

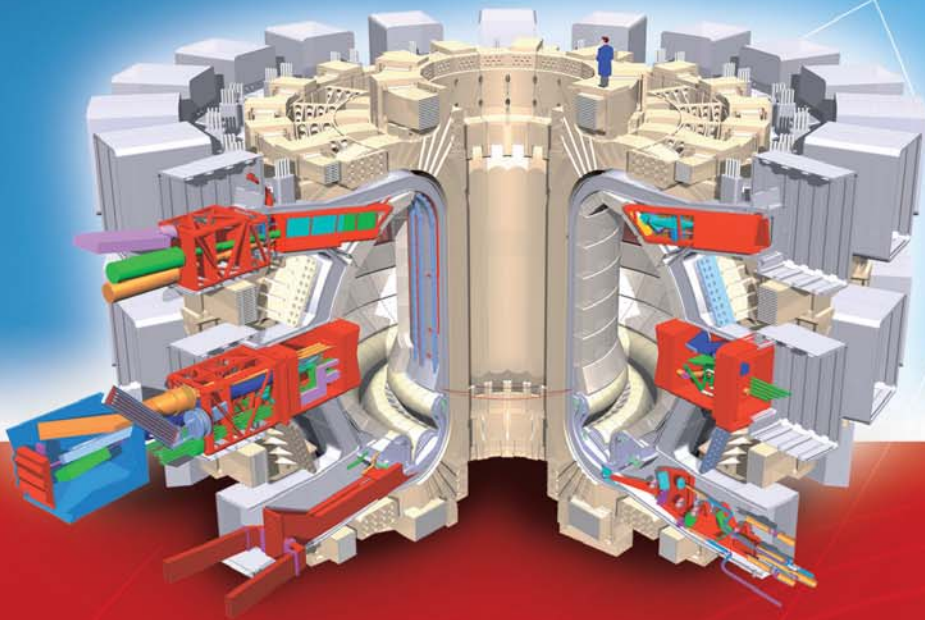


FUSION FOR ENERGY
THE EUROPEAN JOINT UNDERTAKING FOR ITER AND THE DEVELOPMENT OF FUSION ENERGY



Polish Industry

for ITER



www.technologpark.pl

Wrocławski Park Technologiczny S.A.

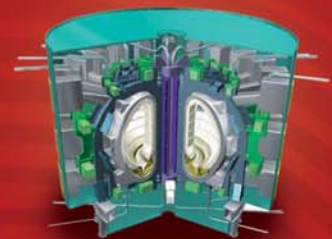
ul. Muchoborska 18, 54-424 Wrocław

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Projekt Iiter



COMPANY FULL NAME	AKROPOL ELEKTRONICS
COMPANY SHORT NAME	AKROPOL ELEKTRONICS
BRANCH	Control and measure apparatuses
ADDRESS	ul. Zaporowska 62/9 53-416 Wrocław, Poland
TELEPHONE FAX	+ 48 609 582 544 + 48 71 361 82 55
E-MAIL	akropol@osti.pl
WEB SITE	



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Wojciech Słowik
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PRODUCTS FOR MEASUREMENT AND CONTROL OF:

- temperature,
- humidity,
- pressure,
- radiation control and protection.

OFFER FOR ITER NEEDS

- thermocouples,
- RTD probes,
- dose rate meters.



COMPANY FULL NAME	CIT Engineering Polska Sp. z o.o.
COMPANY SHORT NAME	CIT Engineering
BRANCH	Measurement systems Measurement systems design
ADDRESS	ul. Muchoborska 18, 54-424 Wrocław, Poland
TELEPHONE FAX	+48 71 344 11 89 +48 71 344 11 89
E-MAIL	infopl@citengineering.com
WEB SITE	www.citengineering.com



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Marcin Chruściel marcin.chrusciel@citengineering.com, mob: +48 660 698 009
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OFFER FOR ITER:

- Electrical and non-electrical values measurements
- Digital signal processing
- Machine Vision measurement systems
- Digital image processing

COMPLETED PROJECTS:

- Philips Lighting: Measurement and test systems
- Philips Medical: Measurement systems
- LG Display: Overnight Life Testing
- LG Chem: Vision inspection system
- Tyco Electronics: Fibre Optic Measurements
- Delphi Automation: Product inspection
- TÜV Rheinland: Measurement system for products certification
- Oce technologies: quality control
- Xaar: Inkjet printhead testing



COMPANY FULL NAME	Creotech Sp. z o.o.	
COMPANY SHORT NAME	Creotech	
BRANCH	Electronics, Optoelectronics, Mechatronics	
ADDRESS	ul. Gandhi 35, 02-776 Warszawa, Poland	Laboratory: ul. Nefrytowa 8, 05-500 Piaseczno, Poland
TELEPHONE FAX	gsm: +48 692 251 507 or gsm: +48 601 950 317 +48 22 486 93 93	
E-MAIL	kontakt@creotech.pl	
WEB SITE	www.creotech.pl	



