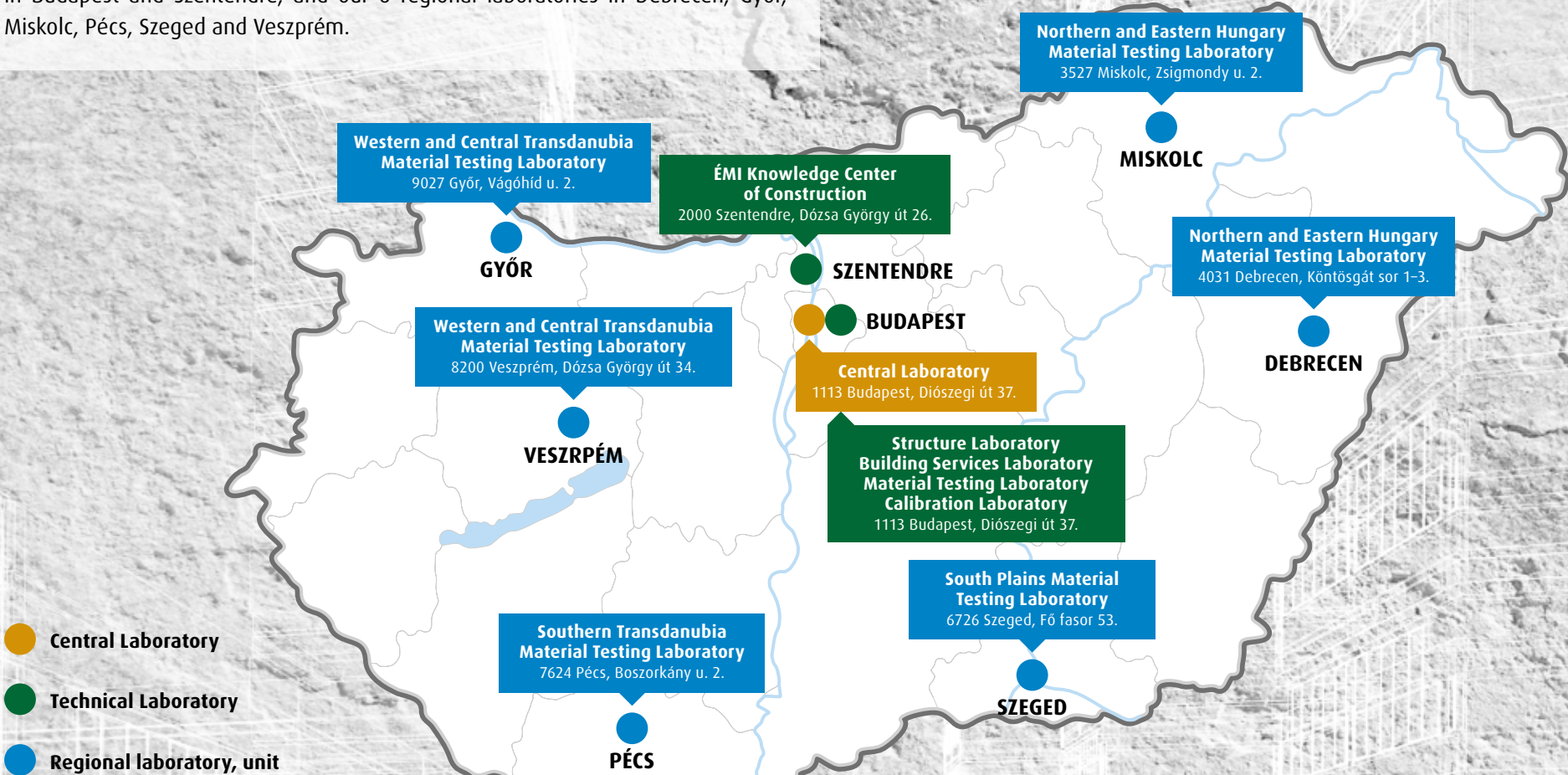
Cyclic pressure load testing equipment



INSTRON 1500 KN

Nationwide network

ÉMI covers all of Hungary with its activities and fulfils international orders as well. Our high quality, professional work is supported by our 5 technical laboratories in Budapest and Szentendre, and our 6 regional laboratories in Debrecen, Győr, Miskolc, Pécs, Szeged and Veszprém.



