



**FACULTY**  
**OF POWER and**  
**AERONAUTICAL**  
**ENGINEERING (FPAE)**  
**Education**

**D.SC. Ph.D Artur Rusowicz, prof. WUT**

# **EDUCATION - flexible three level studies (according to the Bologna Declaration)**

## ■ **FULL TIME STUDIES:**

- ⇒ Undergraduate (3.5 years = 7 semesters) – B.Sc.
- ⇒ Graduate (1.5 years = 3 semesters) – M.Sc.
- ⇒ Ph.D. studies (4 years)



# EDUCATION - number of students

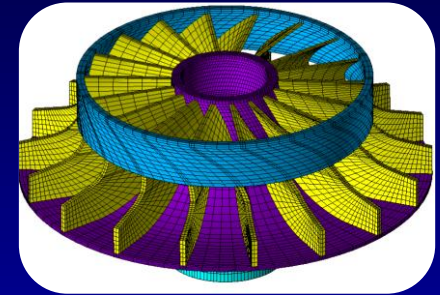
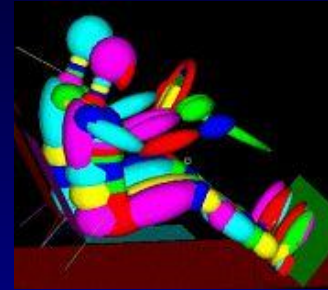
Students	Full-time	B.Sc.	1400	$\Sigma$ 2050	$\Sigma$ 2400
		M.Sc.	650		
	Part-time	B.Sc.	200	$\Sigma$ 350	
		M.Sc	150		
Ph.D. students	Full-time			90	$\Sigma$ 105
	Part-time			15	
Participants of postgraduate study					200



# EDUCATION - fields & specializations

## ■ MECHANICS AND MACHINE DESIGN

- Modeling and Computer Simulations in Mechanics
- Computer Aided Engineering



## ■ AUTOMATIC CONTROL AND ROBOTICS

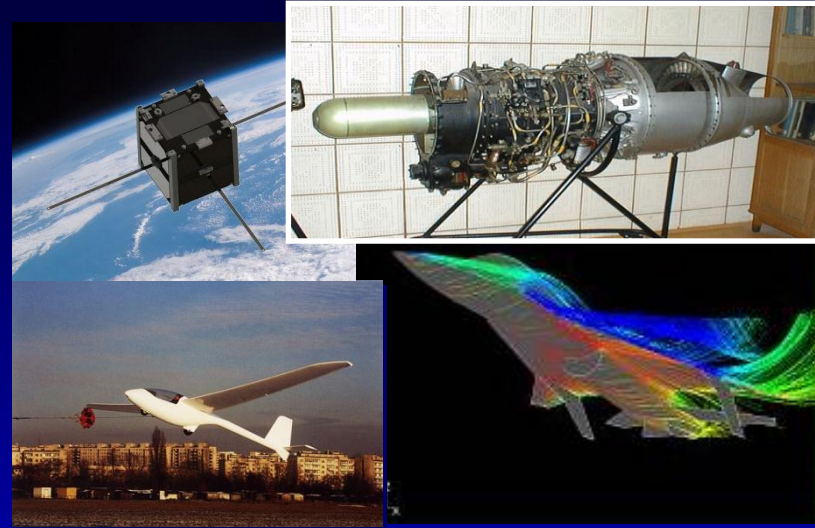
- Robotics
- Biomechanics  
and Biorobotics



# EDUCATION - fields & specializations

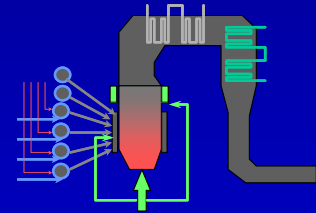
## ■ AERONAUTICAL & AEROSPACE ENGINEERING

- Airplanes and Helicopters
- Avionics and Aircraft
- Aircraft Engines Systems
- Aerospace Engineering (M.Sc)



## ■ POWER ENGINEERING

- Sustainable Energy
- Power Systems and Devices
- Refrigeration and Air Conditioning
- Nuclear Power Engineering – only M.Sc. studies