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS

Grzegorz Kasprowicz or Grzegorz Brona

Creotech Ltd. offers a comprehensive service of leading projects of creation electronics, optoelectronics and mechatronics devices. We offer feasibility study, preliminary project development, prototype production, project development until the final production version. We can as well organize the serial production of the devices developed by us or by other companies/groups. We are preparing projects of the embedded microcomputer devices (Arm, PowerPC and other technologies), cameras (CCD, IR or CMOS equipped) and measurement systems (data acquisition cards, FPGA systems, remote control systems controlled via ethernet, gigabitethernet, wifi). We are organizing production of prototypes one to few copies - as well as longer series up to a few hundreds copies. Creotech Ltd. executes contracts for a number of scientific institutes, e.g. European Organisation for Nuclear Research CERN (production and project preparation of data acquisition cards for LHC accelerator),

Laboratory of Astrophysical Aparatus Polish Institute of Nuclear Problems (production and tests of astronomical CCD cameras), Warsaw Technical University (project of CCD cameras with embedded microcomputer system). We are also co-operating with many private Polish and international high-tech companies (e.g. Elpoma Electronics, Amart Logic, Inframet). Creotech is a young company, founded in 2008. Its founders, however, (adjunct at the University of Warsaw, employees of the European Laboratory for Nuclear Research) and staff have extensive experience in the design, construction and manufacture of complex electronic and mechanical equipment. For the innovative designs the company was awarded several prizes, inter alia an award given by the Polish Ministry of Science and Higher Education and the Golden Medal of Poznan Trade Fairs (the most important trade fairs award in Poland).



COMPANY FULL NAME	Zakład Technologii Wysokoenergetycznych EXPLOMET Gałka, Szulc spółka jawna
COMPANY SHORT NAME	ZTW EXPLOMET
BRANCH	Explosive cladding, sector code number 28.50.00
ADDRESS	ul. Oświęcimska 100H 45-641 Opole, Poland
TELEPHONE FAX	+48 77 451 78 18, 451 78 19, 451 78 17 +48 77 456 25 11
E-MAIL	biuro@explomet.pl office@explomet.pl
WEB SITE	www.explomet.pl



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS

Zygmunt Szulc, zygmunt.szulc@explomet.pl

Our firm specializes in explosive metals cladding technology. By this method we produce bimetal and many-layer systems, which in a form of cladding plates, forgings, tubes and bars have application to apparatus construction (chemical and power engineering, electrolysis process), as well as to manufacture different types of conductor-rails and bimetal contacts applied in electrical power engineering. We also produce so-called welding connectors (i.e. to ships construction, or anode in aluminum electrolysis). Our products can also find applications in other fields of manufacturing.

Grades of clad material which we are using to cladding: chromium steel, chromium-nickel steel (austenitic steels, and duplex), copper and its alloys, nickel and its alloys, titanium and its alloys, aluminum and its alloys and others.

OFFER FOR ITER:

Currently we are starting cooperation with Department Material Engineering of Technical University of Warsaw, directly connected with ITER subject. We have to make technological trials of manufacturing of joint between tungsten and special steel, to make examinations of usefulness this kind of materials in building of ITER reactor's elements. Our offer for ITER includes:

1. Making bimetallic and multilayer materials, potential usefulness to elements of reactor building.
2. In cooperation with research centers, elaboration of new multilayer materials and technology of it manufacturing, usefulness in element's manufacturing.
3. Cooperation at elaboration of technology of reactor's elements making, including explosive cladding technology to manufacturing multilayer materials, also in sets (elements) axis symmetrically bars pipes.
4. Cooperation at elaboration technology of jointing reactor's elements using sets of welding connectors, manufactured by explosive cladding method.
5. Elaboration of technology of materials treatment using energy of explosion for getting new properties; consolidation of powder materials, materials hardening through dynamic cold work, forming of structure through dynamic deformation, other applications.
6. Cooperation at elaboration of forming technology of atypical elements of reactor using energy of explosion.

MAIN ACHIEVEMENT

1. In range of productive activity (export is on level 75% to 96% of total sell of Explomet):

- a. Manufacturing for stable and new getting recipients of cladding materials in unit areas up to 20m², including titanium with chromium-nickel steels, austenitic in areas up to 12m², and also larger, acc. to needs
- b. Disposition of own technologies to making multilayer sets in so-called "one-shot" using few layer in very small thicknesses.
- c. Manufacturing of cladding materials in thicknesses of clad layers from 0,5mm to 35 mm.
- d. Productive manufacturing of joints (cladding plates) titanium + nickel in thickness: 1 + 1 mm.
- e. Manufacturing of welding connectors transition structural and electrical, with interlayers i.e. from pure titanium in very small thicknesses.
- f. Manufacturing of three-layer sets (both side cladding), to manufacturing of large-sizes elements of process apparatuses.
- g. Manufacturing of both side cladding plates for special purposes, i.e. to further processing by rolling for three-layer strips (silver alloys + copper / copper alloys + silver alloys) in final thickness 0,25 mm.

