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Development of Embedded System Courses with implementation of  
Innovative Virtual approaches for integration of Research,  
Education and Production in UA, GE, AM



# Presentation of the Donbass State Engineering Academy (DSEA) Kramatorsk, Ukraine

28-30 January 2014

Oleksandr Tarasov



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Donbass State Engineering Academy is a higher educational establishment of the IV<sup>th</sup> accreditation level training bachelors, specialists and masters of science full-time and part-time, including specialists' retraining. DSEA runs postgraduate and doctorate courses. The Academy also includes the Machine-Building College of DSEA (Kramatorsk) and the Druzhkivka Technical School of DSEA.



## Key facts and figures:

- Founded in 1952
- 5 Faculties, 31 Departments
- 7700 students
- 65 PhD students
- 368 academic staff
- 412 employers

More than 75% of specialists with higher education employed in machine building industry of Donbass region are DSEA graduates

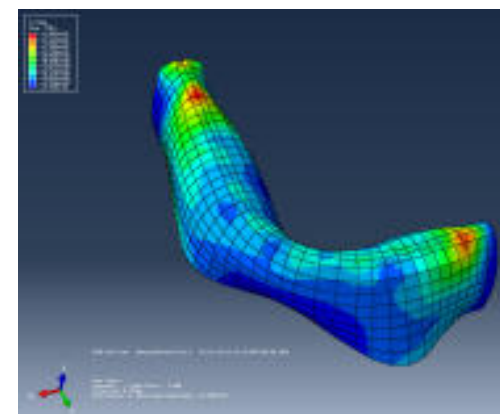
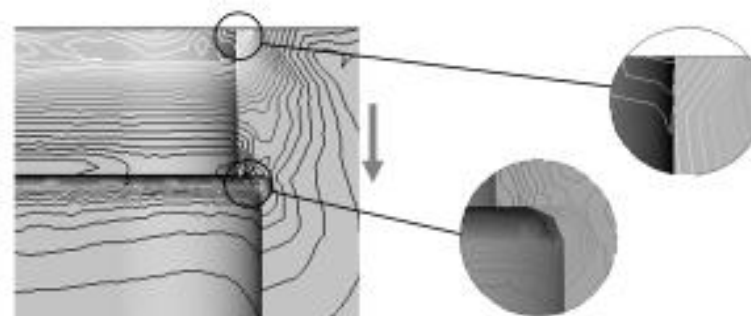
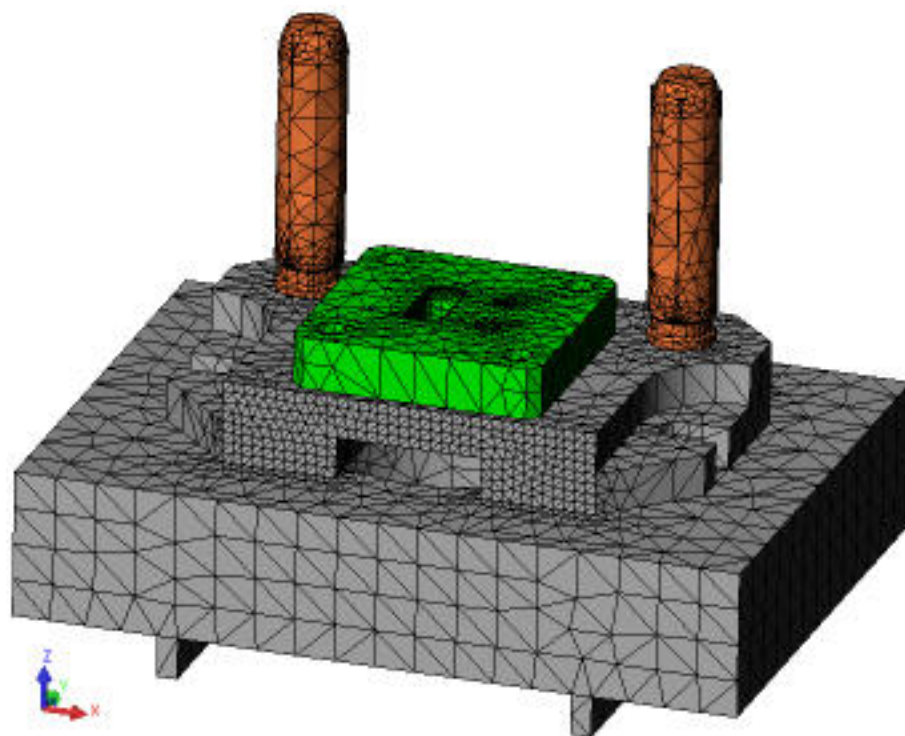