# EDUCATION – Courses in English

FPAE the only educational institution in Polish Academia offering full English courses in *Aeronautical & Aerospace Engineering, Power Engineering and Robotics.*

## 1. AERONAUTICAL & AEROSPACE ENGINEERING full BSc., MSc. and PhD. courses

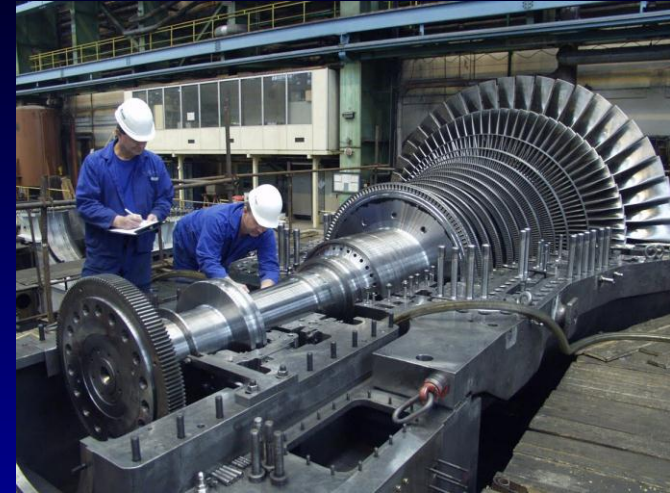


In 2013 WUT (FPAE) became a member of the prestigious Partnership of European Group of Aeronautics and Space Universities (PEGASUS)



# EDUCATION – Courses in English

## 2. POWER ENGINEERING – full BSc., MSc. and PhD. courses

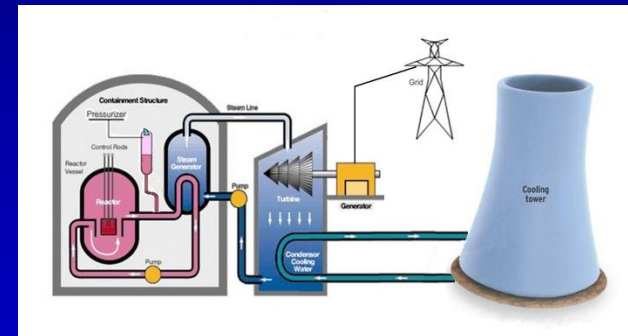


## 3. NUCLEAR POWER ENGINEERING full MSc. and PhD. courses

FPAE's long tradition – over 300 MSc. graduates. Collaboration with OSU USA, KTH Stockholm, AREVA, GE- Hitachi, Westinghouse and others.

FPAE coordinates a new EU project - PhD. Studies on „*Innovative Nuclear and Sustainable Power Engineering*”

(Partners: OSU USA; Hanbat TU Korea, Faculty of Physics WUT, National Center for Nuclear Research, Gdansk UT)