2. In range of research and development activity:

- a. Establishment of own, original technological solutions technology of explosive cladding, for next purposes, in aim to increase quality of services and products, modification of parameters, decreasing negative influence for environment, increasing of productive offer stable process.
- b. Cooperation with national scientific research centers: Technical University of Opole (for several dozen years still), Institute of Non-ferrous Materials, Technical University of Warsaw, Silesian Technical University, Military University of Technology WAT, others.
- c. Cooperation with foreign scientific research centers, i.e. Technical University of Ostrava (Czech Republic), Technical University of Trnava (Slovak Republic), recently also undertaking of talks of taking cooperation with Technical University of Volgograd (Russian Federation) and Paton Institute in Kiev (Ukraine).



COMPANY FULL NAME	The Andrzej Soltan Institute for Nuclear Studies
COMPANY SHORT NAME	SINS
BRANCH	Radiotherapy, radiography
ADDRESS	05-400 Otwock-Świerk Poland
TELEPHONE FAX	+48 22 718 05 83 +48 22 779 34 81
E-MAIL	sins@ipj.gov.pl
WEB SITE	www.ipj.gov.pl



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Karolina Sas
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The Andrzej Soltan Institute for Nuclear Studies IPJ is a state owned Laboratory. It carries out pure and applied research on subatomic physics, i.e. the elementary particle and nuclear physics, the hot plasma physics and related fields. It also produces specialized equipment for various applications (notably for medicine and environmental protection). Its staff includes a number of eminent scientists and technology experts. Scientific Council of the Institute grants Ph.D. and habilitation degrees. The Institute conducts advanced training for various inside and outside groups. IPJ is part of numerous international scientific cooperation's among them : CERN Experiments (Switzerland) CMS, LHCb, ALICE, COMPASS and the biggest in the world accelerator LHC Large Hadron Colider. RHIC (Brookhaven), DESY (Hamburg), and experiments related to neutrino physics in Italy (ICARUS), Super Kamiokande and K2K (Japan). One of Institutes achievements is the PI of the Sky project. It is a collaboration among several institutions in Poland. The PI of the Sky project is a collection of instruments and software designed to detect optical transients. The primary motivation for the PI project is to attempt to detect the optical outbursts associated with Gamma Ray Bursts (GRBs). PI should be capable of detecting such events independently without reliance on gamma ray detectors in space.

Measurable effects of conducted in the Institute experiments and scientific work is the development of sophisticated products among them: medical equipment (accelerators, simulators, photon needle), Multi-channel Pulse Amplitude Analyzer applied in student's nuclear laboratories and many more.

Active in the domestic market, as well as abroad in Europe, Asia and South America. IPJ is also well-known in the industrial market. One of the production branches, apart from the advanced healthcare, are industrial accelerators used in radiography and sterilization.

Lillyput 3 linear accelerator is a modern equipment designed for non-destructive examination using radiographic method. The accelerator enables radiographic examination of elements made of steel, cast iron, alloys and light materials. Lillyput 3 is offered in both stationary and mobile configuration.

IPJ medical field of expertise has more than 30 years. The Institute is one of few in the world producers of medical equipment for radiotherapy. Delivering professional and advanced healthcare to cancer patients the IPJ offers: accelerators, X-ray simulators, therapeutic tables and other necessary accessories for the diagnostics and the therapy.

In the companies treatment line you will find three accelerators - Coline 4, Coline 6 and Coline 10, having the smallest dimensions in comparison to competitive linacs, therefore not requiring a lot of place in a bunker and fulfilling international standards requirements. Additionally the offer includes Simax X-ray simulator and Polkam table family- Polakm 16 treatment table, Polkam TBI and Polkam Mold Room version, treatment planning system Alford 2D and 3D and X-ray shielding doors.

The Andrzej Soltan Institute for Nuclear Studies IPJ products meet all safety requirements what is confirmed by CE mark and have been installed in many countries. More than 70% of our production is exported.