## Key research areas:

- CAD/CAM/CAE-systems research and software integration (SOLID WORKS, Compas, Delcam PowerSolution, ABAQUS, Q-Form)
- Creating embedded systems based on automation equipment of foreign and domestic firms
- Development processes and machines for plastic deformation, impact and pressure forming, rolling mill
- Cast iron manufacture
- Technology of metalworking, heat treatment and welding
- Creating different equipment (for vibration stress relief, crash testing with shock acceleration and others)



# Design and calculations of engineering structures based on Finite Element Method

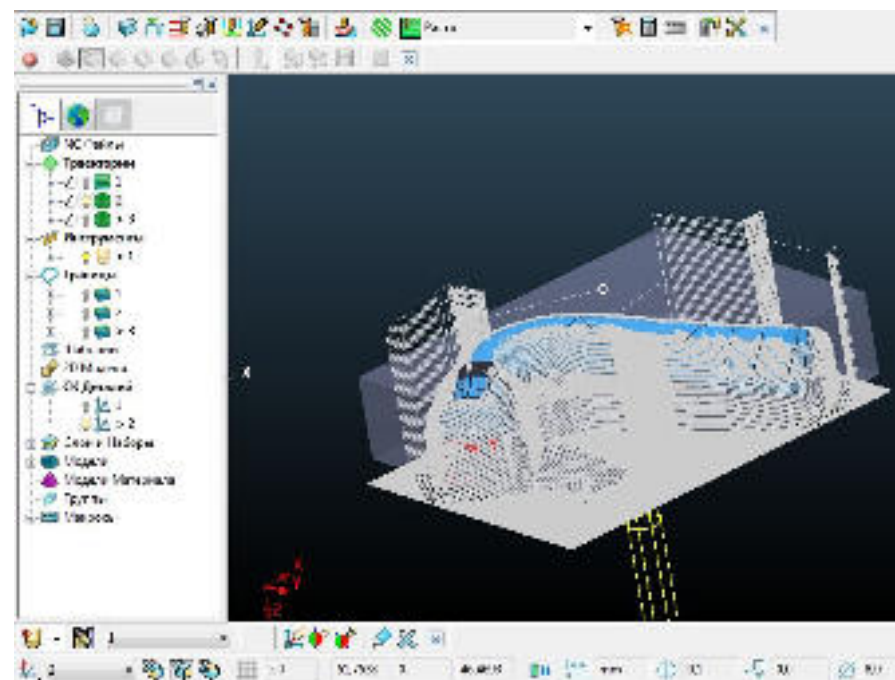
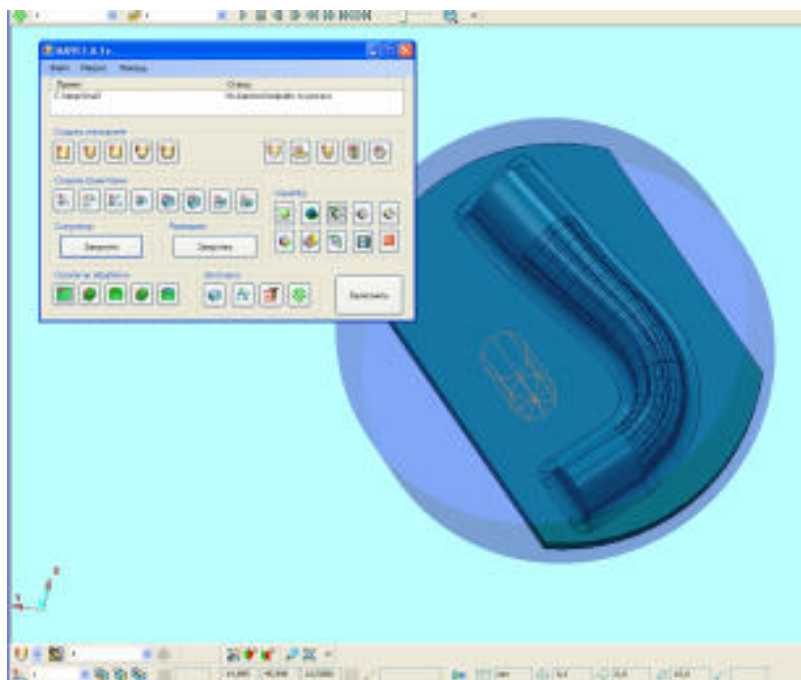




