



## ENGINEERS FROM KRAKÓW AT THE TRADE SHOW IN BRAZIL

# THE ENERGY SECTOR NEEDS INNOVATION



All companies in the EC Group are now witnessing extensive interest in new projects in the energy sector. Since its beginnings, the Company has completed many projects in this sector. Specific fields of application have included: status monitoring of equipment and systems, prediction of safe operating time, studies on vibration of structural elements and modification of the properties of structures, assessment of power industry projects' impact on environment, and control of power industry processes. In addition to previously offered services the current projects involving the EC Group companies also include the following: monitoring of power transmission lines, network control – with specific focus on renewable energy sources, electrical and thermal power storage, control of battery units and sets, power balancing for industrial and utility systems, availability analyses for power industry units and systems, as well as power generation efficiency enhancements. One of the most interesting challenges recently faced by our specialists was to improve the efficiency of OCR turbines through the use of thermoelectrical materials. Commercial application of the developed solution still requires some verification at the level of operational tests.

New projects and developments in the domestic energy sector are mainly related to the necessity of meeting competitive challenges. In the near future, the industry will have to compete with suppliers from other EU countries, as defined in the provisions of the new EU directive on the energy sector.

An increasing number of transportation means and equipment used in various sectors of the economy can now draw energy from batteries; battery longevity and capacity related to their weight are the key issues in such applications. Our companies are very successful in this field. Our developments focus on designing the Battery Management Systems (BMS) that are used to control charge/discharge processes to provide the longest possible life of cells. Our systems are installed in vehicles, power tools, electric bikes and many other battery-powered devices. We design electricity storage facilities in the form of sets comprising Lithium-ion cells designed for network applications, including balancing of power networks capable of handling renewable energy sources, such as photovoltaic and wind farms.

Due to an increasing demand for projects regarding implementation of innovations in the energy sector, the EC Group has made a strategic decision to focus our development in this direction. We search for partners interested in enhancing manufacturing processes, as well as power transmission and distribution; we are launching projects in this field in order to improve and broaden the portfolio of services offered to our customers, and we are also implementing our innovative solutions in the energy sector.

A handwritten signature in black ink, appearing to read 'Tadeusz Uhl', written in a cursive style.

**Prof. Tadeusz Uhl**  
President of the EC Group



## ENGINEERS FROM KRAKÓW AT THE TRADE SHOW IN BRAZIL

4

For the first time EC Engineering presented its offer at the largest trade show in South America.

The event took place in November, in Sao Paulo, Brazil.

## RFID SYSTEMS FOR AVIATION SAFETY

Conference in Dęblin, Poland

6

## SOLUTIONS FOR CLASSICAL ENGINEERING AND BIOENGINEERING

Electromagnetic Strength Testing Equipment

8

## CAMERAS FOR INDUSTRY AND LABORATORIES

Perfect tool for industry and research & development laboratories

9

## MSC SOFTWARE FOR STUDENTS

Valuable assistance in mastering skills

10

## INNOVATIVE ANTI-FOULING TESTS

Results in maximum 21 days!

11

## VIBstudio. YOUR MACHINERY GUARDIAN

Intelligent platform for continuous monitoring of machinery and equipment

12

## MONITRAN – EC SYSTEMS' NEW BUSINESS PARTNER

Vibration sensors from English manufacturer in our offer

13

## MAINTENANCE TRADE SHOW, THE 5<sup>TH</sup> EDITION IN CRACOW

EC Systems at the MAINTENANCE Trade Show

14

## PLAN YOUR INVESTMENT IN DIAGNOSTICS

EC Systems seminar with participation of experts from AGH University of Science and Technology, Kraków, Poland

15



# ENGINEERS FROM KRAKÓW AT THE TRADE SHOW IN BRAZIL

For the first time EC Engineering presented its offer at the largest trade show in South America. The event took place on November 11-13th, in Sao Paulo, Brazil.

The NT Expo in Sao Paulo is an international railway exhibition that has been staged 17 times. Over 200 exhibitors, including several from Poland attended this year's edition.

Engineers from EC Engineering presented railway vehicle designs that have been recently developed at our facilities in Kraków. They also presented a prototype of the railway pantograph 200EC; this is an innovative apparatus with aerodynamic components designed to collect power for the train, featuring higher durability and lower weight. They also presented EC-VAC, a vacuum toilet, which, because of low water consumption, can be an ecological alternative to traditional train toilets. Another product exhibited at the trade show was an innovative footrest for tram drivers, designed by a company from Kraków.



EC Engineering's participation in the event was made possible thanks to the support provided by the European Regional Development Fund, as part of the Innovative Economy programme.