Hungarian Construction Technology Platform

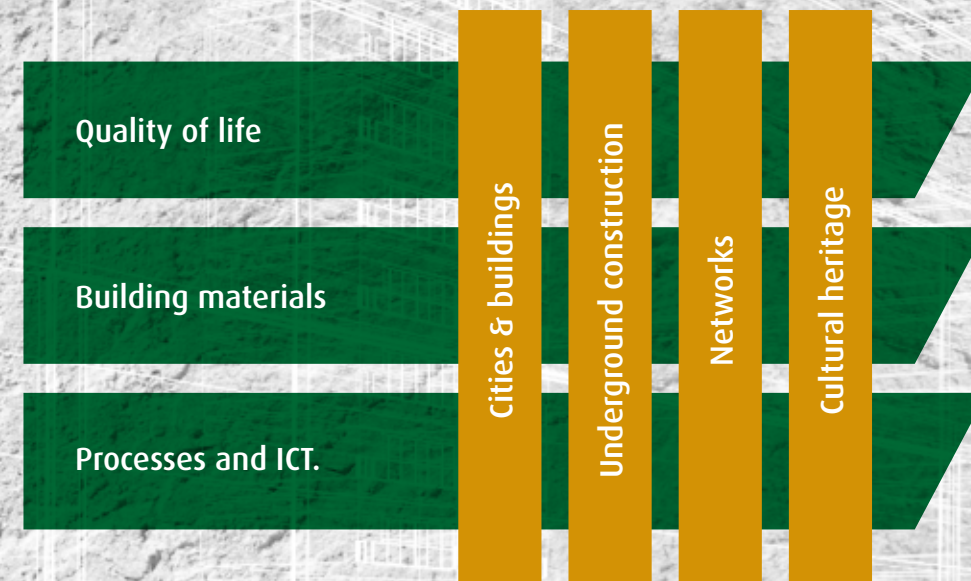
With the understanding of the Ministry of Local Government and Regional Development and coordinated by ÉMI Non-profit Limited Liability Company for Quality Control and Innovation in Building (ÉMI), the Hungarian Construction Technology Platform (HCTP) has been established on 26 September 2007 with the following focus areas:

- Underground construction,
- Cities & buildings,
- Quality of life,
- Building materials,
- Networks,
- Cultural heritage,
- Processes and ICT.



Aims of HCTP

- building the bridge between science and industry involving large, medium and small enterprises, universities, research institutes and professional associations;
- organizing innovative programs and R&D activity with involvement of medium and small enterprises;
- knowledge and technology transfer among nations, primarily through taking part in European research programs;
- active participation in preparation of laws and regulations, national economic development and research and development programs;
- strengthening cohesion between the European and national levels regarding strategies, programs and funding, taking into account the potential of the system of regional contacts;
- participation in the activities of the European Construction Technology Platform (ECTP).



Responsibility



Promoting sustainable development

Sustainable development that meets the demands of today without depleting the possibilities of tomorrow is the creed behind ÉMI's activities. The construction sector is known for its high use of natural resources (raw materials, energy), and ÉMI's sustainable development efforts are focused on developing activities that will result in efficient and reduced energy and material use solutions that work to counterbalance the high natural energy consumption.

With environmental awareness coming into view, the construction industry has been engaged in reusing recycled materials in an increasing number of areas and with an increasing intensity. In this area, ÉMI's activities focus on recycling solutions for concrete debris and insulation materials.

ÉMI's research is centered around environmentally friendly, healthy and safe solutions, which, from building materials through nuclear and fire protection, involve the reduction of the adverse effects caused by man and the environment.

ÉMI will actively contribute to the realization of the 3x20% EU objectives by 2020 (reduction of energy consumption and CO2 emissions, increasing the use of renewable energy).

Servicing user needs

ÉMI's dedication towards sustainability and its realization cannot be envisioned without servicing the needs of the customers or users. People's quality of life is strongly linked to the healthy and comfortable design of enclosed and semi-enclosed spaces.

ÉMI therefore considers it natural to contribute to the creation of a safe, attractive, environmentally friendly, healthy, comfortable, accessible built environment, by seeking and developing new concepts, technologies, materials and processes.



Knowledge Center



The Concept

ÉMI's vision is mostly focused around the standards of the built environment, sustainable and energy-conscious construction, and the efficient management of resources. In this spirit, we have developed an innovative multi-element project for the ÉMI Szentendre Industrial Park that is unique in the field of construction and has the potential to lay the foundations for the development of energy-conscious building in Hungary.

The professional focuses of ÉMI's innovation project system are the areas affected by:

- the development of ECO (sustainable) green building,
- intelligent building methods,
- construction-related environmental protection,
- construction-related energy management,
- the interconnections of construction and renewable energy sources.