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## Developing software for CNC model creation







# Programming microcontroller stands



**AVR**<sup>®</sup> STK500



C2000 32-bit Real-time Control MCUs



MSP430 Ultra-Low Power 16-bit MCUs

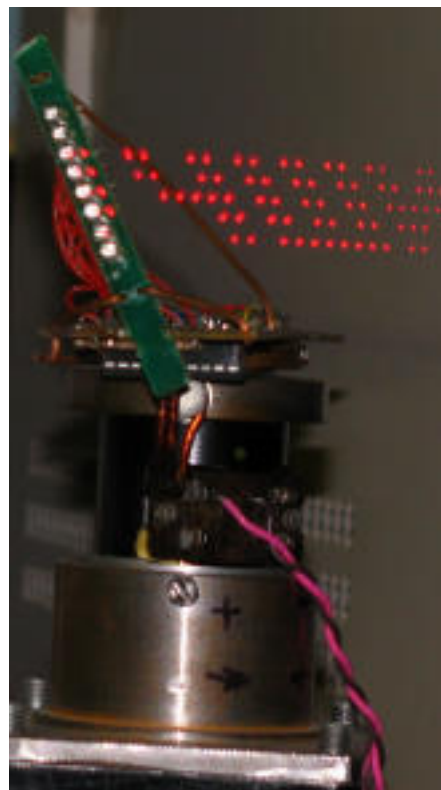




# Programming different devices



Joystick, IR, barcode scanner,  
bank card reader,  
touch-sensitive keyboard



High Voltage Motor Control and  
PFC Developer's Kit





# Programming embedded systems automation



LOGO!: The leading logic  
module for micro  
automation



EATON MOELLER  
EASY512-DC-RC  
Programmable Logic  
Controller



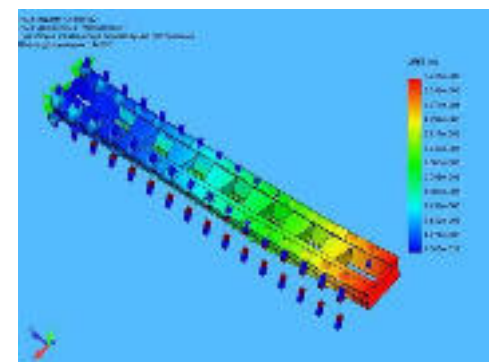
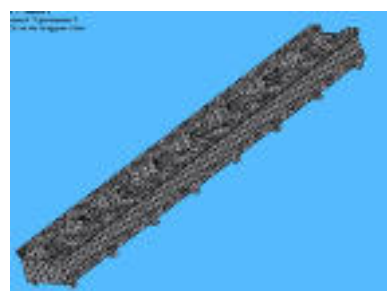
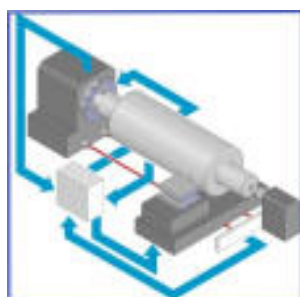
DC Converters  
SIMOREG DC-MASTER