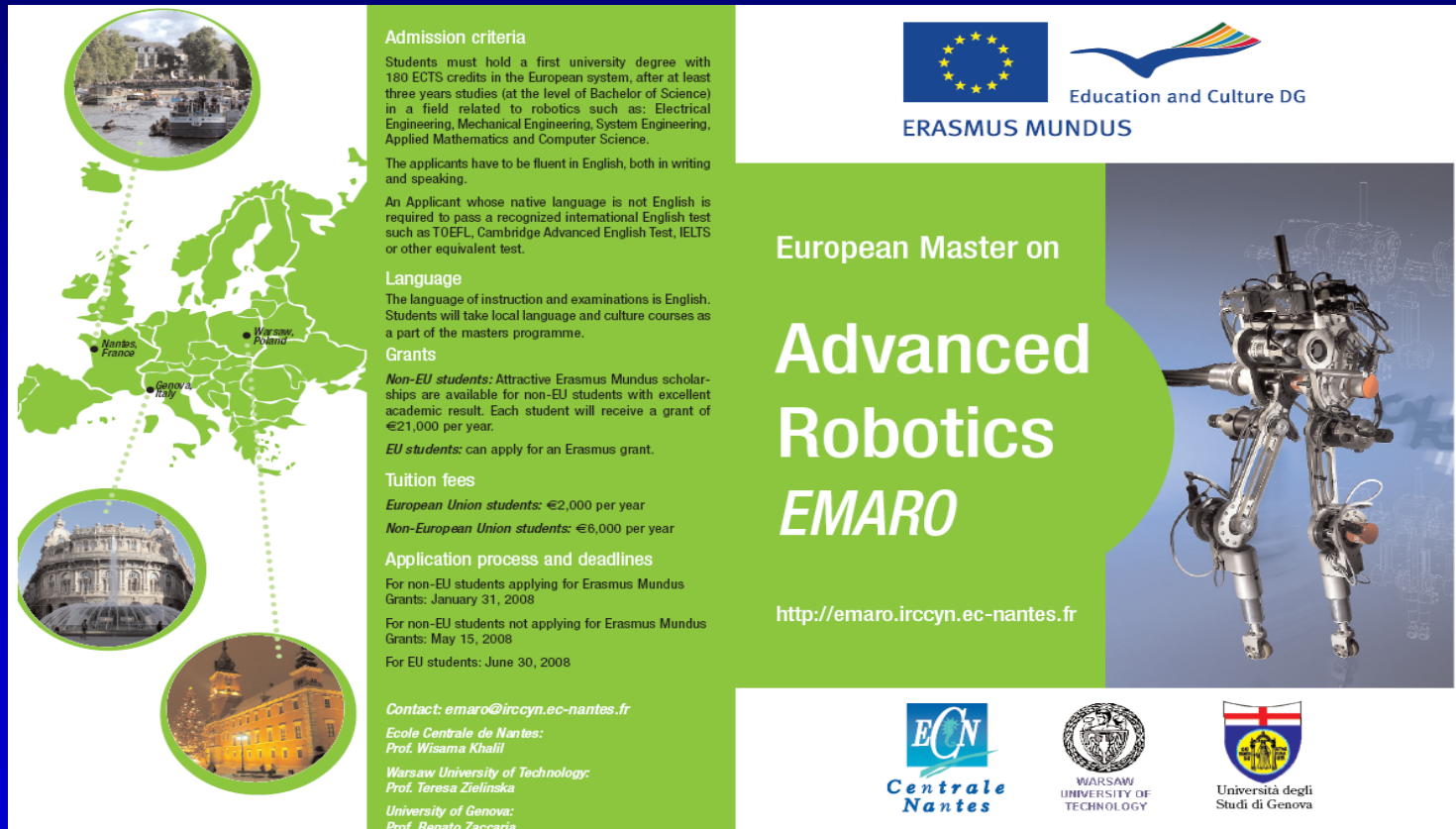


# EDUCATION: Courses in English

## 4. ROBOTICS & European Master on Robotics

full MSc. and PhD. courses

FPAE runs **ERASMUS MUNDUS** – European Master on Advanced Robotics (with ECN Nantes, Univ Genova Italy, Keio Univ Japan, Jao Tong Univ. Shangai, Asian Inst. Technology, Thailand)



**Admission criteria**  
Students must hold a first university degree with 180 ECTS credits in the European system, after at least three years studies (at the level of Bachelor of Science) in a field related to robotics such as: Electrical Engineering, Mechanical Engineering, System Engineering, Applied Mathematics and Computer Science.

The applicants have to be fluent in English, both in writing and speaking.

An Applicant whose native language is not English is required to pass a recognized international English test such as TOEFL, Cambridge Advanced English Test, IELTS or other equivalent test.



**Language**  
The language of instruction and examinations is English. Students will take local language and culture courses as a part of the masters programme.

**Grants**  
*Non-EU students:* Attractive Erasmus Mundus scholarships are available for non-EU students with excellent academic result. Each student will receive a grant of €21,000 per year.  
*EU students:* can apply for an Erasmus grant.