The Knowledge Center

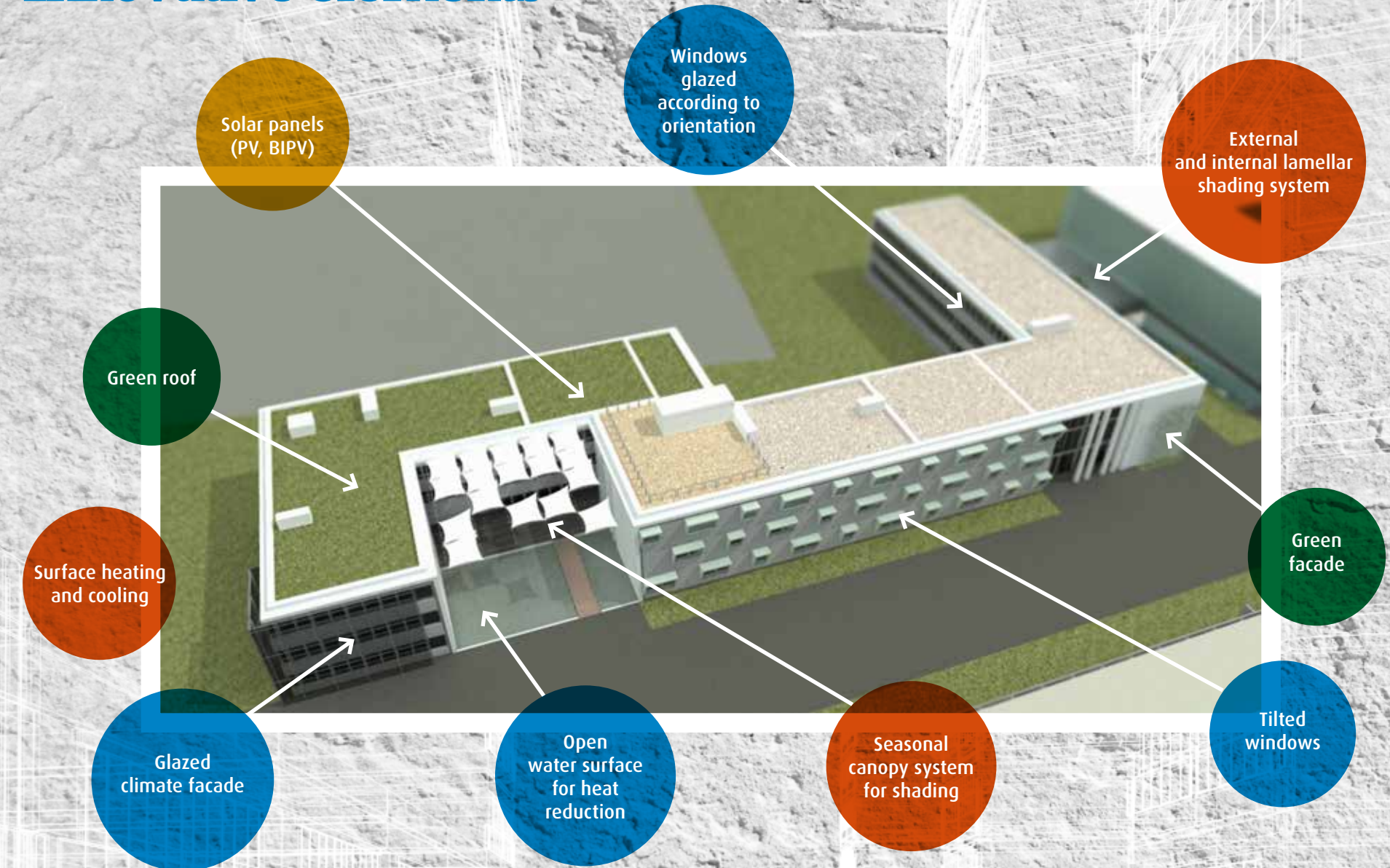
The center for innovation and entrepreneurship is located in an energy-efficient 3-storey office building built with environmentally friendly construction and mechanical systems, and comprises 5685 square meters of space.

The objective of the EU initiative CONCERTO – in which ÉMI also participates – is to build community-scale demonstrations of the integrated use of energy efficient solutions and large scale renewable energy sources. Priority is given to the presentation of poly-generation technologies (parallel cooling, heating and electric energy supply).

ÉMI's Knowledge Center in Szentendre takes part in this project system, and, thanks to the PIME'S project, can function as a demonstration site for:

- use of recycled insulation materials in the renovation of buildings,
- use of bio-climatic principles in design,
- architecturally integrated active and passive solar systems, sunspaces,
- green roofs and green facades,
- effective summer heat protection with innovative shading.