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## Development of integrated control in heavy engineering complex technological system

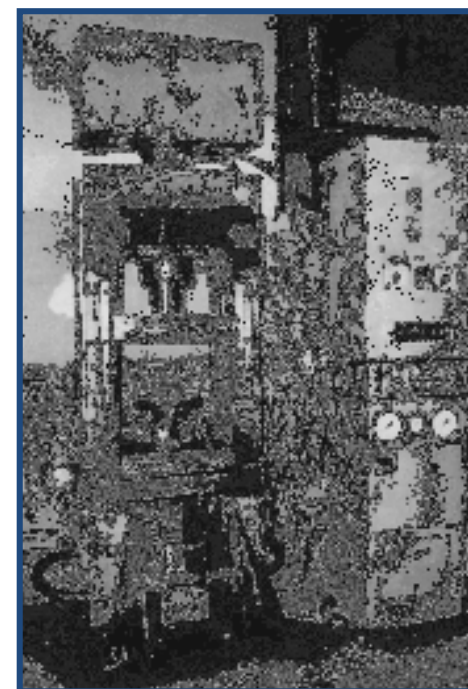
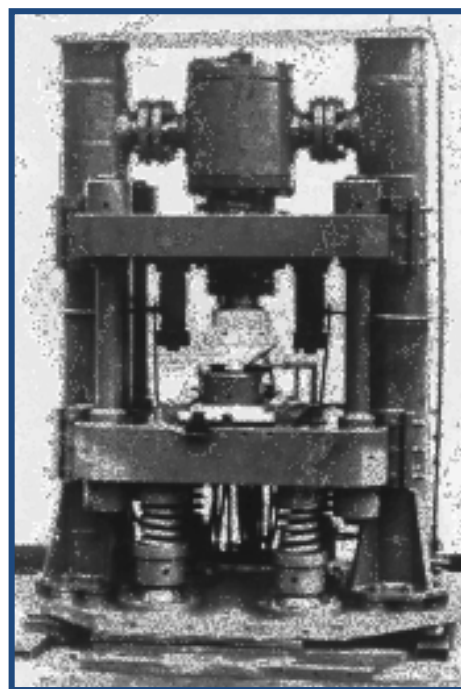




## Study and development new types of equipment



Reconstruction of industrial rolling mill 100/260x200



New types of impact press-hammer



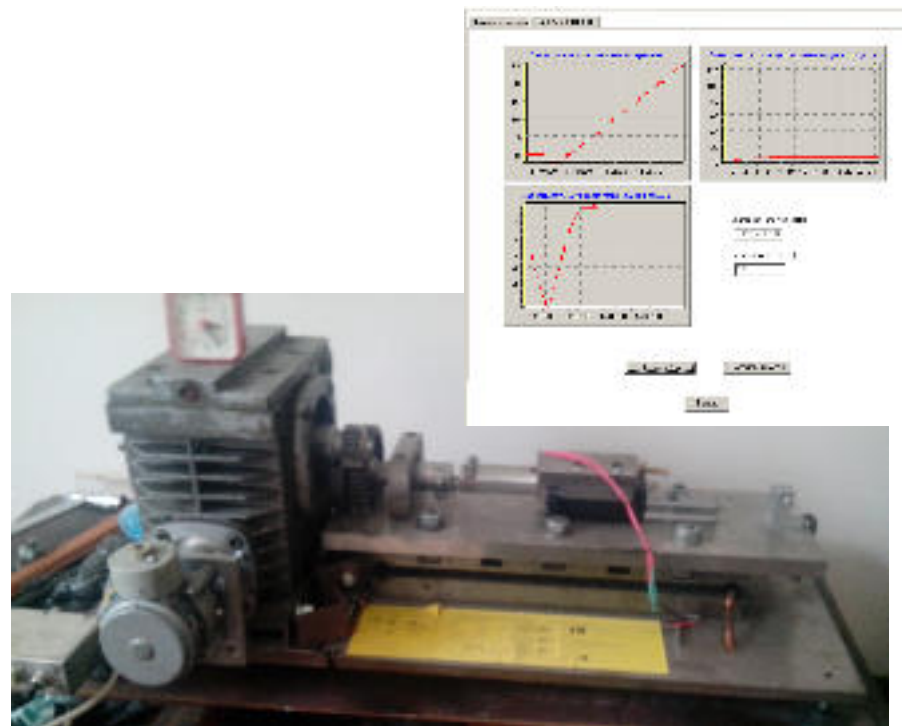
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## Cooperation with the National Science Academy of Ukraine