COMPANY FULL NAME	KPIT Infosystems Central Europe Sp. z o.o. (Grupa KPIT Cummins)
COMPANY SHORT NAME	KPIT ICE
BRANCH	Industry IT Services
ADDRESS	Wrocławski Park Technologiczny ul. Klecińska 125, 54-413 Wrocław, Poland
TELEPHONE FAX	+48 71 78 58 900 +48 71 78 58 901
E-MAIL	KPIT-ICE_Reception@kpitcummins.com
WEB SITE	www.kpitcummins.com



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Joanna Orkusz
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OFFER FOR ITER

IT and consulting services in the following areas:

Consulting / IT Architecture:

- Architecture Definition
- Capacity Planning
- Technology selection
- Security design, implementation and audit
- Project Management

Software Development:

- Requirements management
- Architecture Design
- Source code development and Testing
- Deployment
- Maintenance and support

MAIN ACHIEVEMENTS

The quality of KPIT Cummins services has been recognized and confirmed by the following certifications:

- CMMI level 5
- ISO 9001:2000
- BS 25999:2007
- SPICE Level 5



COMPANY FULL NAME	Przedsiębiorstwo Produkcji Handlu i Usług "KRIOSYSTEM" Sp. z o.o.
COMPANY SHORT NAME	KRIOSYSTEM Sp. z o.o.
BRANCH	Cryogenics
ADDRESS	ul. Muchoborska 18 54-424 Wrocław, Poland
TELEPHONE FAX	+48 71 349 00 20 +48 71 349 00 22
E-MAIL	biuro@kriosystem.com.pl
WEB SITE	www.kriosystem.com.pl



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS

Grzegorz Michalski +48 71 349 00 20

DESCRIPTION OF SUBJECT OF ACTIVITY AND OFFER FOR ITER NEEDS

- design, delivery, assembly installations for transportation of liquefied gases on the basis of vacuum insulated pipelines
- design, delivery, assembly installations of high vacuum
- design, delivery, assembly installations of gaseous helium and nitrogen
- design, delivery, assembly cryogenic laboratory stands.
- Cryostat for superfluid helium researches delivered for SACLE (France) in 2005 within the confines of NED programme
- Cryostat for investigation of efficiency of cryogenic thermal insulation in environment of liquid nitrogen or helium delivered for Wrocław University of Technology Division of Cryogenic and Gaseous Technology in 2006
- over 600 meters of Vacuum Insulated Pipelines delivered in Poland in 2008 for Linde, Air Liquide, Messer, Air Products
- gas cylinder filling station CO₂, O₂, Ar, N₂ - Air Products, Kędzierzyn Koźle (Poland)

The apparatuses manufactured by KRIOSYSTEM serve in dozens research institutes and universities all over the country. The produced stations for research and measurements at low temperatures (e.g. helium cryostats, also used for obtaining millikelvin range temperatures, siphons for transferring liquefied gases) have also been internationally recognised they are used in laboratories in the USA, Switzerland (CERN) and Germany.



Cryostat for superfluid helium researches delivered for SACLE (France) in 2005 within the confines of NED programme



Vacuum Insulated Pipeline for liquid nitrogen



COMPANY FULL NAME	PREVAC Spółka z ograniczoną odpowiedzialnością
COMPANY SHORT NAME	PREVAC Sp. z o.o.
BRANCH	Precision and vacuum technology
ADDRESS	ul. Raciborska 61 44-362 Rogów, Poland
TELEPHONE FAX	+48 32 45 92 000 +48 32 45 92 001
E-MAIL	prevac@prevac.eu
WEB SITE	http://www.prevac.eu



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS

PREVAC Sp. z o.o. focuses all its efforts on permanent development and implementation of the new solutions and measurement systems based on precision or vacuum technology.

Our Company takes up continual development of new solutions, their implementation and selling on home and foreign markets.

As the representative of world-leading vacuum technology companies on Polish, Czech and Slovak territory, PREVAC offers their wide range of components and scientific instrumentations.

Our concern for quality of delivered components, systems and provided services obliged us to evolve and implement procedures that improve our quality supervision beginning from materials and subassemblies purchase through designing, manufacturing and delivery control.

- 2005:**
- County Business Leader 2005
 - Gazelle of Business 2005

- 2006:**
- Product of the Year
 - Gazelle of Business 2006
 - Nomination for the title of Solid Employer of the Year 2006

- 2007:**
- THE GOLD MEDAL award from POLISH VACUUM SOCIETY organization for UHV distribution chamber with set of distributors and goniometer receiving stations, accommodated for unique sample holders capable to cooling down to LN2 temperature and heating up to 2000°C
 - Polish Product of the Future - Experimental Complex for Investigation of High Temperature Properties of Molten Metals and Alloys
 - Quality International 2007 QI PRODUCT
 - Quality International 2007 QI ORDER
 - Laureate of the program EU STANDARD 2007

- 2008:**
- Gold Quality International 2008 in category QI SYSTEM
 - Bronze Quality International 2008 in category QI PRODUCT
 - Bronze Quality International 2008 in category QI SERVICES
 - Bronze medal - "BRUSSELS INNOVA 2008" for Experimental Complex for Investigation of High Temperature Properties of Molten Metals and Alloys