Innovative elements



The development of the Knowledge Center is continuing

As a joint project with universities, ÉMI plans to establish a Knowledge Center of Construction and a university campus in ÉMI's Innovation and Industrial Park in Szentendre.

A prerequisite of the development is the general renovation of Hall "E", where ÉMI intends to move its laboratories. In the course of the relocation, the laboratories will be configured flexibly, according to ÉMI's long term R&D&I strategy, to suit new challenges such as energy-efficiency, primary usage of renewable resources, recycling and material saving, lifecycle optimization and intelligent technologies (ICT).

Parallel to the moving of the laboratories, the laboratory equipment will be modernized and new testing systems will be purchased in order to establish the testing background needed for assessing environmental friendly construction.



Szentendre Industrial Park, Hall „E” - Visual plan

European Union funding sources involved:

The development project is being realized from two grants awarded through a European Union tender, and from our own resources and credit.

1. Grant awarded within the framework of the 'Central Hungary' Operational Program of the New Hungary Development Plan, on the subject „Site and service development of industrial parks and industrial areas” (KMOP-1.5.3/D, 2008-0003). The support (maximum HUF 475 million) covers 28,78% of the project costs.
2. Grant won at the competition „TREN/FP7EN/239288/”PIME'S „Concerto communities towards optimal thermal and electrical efficiency of buildings and districts, based on MICROGRIDS -PIME'S”. The support covers maximum 50% of the total investment earmarked for this purpose.



PIME'S receives funding from the European Union 7th Framework Programme under Grant Agreement No 239288



ÉMI as a professional background institution



National Energy Strategy for the Building Sector (NESB)

Commissioned by the Ministry of National Development, in 2012-2013 ÉMI developed the National Energy Strategy for the Building Sector (NESB). The main goal of the project was to prepare mid-term concepts and define strategic directions for energy-saving building renovation and construction.

The project activities included:

- Preparation, scope methods
- Data collection
- Typology for residential and public buildings
- Energy audit and expertize
- Building models
- Refurbishment packages
- Cost calculations
- Building Energy database
- International and national outlook
- Economic impact assessment
- Strategic Environmental Assessment (SEA)



Preparation of technical specifications related to the Complex Panel Building Refurbishment Program



We accomplished the elaboration of the technical definitions and recommendations through performing the following subtasks:

- Determination of the main types of buildings and housing units
- Development of model solutions
- Cost estimations
- Technical specifications (technical specifications of built-in materials, development of recommended orders of technologies, etc.)

Contacts

Education

When ÉMI was founded, the regional units were established in cities with bigger regional universities to allow for cooperation with higher educational institutions and teachers, and to be able to demonstrate construction material tests in practice alongside theoretical education. ÉMI remains to be in close contact with universities, and in many cases its regional laboratories are hosted within university campuses.

ÉMI's leading researchers and renowned experts give regular lectures at the Faculty of Architecture at the Technical University of Budapest; the Ybl Miklós Faculty of Architecture and Civil Engineering at the Szent István University; and they are also in close contact with the tutors of the Mihály Pollack Faculty of Engineering and Information Technology at the University of Debrecen.

Besides their work in higher education, ÉMI's professionals provide assistance in secondary education as jury members at regional and national professional competitions in construction organized by technical and vocational schools.



ÉMI as a background institution

The expert work performed by ÉMI has been determinative ever since it was established, and has been closely connected to the role it has played in developing national and international standardization. Through performing these tasks, ÉMI has built strong contacts with fire departments (today encompassed by the National Directorate General for Disaster Management) and the departments of the Ministry of Interior responsible for construction issues. These institutions have involved ÉMI in wording regulations, legislation and standards, and preparing research and development and infrastructural schemes affecting the Hungarian construction industry.

ÉMI's experts take part in energetics tenders and project preparations falling under the jurisdiction of the Ministry of National Development (ÉMI's owner) in order to guarantee the consistency of construction requirements, regulatory requirements and consumers' needs in tender announcements. Such preparatory works were the development of National Energy Strategy for the Building Sector during 2013 and preparing a study about the lessons learnt during the supervision of investments accomplished under the Hungarian Green Investment Scheme.



Contacts with professional organizations

While performing its tasks as a background institution and a source of R&D, ÉMI got connected to a number of professional organizations in the construction industry. The collaboration with them was often made easier as a result of ÉMI's membership in the given organization. As in the case of its other activities, with its work performed in professional organizations ÉMI intends to foster the development of the Hungarian construction industry, and the safety and livability of our built environment.