**Tuition fees**  
*European Union students:* €2,000 per year  
*Non-European Union students:* €6,000 per year




**Application process and deadlines**  
For non-EU students applying for Erasmus Mundus Grants: January 31, 2008  
For non-EU students not applying for Erasmus Mundus Grants: May 15, 2008  
For EU students: June 30, 2008

**Contact:** [emaro@ircsyn.ec-nantes.fr](mailto:emaro@ircsyn.ec-nantes.fr)  
*Ecole Centrale de Nantes:*  
Prof. Wisama Khalil  
*Warsaw University of Technology:*  
Prof. Teresa Zielinska  
*University of Genova:*  
Prof. Renato Zaccaria

  
ERASMUS MUNDUS  
  
Education and Culture DG

European Master on  
**Advanced Robotics**  
**EMARO**

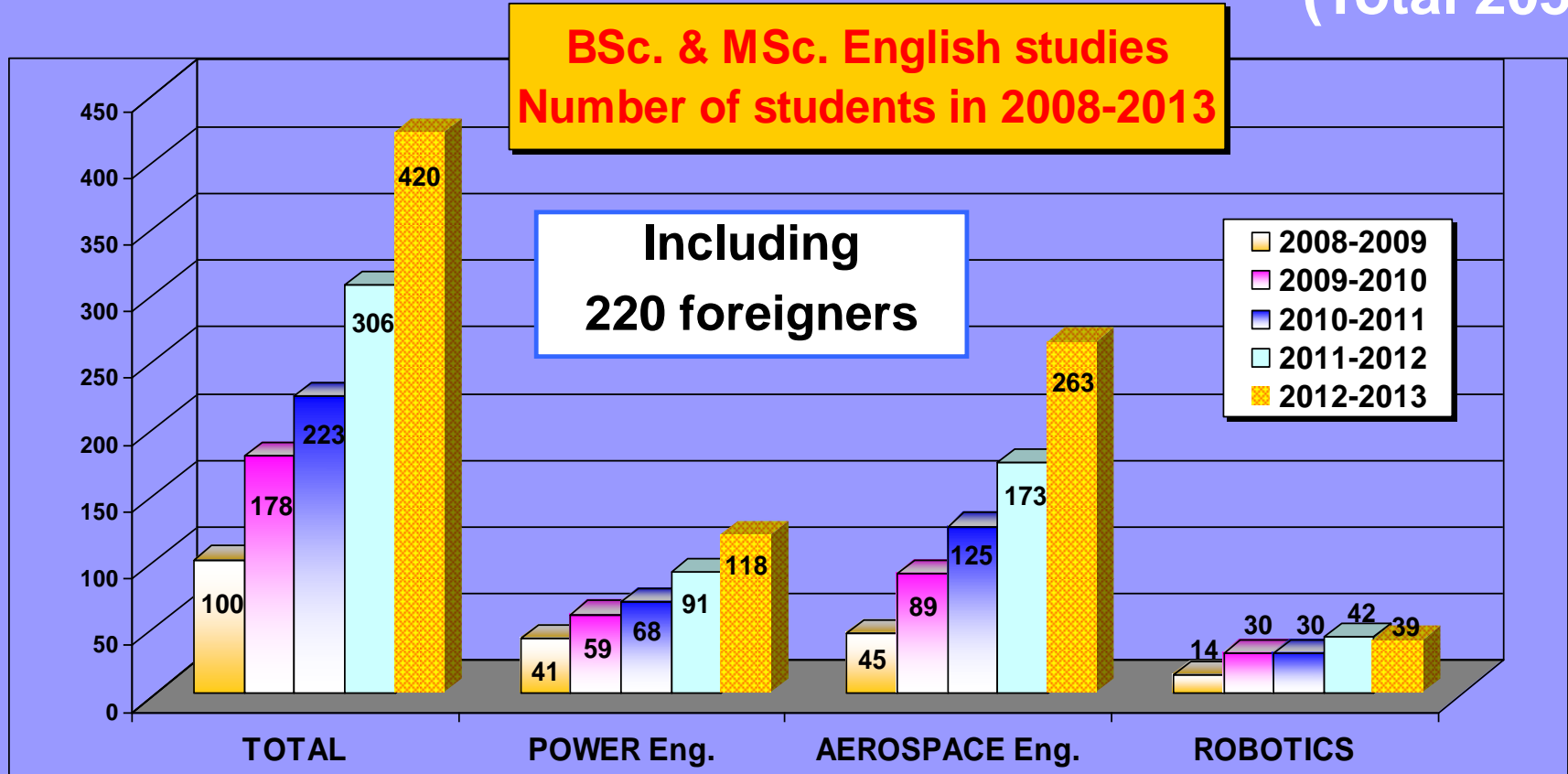
<http://emaro.ircsyn.ec-nantes.fr>

  
Centrale Nantes  
  
WARSAW UNIVERSITY OF TECHNOLOGY  
  
Università degli Studi di Genova

# EDUCATION: Courses in English

Increasing interest in English studies at FPAE (WUT)