- 2009:**
- Bronze Quality International 2009 in category QI ORDER



COMPANY FULL NAME	Surfland Systemy Komputerowe S.A.
COMPANY SHORT NAME	SSK S.A.
BRANCH	Information and Telecommunication
ADDRESS	ul. Braniborska 44-52 53-680 Wrocław, POLSKA
TELEPHONE FAX	+48 71 78 02 900 +48 71 78 02 777
E-MAIL	ssk@ssk.com.pl
WEB SITE	www.ssk.com.pl



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Tomasz Magda
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We offer comprehensive IT service: from a project, through teletechnical infrastructure, hardware supply and configuration, to technical support services as well as outsourcing of IT and network resources.

- We support new investments from the ground up: design and realization of structural cabling systems (including fibre optic), power supply systems (with UPS), air conditioning systems, computer network systems LAN, WLAN etc.
- We implement advanced server technologies and data filing systems (disk arrays, SAN mass memories).
- We provide energy-efficient solutions for optimization and management improvement of availed IT infrastructure, based on virtualization technology.
- We ensure technical security: access control systems, visual monitoring (CCTV), warning, fire alarm and extinguishing systems.
- We secure computer networks full-scale from Internet-originated threats, information theft as well as any damage of data storage devices.
- We promote modern communication (i.a. VoIP, videoconference) and team-work support solutions ensuring users' mobility, remote access to shared resources and safety of conveyed information.

Surfland Systemy Komputerowe SA has over 15 years of experience in providing technology-advanced IT solutions. During this time our clients portfolio has included companies and institutions of various industries (manufacturing, trade, finance, architectural engineering, education, administration, public utilities, telecommunication). There are SMB-type firms as well as large, international enterprises among them.

We support both: developing organizations and brand new investments we have participated in building and extending of Polish Toyota's, UPM Raflatac's, Svenska Cellulosa Aktiebolaget SCA's factories and Andel's hotels (Summit Hotels & Resorts group) among others. Amongst our clients there are also: Municipal Office of Wrocław, Lower Silesian Marshal's Office, University of Wrocław, Industrial Park WROCLAW, and many more. The solutions implemented by Surfland Systemy Komputerowe SA are tailored to meet each client's individual needs.

Our long-term partnerships, confirmed with numerous certificates, including: Microsoft Gold Certified Partner, Cisco Silver Partner, HP Preferred Partner GOLD, F5 Gold Advantage Partner, IBM Advanced Business Partner and VMware Professional Partner, guarantee access to up-to-date technologies of recognized producers.

The company has been granted ISO 9001:2000 quality certification.



COMPANY FULL NAME	Technology Transfer Agency Techtra Sp. z o.o.
COMPANY SHORT NAME	Techtra
BRANCH	Printed Circuit Boards, Particle Detectors, High Temperature Superconductors
ADDRESS	Muchoborska 18 PL 54-424 Wrocław,
TELEPHONE FAX	+48 71 7985885 +48 71 7985886
E-MAIL	techtra@techtra.pl
WEB SITE	www.techtra.pl



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Piotr Bielówka, +48 71 7985885, piotr.bielowka@techtra.pl
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TECHTRA OFFERS:

- Particle detectors based on GEM technology for nondestructive testing.
- Prototyping and manufacturing silver and silver-alloys tubes for high temperature superconducting tapes and wires.
- Printed Circuit Boards prototyping and manufacturing .
- Gas Electron Multiplier. Typically square boards 100x100 mm, others dimensions and shapes on request.

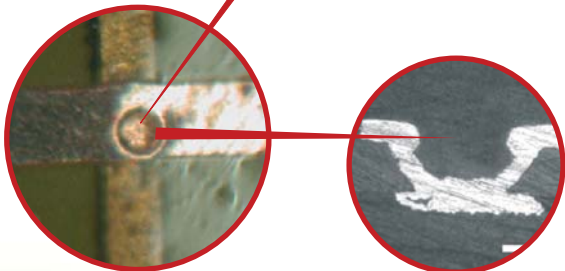
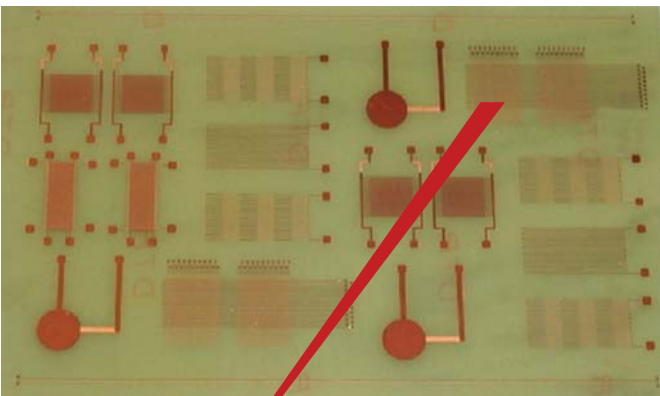
TECHTRA ACHIEVEMENTS:

- April 2008: Techtra is awarded with "Hope of Polish Market" prize, by Polish v-ce premier Waldemar Pawlak.
- April 2007: Techtra is awarded with Silver Medal during International Innovation Salon, Geneva 2007

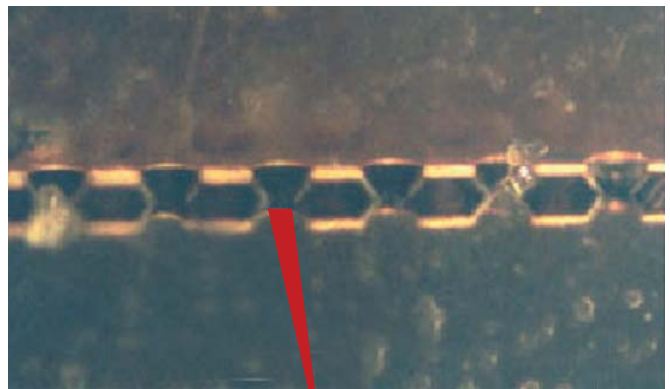
R&D ACTIVITIES

Implementing laboratory scale Micro-Chemical-Vias technology into industrial conditions.
Commercial delivery GEM foils for CERN.
Participating jointly with University of Cambridge, Leibniz Institut in Dresden and Cryogenic Ltd. in HIGINS project, that aims for building 25 Tesla high temperature superconducting magnet.

PCB prototypes



Microscopic view of GEM cross-section



COMPANY FULL NAME	Teka Konstrukcje Aluminiowe Wiesław Gutowski	
COMPANY SHORT NAME	Teka Aluminium Constructions	
BRANCH	Building contractor, aluminium constructions	
ADDRESS	Stara Droga 8 63-500 Ostrzeszów, Poland	Składowa 1 63-500 Ostrzeszów, Poland
TELEPHONE FAX	+48 62 586 13 43 +48 62 586 03 89	
E-MAIL	teka@tekasystem.pl tekasystem@tlen.pl	
WEB SITE	www.tekasystem.pl	

teka®



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Wiesław Gutowski, Agnieszka Zdrzałka-Brdęk
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WE MAKE ALUMINIUM, STAINLESS STEEL AND GLASS PRODUCTS.

The products we offer include comprehensive building fixtures, for instance:

- aluminium doors, glass doors,
- skeleton, structural, semi-structural, point-fitted (spider glass) aluminium facades,
- classic aluminium winter gardens and arched gardens made of wood and aluminium,
- aluminium partition walls, full-pane (muntinless) partition walls,
- aluminium structures for terraces and balconies,
- aluminium and steel skylights,
- aluminium and stainless steel canopies.

We successfully equip large industrial and commercial structures. Our role is not limited to manufacture and sale, because we carry out comprehensive maintenance of metal elements of windows and facades.

Our offer includes:

- delivery and assembly of the product,
- long-term service,
- guarantee on the entire product range.

We produce and assemble aluminium structures for example for: Hochtief Polska, Budimex Dromex, Kajima Europe, Budus Katowice, Poor Polska, Arkop Wrocław, MC Kontrakty Budowlane Łódź and many others.

LIST OF MAJOR PROJECTS.

- Company Kajima Europe Sp. z o.o. (Building Office GM Opel)
- Company Metro- Macro Cash&Carry
- Company Hochtief (Lubin Gallery Commerce Indomo)
- Company Hochtief Poland (Manufacturing Nardi Olawa)
- Company Budus SA (Hypermarket Praktiker in Rybnik)
- Company Budus SA (Exhibition Salon AGATA in Szczecin)
- Company Budus SA (Szczecin Gallery Commerce Carrefour)
- Company Cilasen (Manufacturing Cilasen in Zwonowice)
- Company MCKB sp. z o.o. (Manufacturing Centrostal in Lodz)
- Company B&B Bauwbedrijf v.o.f (Apartment building in Assen, Holland)
- Company MEBLAR Poland (Manufacturing in Baranów)
- Company Arkop sj (Stations of fuels Shell in: Szczecin, Żdżary Gdańsk, Konik Stary)
- Meditrans site: Warsaw, 19 Woronicza Street (Apartment Building in Warsaw next to the TV station)
- Company Arkop sj (Apartment Building in Wrocław)
- Company Budus SA (Exhibition Salon in Sosnowiec)
- Company Ampol (Exhibition Salon TIR in Wrocław)