# RFID SYSTEMS FOR AVIATION SAFETY



RFID Systems – Poland’s only manufacturer of RFID UHF equipment and systems – participated in September 2014 in the international science conference organised by the Polish Air Force Academy in Dęblin. Its main subject was safety of operations at airports and harbours, security of aviation and means of marine transportation, and protection of infrastructure.



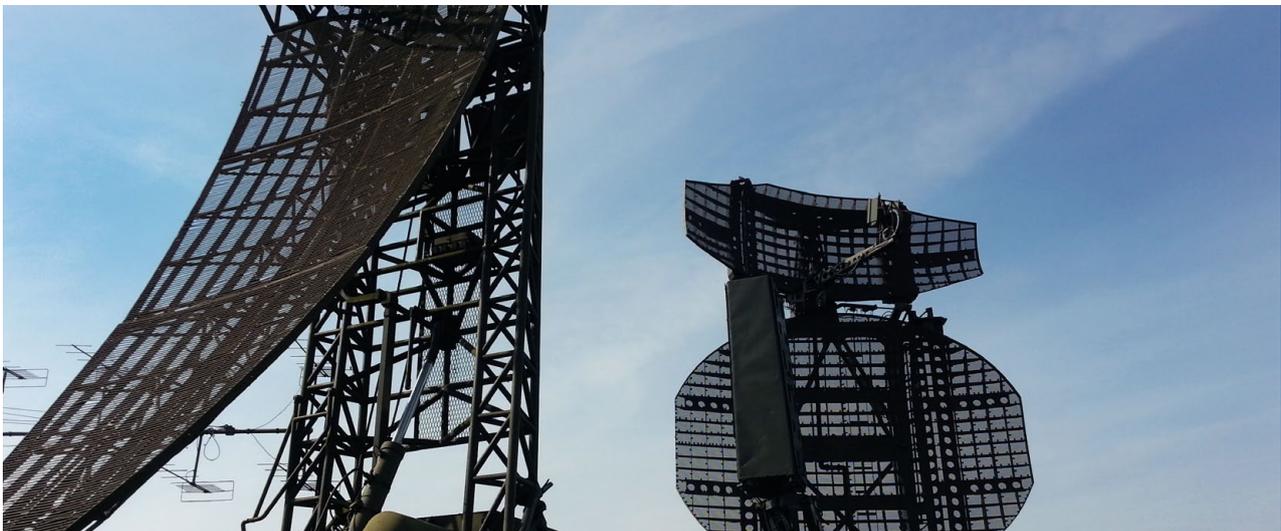


The conference gathered over 140 participants, which included representatives of universities, research institutes, marine organisations, airlines and airports, and enterprises operating in the aviation and maritime industry.

One of the sessions was dedicated to the issue of security controls performed by national protection services, internal airport management services or specialised armed security services. During the session, Bartłomiej Maćkiewicz of RFID Systems demonstrated how the capabilities of RFID technology can improve the level of security and enhance the logistics processes in aviation.

Our experts also had the opportunity to present an example of RFID technology solutions – the RFID AirPort system dedicated to airports and airlines. In the system, in addition to protected zone access control, we propose tracking vehicles operating within the airport area, luggage location modules, as well as a mobile perimeter barrier designed for security of the airport facilities or their parts. The conference in Dęblin included a presentation and discussion on practical tests of the RFID AirPort system performed at the Władysław Reymont Łódź Airport. Our solution garnered high interest from participants, which established new business contacts.

In November, RFID Systems participated in the Auto-ID International Conference, dedicated to RFID technology in its broadest sense. The conference was held in Ostrava, Czech Republic. It offered discussion of possible applications of RFID technology in railway, services, logistics, retail and other sectors of the economy. The futures of RFID and related technologies were also considered.



# SOLUTIONS FOR CLASSICAL ENGINEERING AND BIOENGINEERING

## ELECTROMAGNETIC STRENGTH TESTING EQUIPMENT

BOSE ElectroForce, manufacturer of strength testing equipment, uses a patented technology based on electromagnetism. This ensures high universality of tests.

**BOSE**<sup>®</sup>  
Better products through research<sup>®</sup>



The BOSE ElectroForce strength testing equipment allows the performance of static tests and dynamic tests up to 300Hz, with the possibility of setting nearly an infinite number of cycles.

The offer includes strength-testing devices fitted with special-purpose chambers, such as:

- thermal
- accelerating sample corrosion
- bio-chambers, simulating conditions within an organism.