(Total 2050)



From: Angola, Armenia, Belarus, Bolivia, Camerun, Canada, China, Columbia, Egipt, France, Germany, Grece, Hungary, India, Iran, Iraq, Italy, Jamaica, Kazakhstan, Kenya, Latvia, Libya, Lithuania, Mexico, Morocco, Nepal, Nigeria, Oman, Pakistan, Russia, Saudi Arabia, Sudan, Turkey, Ukraine, USA and others.

# ***International Students' Mobility***

- ***SOCRATES / ERASMUS – European Students' Mobility Programs – FPAE one of the most active faculties of WUT:***
  - **over 70 bilateral agreements with European Universities**
  - **one- or two-semester visits (compatible curricula)**
  - **50-60 Polish students sent every year abroad**
  - **40-50 foreign students annually hosted at the Faculty**



Spain, Belgium, Italy, Germany, UK & NI, Ireland, France, Sweden, Turkey, Czech Republic, Portugal, Romania, Spain, ...

**FPAE is the University leader in coordination of prestigious international education programs (*Erasmus Mundus*) approved and supported by EU**

# EU Educational Programs in the frame of Erasmus Mundus coordinated by FPAE



EWENT 

East-West European Network on higher Technical education

European Commission  
ERASMUS  
MUNDUS



eAstana 

Warsaw University of Technology

euroAsian Starter for Technical Academic Network Application

European Commission  
ERASMUS  
MUNDUS



PANTHER 

Warsaw University of Technology

Pacific Atlantic Network for Technical Higher Education and Research

European Commission  
ERASMUS  
MUNDUS



ACTIVE 

Warsaw University of Technology

Atlantic Caucasus Technical universities Initiative for Valuable Education

European Commission  
ERASMUS  
MUNDUS



HERITAGE

Erasmus Mundus Partnership India-Europe

# EDUCATION – Lab Facilities



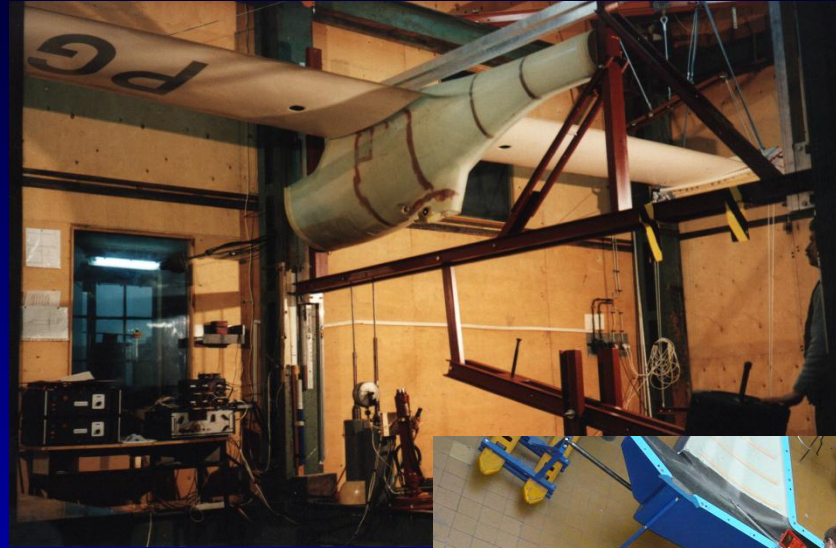
Low and High Speed Aerodynamic Laboratory