COMPANY FULL NAME	Vratis Ltd.
COMPANY SHORT NAME	Vratis Ltd.
BRANCH	Image processing solutions
ADDRESS	Klecinska 125, 54-413 Wrocław, Poland
TELEPHONE FAX	+48 796 997 288 +48 71 798 58 17
E-MAIL	info@vratis.com
WEB SITE	www.vratis.com



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS

COMPANY PROFILE

Vratis Ltd. is a spin-off company founded in 2006 that specializes in project-based numerical algorithm development in life sciences and engineering. Our broad numerical experience derives from applications in computational fluid dynamics, machine vision, quality control and pattern recognition. We provide high-end products and services for customers interested in applications designed for a specific scientific problem. Our solutions are based on state-of-the-art know-how and expertise in reconfigurable computing, bioinformatics, medicine and IT. Headquarters in Wrocław, tight collaboration with Wrocław University of Technology and University of Zurich, highly educated staff of hardware and software developers with research background make us a reliable partner. Many of our results were published in highly ranked journals and books (including Nature Methods, Int J Gynec Cancer, Histopathology, Springer).

OUR ACHIEVEMENTS

- March 2008 - Vratis, ETH Zurich and ITIS Foundation launch SpeedIT project aimed at hardware acceleration of Computational Fluid Dynamics.
- January 2009 - Vratis is awarded with grants from Polish Ministry of Science (1st place in Poland) and Polish Agency for Enterprise Development. April 2009 - Vratis partners Visimatik Inc., Canada to develop web-based image processing

CONTRIBUTION TO ITER

Computational acceleration applied to Controlled Nuclear Fusion.

Vratis aim is to develop a family of solvers most beneficial for fusion data analysis. Our research has led us to the conclusion that moderate acceleration can be provided using specialized software libraries and the parallel processors present in most modern graphic cards (GPUs) and FPGAs (Frame Programmable Gate Arrays), making the hardware solution cheap and easily replicable yet requiring task-specific numerical libraries. There are **3 scenarios for our contribution** with gradually increasing specialization and acceleration gain. Those scenarios can be applied simultaneously as a few problems could be already well identified and easily parallelizable:

A) Creating GPU-specific software library.

Jitter issues become evident when migrating offline code into realtime domain. This calls for using custom libraries based on GPU technology as **no hardware re-design** is involved in the process, **rapid software**

prototyping is the requirement and lower acceleration ratio (about an order of magnitude) is acceptable. Relatively inexpensive, widely available hardware (a modern graphic card) is a bonus in this scenario.

B) 'Industry-specific' library of numerical methods using a custom FPGA accelerator board.

Plasma diagnostic control algorithms often concentrate on solving approximation problems. The equations arising from associated formulas are often numerically unstable and require floating-point precision. This demands specific solvers for ill-determined, dense matrices and is **feasible using FPGA technology**. Such problems are relatively common in science and thus the **development time is reduced** due to their well-defined algorithmic nature. In the process, we can extend our portfolio of solutions and merge the experiences from Computational Fluid Dynamics creating **coherent acceleration library using our custom FPGA accelerator cards without neither high-bandwidth networks nor active cooling.**

Equation-specific solver library using a custom FPGA accelerator board.

The most ambitious problems can be solved by defining the whole discretization of the equations inside a network of collaborating FPGAs. This scenario leads to creation of very unique hardware and is very labor intensive to introduce, however this is the only method that offers 'unlimited' parallelization, scaling computational power with the number of transistors in an FPGA which still obey Moore's Law. When pushed to the limit, this technology could also be used in grid computing centers (one internally massively-parallel accelerator card per grid node), allowing unprecedented acceleration without astronomical power consumption or network congestion.

SUMMARY

Whatever contribution scenario is chosen it is evident for us that the real usefulness of the hardware solutions depends, more than ever before, on the understanding of specific numerical issues by the hardware engineers. It is also evident that all of the hardware acceleration platforms are facing memory bottleneck problem which can only be mitigated at algorithm design phase.

Our chances to spot computational acceleration opportunities are increased by the similarity of CFD and MHD solutions and pitfalls, the experience of our team of PhD researchers and professionals in CFD and plasma diagnostics.