The BOSE ElectroForce equipment is very easy to install and operate. The devices can be activated and operated without the need for special laboratory environment or any external hydraulic or pneumatic supplies. All you need to do is to set up the system in your laboratory, connect power, configure the testing conditions and carry out the tests. The manufacturer offers low-weight equipment for full mobility.

Using a friction-free technology based on electromagnetism makes the BOSE ElectroForce strength-testing equipment durable and reliable. This is confirmed by a 10-year warranty.

The use of a friction-free motor allows strength testing of very delicate bio-components, as well as materials with very high strength limits. The devices provide accurate control of displacement and force, within the range of 0 to 15kN.

The BOSE ElectroForce equipment allows the performance of various strength tests, such as:

- compressive strength
- bending strength
- torsional strength.

A single test can comprise combined loads, e.g., tensile load with torsion or compressive load with bending.



# CAMERAS FOR INDUSTRY AND LABORATORIES

FLIR Systems – the world leader in design and production of thermal vision cameras and a long-term partner of EC Test Systems – has a special promotional offer for entrepreneurs and scientists: packages with scientific cameras.



The FLIR Bench Test Thermal Kits are fully operational measuring packages, ready for use immediately after purchase. The thermal vision camera kit includes a professional FLIR ResearchIR software package allowing fast recording and analysis of thermal tracks. It allows creation of temperature change charts based on real-time measurements and recorded sequences. The software provides advanced recording triggering and stopping functions.

It makes a perfect tool for industry and research and development laboratories.

## FLIR A35SC / A65SC Package

The package includes:

- A35sc or A65sc camera
- optics with manual focus adjustment: 48° for A35sc and 45° for A65sc
- ResearchIR software, providing sequence acquisition and data analysis functions
- stand adapter
- PoE (Power over ethernet) power supply.

PROMOTIONAL PRICE – FROM EUR 3,650 NET.

## FLIR E40SC Package

The package includes:

- FLIR E40 camera (19,200 measurement points)
- 25° and 45° lens, with manual focus adjustment
- stand adapter
- ResearchIR software, providing sequence acquisition and data analysis functions.

The camera allows measurement with resolution up to 200µm per pixel for the 45° lens.

PROMOTIONAL PRICE – FROM EUR 3,950 NET.

## FLIR T420SC Package

The package includes:

- FLIR T420 camera (76,800 measurement points)
- 25° and 45° lens, with manual and automatic focus adjustment
- stand adapter
- ResearchIR software, providing sequence acquisition and data analysis functions
- optional: close-up 2x (50µm) or close-up 4x (100µm) lenses.

PROMOTIONAL PRICE – FROM EUR 8,950 NET.

The offer is valid while stocks last. For more details, visit [www.ects.pl](http://www.ects.pl).

# MSC SOFTWARE FOR STUDENTS



**MSC Software’s Student Editions** has been on the market for four years now and is used fully **FREE OF CHARGE** in Poland by more than **3,000** students.

Programs such as: **MSC Nastran**, **Patran**, **SimXpert**, **Adams**, **Marc**, and **Actran** allow users to become acquainted with standard solutions that have been successfully employed in the industry for over 50 years.

**MSC Software’s Student Editions** is a valuable assistance tool for mastering skills in Computer Aided Engineering (CAE) and simulations.

**THE SOFTWARE OFFERS:**

- analysis of kinematics and dynamics with the multibody method – using **Adams®** software
- linear statistic and dynamic analysis – using **MSC Nastran/Patran®** software
- non-linear phenomenon analysis – using **Marc®** software
- interdisciplinary analysis – using **SimXpert®** software
- acoustic analysis – using **Actran®** software.

Attention, students! Having the ability to perform simulations using MSC Software’s Student Editions will gain you a great advantage on the contemporary job market.

Thanks to fast and unlimited access to a wide range of tutorials and web seminars, as well as example problems, you can use the software for self-tuition.

**DON’T WAIT, REGISTER TODAY!**

Visit <http://www.mscsoftware.com/student-editions> and download the free software MSC Free Student Edition.  
 Contact: [software@ec-e.pl](mailto:software@ec-e.pl), phone +48 12 341 89 41



# INNOVATIVE ANTI-FOULING TESTS

Ships, bridges, posts, shores, platforms, buoys, and all water submerged elements made of wood, plastic or steel are affected by aquatic organisms that attach to them causing increased risk of corrosion. This phenomenon is called **fouling**, which decreases the efficiency of marine transportation by reducing the speed and increasing fuel consumption of vessels.