# EDUCATION - Lab Facilities



Laboratory of  
Aeronautical Systems  
and Simulators

# EDUCATION - Lab Facilities



Laboratory of Airframes

# EDUCATION – FPAE Gliding School

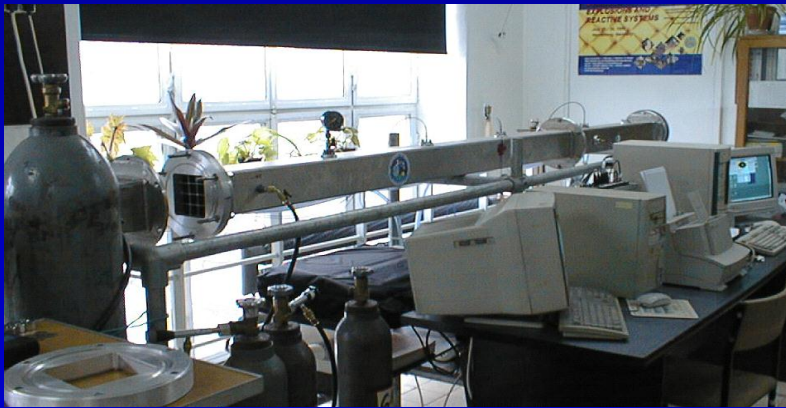


## EDUCATION BY PROJECTS: Ultra-Light Sailplane Educational Project



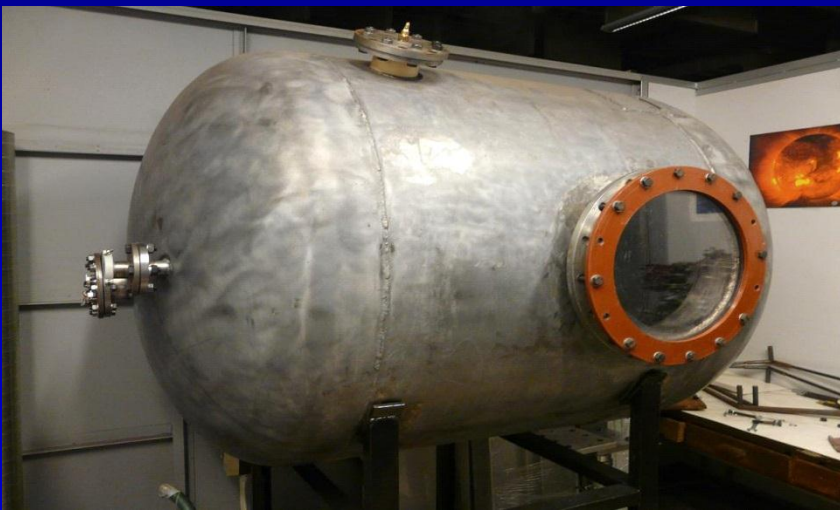
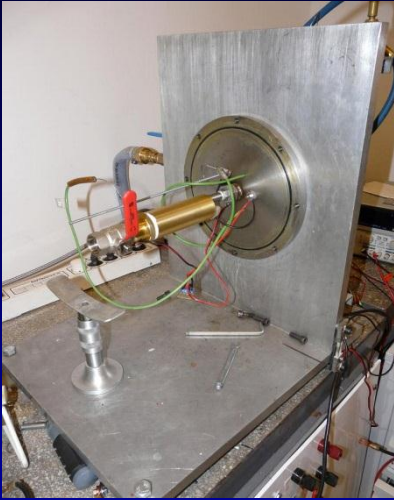