COMPANY FULL NAME	Mining Electronics Factory "ZEG" Inc.
COMPANY SHORT NAME	ZEG Inc.
BRANCH	Production of electronic and electrical power engineering devices.
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E-MAIL	zegtychy@zeg.pl
WEB SITE	www.zeg.pl



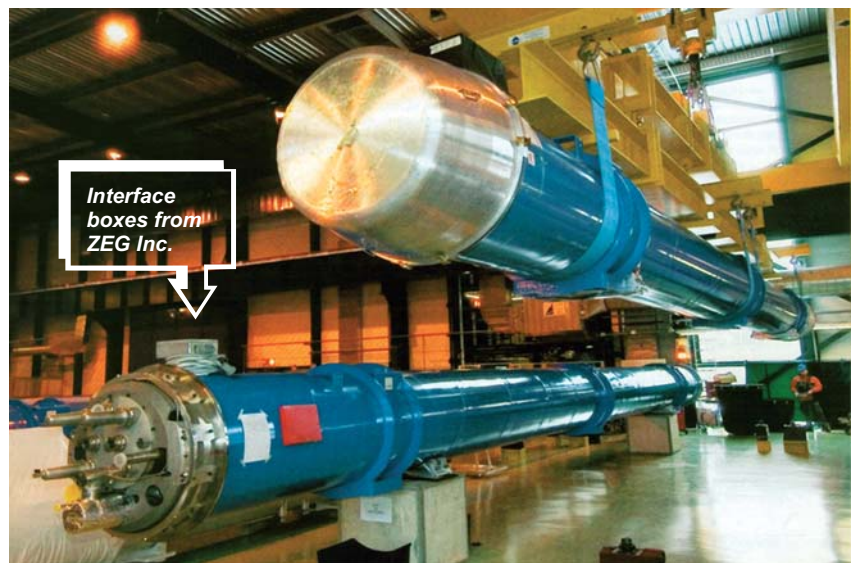
NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS **Tomasz Mendrella, tel. +48/32/7869910, e-mail: tjm@zeg.pl**

THE COMPANY'S BUSINESS AREA INCLUDES:

Design and the production of devices and equipment in electronics, of electroenergetics, electrotechnologies allocated for the coal mine according to requirements, directives of ATEX, LDV, EMC.
 The production includes producing printed circuits, the assembly of arrangements of electronics, the production and the assembly of electrotechnical devices, producing the structure of metal (e.g. casings), starting, testing and the examination, final acceptances.
 Design, development and manufacture of electronics and automation equipment, especially within the range of power protective for medium voltage distribution networks, for generators and generator-transformer blocks, for 110kV distribution lines.

CONTRACTS AND IMPLEMENTATIONS:

Participation in the CERN project in Geneva, Switzerland, we delivered specialized heavy current and electronics appliances for the projects IT-2907 and IT-3242 in CERN.
 Building development of cogeneration units with methane acquired from the basement of the coal mine. The production and the installation of the security system and control system for the RIOTurbio coal mine in Argentina. In co-operation with the KOPEX Company Inc. we built a control, automation and power supply system at the COROESTI processing plant in Romania, we modernized also one of plants in the "Kolubara" Coal Basin in Serbia. The CZAZ-type set is intended for protecting high-power generator-transformer for blocks 460 MW in PKE power plant in Będzin and four blocks generator-transformer 360 MW w PGE Power plant in Bełchatów.



COMPANY FULL NAME	Zakład Produkcji Automatyki Sieciowej S.A.
COMPANY SHORT NAME	ZPAS S.A.
BRANCH	Measurement systems Measurement systems design
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WEB SITE	www.zpasgroup.eu



NAME OF PERSON TO CONTACT IN SUBJECT OF ITER ORDERS	Joanna Kulpińska
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The ZPAS Group, pursuing shared goals and business philosophy, integrates the product offer of ZPAS S.A. and ZPAS-NET sp. z o.o. The idea is reflected in our motto „solutions for connections”, which refers to advantages of our products. We have sales representatives in more than 30 countries nearly all over the world. Our main customers are: PKN Orlen S.A., Polsat, Siemens, TVP, BZ WBK, PKO, NASK, Alcatel-Lucent, ABB, CERN, MOLEX. At the beginning of 2009 was finalizing new contract with KDM. It was worth more than 2 million EUR. According with ZPAS new philosophy - giving complex solution for the customer the project included installation of dispatching centres in Operator Sieci Przemysłowych Bielawa (Konstancin-Jeziorna) headquarters. It was commissioned by Polskie Sieci Energetyczne. For this project we used the most modern technical and architectural solutions.

ZPAS S.A. OFFERS:

- 19" and 21" data communication enclosures (including server cabinets, telecommunication cabinets, EMC enclosures and others both in floor-standing and wall-mounted versions),
- empty power cabinets (without electrical devices),
- customized cabinets,
- products made of stainless acid-resistant steel,
- universal control desks.

ZPAS-NET OFFERS:

- structural cabling elements,
- fiber optic distribution frames,
- telecommunications accessories,
- ZPAS Control Oversee - system of supervising climatic conditions in server rooms, data communication and power cabinets, and elements of building and industrial automation,
- devices' and systems' integration in Data-Center
- aluminium outdoor cabinets,
- dispatch and control desks,
- mimic boards.

For more information please visit www.zpasgroup.eu