## TRADITIONAL TESTS – ARDUOUS AND COSTLY

Scientists and specialist companies in the industry continually develop innovative coatings that prevent the occurrence of fouling. However, the time needed to obtain the final product from first testing can be as much as 5 years, because laborious tests are carried out in natural, marine environments. The tests are in answer to the question how resistant the developed coating is to the phenomenon it is designed to prevent. These include submerging the tested parts in seawater in different parts of the world, and then quantitative assessment of the degree of growth and adhesion of the surface fouling. The related long periods and logistics increase the cost of research work exorbitantly.

## INNOVATIVE ACCELERATED TEST METHOD

EC Advanced Materials, in cooperation with Innowacja Polska, presents the results of work carried out as part of an international IATS project that has allowed developing a method of providing information on the anti-fouling properties of a coating within a maximum of 21 days! For manufacturers

of coatings designed for contact with water this is a revolutionary difference that helps save money, enhances the process of technology development and makes it more flexible. The project has been co-ordinated by Innowacja Polska, and the research work has been carried out in Germany, the Czech Republic, and Poland. The accelerated anti-fouling tests service will be offered by EC Advanced Materials in Q1 2015.

## ALGAE CULTURES

The tests can be shortened due to the use of solutions containing specially selected species of algae. Their growth is observed on a specific surface in a laboratory environment. Research has proven that the results obtained in the shortened test correspond with the results produced in the standard tests. The research process can be automated through the use of specially designed equipment.



# VIBstudio YOUR MACHINERY GUARDIAN

At EC Systems we make every effort to meet customer needs and continuously update our offer to include products and solutions designed for machinery monitoring and diagnostics. Our latest proposal – VIBstudio – is an intelligent platform designed for continuous monitoring of the technical condition of machinery and equipment, providing protection from failure and vibration diagnostics

The current system release is a summary of our 15 years of expertise in design, development and improvement of diagnostic systems for the most demanding industry branches.

#### THE VIBstudio PLATFORM PROVIDES FOR:

- up to 70% reduction in breakdowns and outages
- 20% reduction of maintenance costs
- up to 30% longer life for the supervised machinery.

A wide range of configurations allows the system to be customised to functional needs and the customer's budget constraints. Moreover, it is easily scalable to phase out the project. The affordable introductory version can be a good base to start to monitor a single machine, and can then be gradually expanded into an enterprise-wide, advanced remote diagnostics platform.

#### THE VIBstudio SYSTEM IS AVAILABLE IN THREE VERSIONS:

- basic (pumps, gearboxes, fans, drives)
- for piston compressors
- for wind turbines

#### VIBstudio SYSTEM HIGHLIGHTS:

- monitoring, safety, and diagnostics for every budget
- modular architecture and scalability
- clear and innovative graphic interface
- intuitive event management
- uses the True Data Validator™ and I<sup>3</sup> Technology™
- uninterruptible, real-time data processing in parallel channels
- false alarm reduction
- automatic failure diagnosis
- data accessible from every location around the world
- advanced kinematics configurator
- compatible with third-party vendor systems.

VIBstudio consists of the VIBmonitor acquisition system and the VIBnavigator software.

VIBmonitor is a modular, multi-channel autonomous system designed for machine-side operation. Through conditioning and high quality acquisition of signals and process parameters and their continuous analysis, the system performs machine monitoring and secures their operation. It uses the True Data Validator™ technology to perform real-time data verification, automatic machine condition detection and advanced diagnostic analyses, providing a quick and efficient response to anomalies, thereby significantly reducing the number of false alarms.



VIBnavigator is the VIBstudio platform user interface, operating based on the I<sup>3</sup> Technology™. It is designed mainly to perform event monitoring and data browsing, as well as system configuration and administration. The interactive and user-friendly browser provides the operator with an intu-

itive interface. Maintenance and diagnostic personnel can benefit from its wide functionality in terms of signal analysis and processing. Customisation and automation of operations allow for very simple alarm cause checking.



# MONITRAN – EC SYSTEMS’ NEW BUSINESS PARTNER

EC Systems has established a co-operation with Monitran – an English manufacturer of vibration sensors and a leader in the design and production of sensors and vibrodiagnostic systems, proximity equipment and displacement measurement devices. Our company is the exclusive distributor of Monitran products in Poland, Romania, Hungary, the Czech Republic and Slovakia.

The Monitran offer includes general-purpose sensors and universal acceleration sensors, special purpose velocity sensors, eddy current sensors and LVDT displacement sensors. Their scope of applications includes the processing industry, power plants, water treatment plants and wind turbines, as well as mining and oil/gas industries. Monitran provides comprehensive services for customised designs.