# EDUCATION - Lab Facilities



Laboratory of Aeronautical Propulsion Systems

# EDUCATION - Lab Facilities



Laboratory of Space Systems

# EDUCATION - Lab Facilities



**Polish Japanese Energy Conservation Center (the only in Europe)**



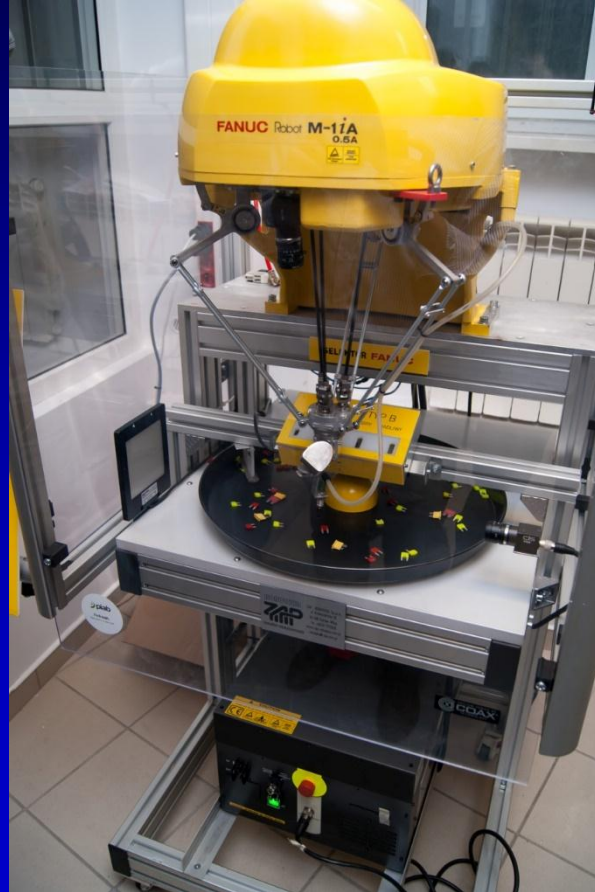
**Laboratory of Pumps, Drives and Power Machines**

# EDUCATION - Lab Facilities

**KUKA LWR  
Light Weight Robot**



**FANUC - M1 iA  
Parallel-link super  
lightweight robot**



**Industrial Robots**



**KUKA  
AGILUS**

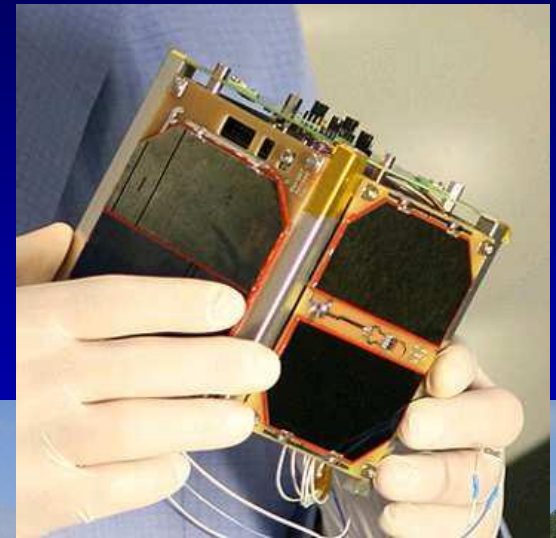
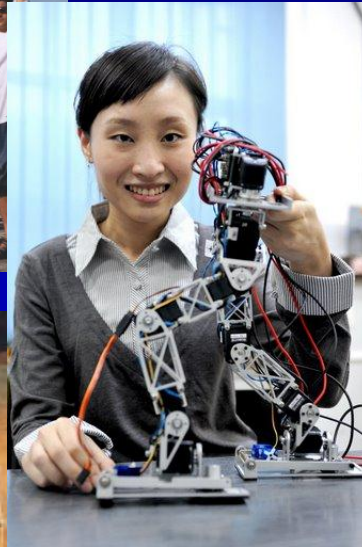


**FANUC  
M10iA  
6DOF**

**New Robotics Laboratory**

# Students' Research Clubs

**14 Clubs** - students involved in research in aviation, gliding, computer aided design, space engineering, robotics, renewable energy, power and automobile engineering, ...



# Selected Students' Achievements

- ❖ **Multiple winners** of International Aero-Design Competition for flying models, SAE, USA

Over seventy teams  
from all over the world



Aero Design, USA, 2013



**2013 !!!!!**  
Winners in all  
classes: *Micro,*  
*Regular &*  
*Advanced.*

# Selected Students' Achievements

- ❖ Students' Club of Vehicles Aerodynamics - **the winner** of International Competition of Shell Eco-Marathon 2013



PAKS MODEL - the FIRST place in the Class of Urban Concept Gasoline



# Selected Students' Achievements

- ❖ **PW-Sat – the first Polish Satellite** and technology demonstrator of the new concept of deorbiting system



**Project of the  
Astronautics  
Students Club**



**Launched on board of the Vega  
Maiden Flight in February 2012**