Membership in national organizations

- First Hungarian Chimney Association
- EOQ Hungarian National Committee
- Building Authorities' Vocational College
- Building Research Association
- Hungarian Association of Building Insulators, Roofers and Tinsmiths
- National Federation of Hungarian Contractors (ÉVOSZ)
- IPE Association of Industrial, Science, Innovation and Technology Parks
- LCA Center Association
- Hungarian Building Product Industry Association
- Hungarian Elevator Association
- Hungarian Society for Quality
- Hungarian Standardization Board
- Association of Hungarian Road, Bridge and Civil Engineering Laboratories
- National Accreditation Board



International relations

ÉMI Non-profit Ltd. is a member of the following organizations:

- **EOTA:** European Organization for Technical Approvals. Membership since 1998.
- **UEAtc:** Union Européenne pour l'Agrément technique dans la construction. Membership since 1995.
- **EGOLF:** European Group of Organisations for Fire Testing, Inspection and Certification. Membership since 1998.
- **ENBRI:** European Network of Building Research Institutes.
- **WFTAO:** World Federation of Technical Assessment Organizations. Membership since 1996.
- **CIB:** International Council for Research and Innovation in Building and Construction. Membership since 1992.
- **ECTP:** European Construction Technology Platform. Membership since 2003.
- **ECIICE:** Co-operation of Central and Eastern European construction testing, inspection, certification and research institutions.

Different international fulfill different roles within the construction industry. The oldest organization is UEAtc, which has been involved in developing numerous directives since it has been active. With the introduction of CPD, EOTA has taken over the role of the biggest professional organization. In a voluntary sense, ENBRI has the largest membership. Hungary takes an active role in the work of CIB as Géza Matuz (Deputy CEO of ÉMI) is a board member.

As part of the certification process, the basic assessment and continuous supervision of product manufacturing is performed by our experienced colleagues familiar with the manufacturing of the given product. This work is performed at manufacturing sites in the following countries:

AUSTRIA – BOSNIA – CZECH REPUBLIC – NETHERLAND – CROATIA – CHINA – POLAND – GERMANY – ITALY – ROMANIA – SPAIN – SERBIA – SLOVAKIA – TURKEY – UKRAINE



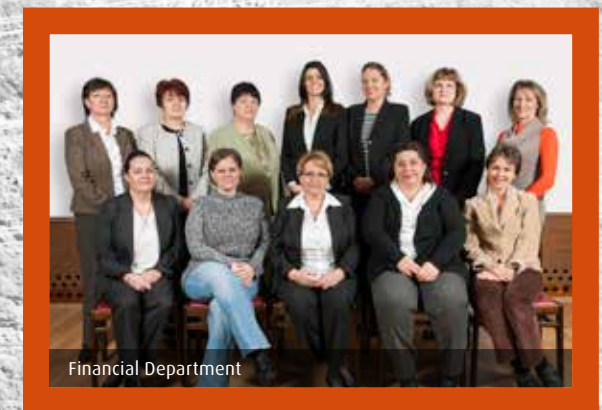
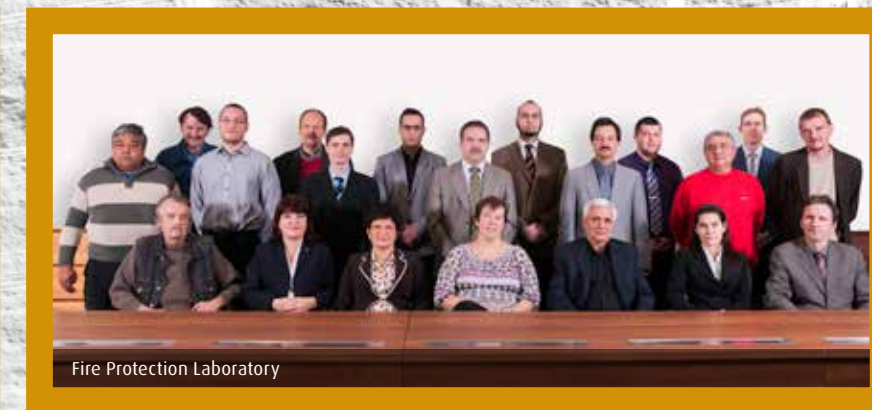
EOTA



The ÉMI Staff



‘In the service of quality’: The Staff of ÉMI



Regional Material Testing Laboratories



Győr



Pécs



Veszprém



Debrecen



Szeged



Miskolc

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