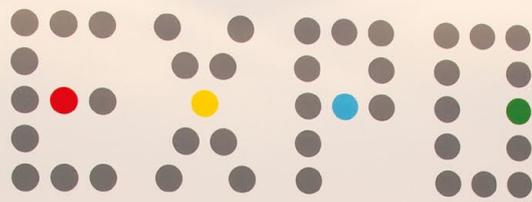
Monitran offers two categories of general-purpose acceleration sensors:

- units with AC output, designed for analysis of vibration data acquired from manual and online vibration analysers,

- units with DC output, suitable for machinery protection, ideal for direct input to PLC, DCS and other industrial controllers.

For more specialised applications, the offer includes dual-output sensors combining two measured signal outputs, e.g., acceleration and temperature, or velocity and acceleration. Monitran also offers special-purpose sensors for high-temperature applications, AC velocity, modal analysis and three-axle measurements.





# KRAKÓW



## MAINTENANCE TRADE SHOW, THE 5<sup>TH</sup> EDITION IN CRACOW

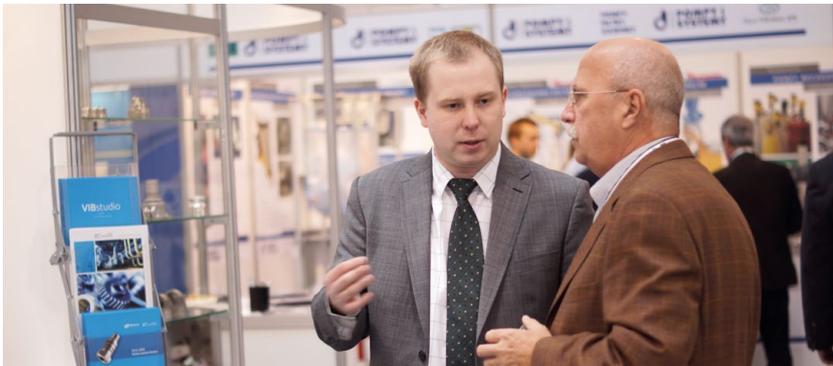
**MAINTENANCE** – Poland’s only Trade Show dedicated to Maintenance, Production Planning & Optimisation, took place in Cracow, October 29-30th. It was the 5th edition of the exhibition. As with every edition, **MAINTENANCE 2014** is co-located with another trade show, **SyMas 2014**, which is dedicated to the Processing, Storage, Transport and Logistics of Bulk Goods, Powders and Granules.

This year’s edition of **MAINTENANCE** was organised at the **International Exhibition and Convention Centre EXPO Kraków**. An area of over 9,000 sq. m. was occupied by more than 100 companies from all over the world, who presented their solutions in machinery diagnostics and monitoring, mechanics, hydraulics and pneumatics. The exhibition programme traditionally included the **learnShops™** seminars, where the exhibitors delivered 26 brief lectures presenting their offer.



The trade show was an opportunity for EC Systems to present our latest product, VIBstudio, an intelligent platform for machinery monitoring and diagnostics. The EC Systems stand was also a chance to become acquainted in detail with the offer of Monitran – our English partner – and to learn about the Easy-Laser® solution, a laser-based machine alignment system.

Participation in the exhibition was a great chance to exchange knowledge and opinions on current trends in the industry, and to learn more about the needs and expectations of potential customers.



# PLAN YOUR INVESTMENT IN DIAGNOSTICS

The first edition of EC Systems' seminar on "Safety and Reliability at a Reasonable Price – Plan Your Investment in Diagnostics" took place in November. The meeting was attended by companies from the energy, steel, food processing and mining sectors. The event was under the auspices of the industry magazine "SUR – Maintenance Services".

One goal of the seminar was to acquaint its participants with machinery monitoring and diagnostic systems and to encourage discussion on the benefits of their implementation. The seminar covered three presenta-

tions developed by experts from EC Systems and the AGH University of Science and Technology. Participants could learn how the EC Systems VIBstudio intelligent machinery diagnostic platform works. They also became acquainted with the laser axle-alignment equipment manufactured by the Swedish company Easy-Laser®.

Organisation of the event was for EC Systems a great opportunity to exchange knowledge and opinions on new trends in the industry. We were also able to learn more about the needs and expectations of our current and potential customers.



 *ENGINEERING*

 *PROJECT*

 *SYSTEMS*

 *INNOWACJA POLSKA*

 *ADVANCED MATERIALS*

 *TEST SYSTEMS*

 *TRAINING CENTER*

 *KPG*

---

EC GRUPA  
ul. Lublańska 34  
31-476 Kraków

tel.: +48 12 627 77 10  
fax: +48 12 627 77 11  
e-mail: [info@ec-grupa.pl](mailto:info@ec-grupa.pl)

[www.ec-grupa.pl](http://www.ec-grupa.pl)