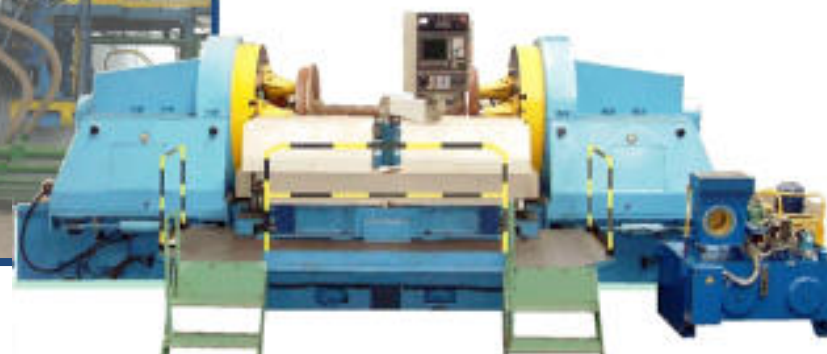
Testing branch automation







## Cooperation with the leading Ukrainian manufacturing enterprises



Practical training at the leading enterprises and writing graduation theses on trending subject matters provides quick adaptation of our graduates to extremely variable environment of modern production





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## Enterprises and companies



**BALLUFF**  
sensors worldwide



**SIEMENS**

ЦЕНТР **САПР**

**softline**<sup>®</sup>

 **TEXAS INSTRUMENTS**





## International cooperation:

- Technology University of Dresden
- AGH University of Science and Technology
- Czestochowa Technological University
- Baltian Technology University
- Moscow State Technical University n.a. N.E. Baumen
- Don State Technical University
- DFG and DAAD



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## International conferences with educational partners



**ITConnect 2013**  
Особиста конференція ІТ-розробників





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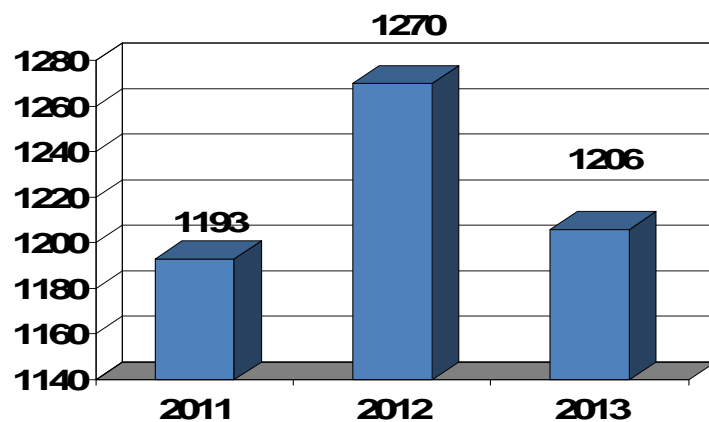
## Participation in the Delcam's program for Ukraine and Russia universities



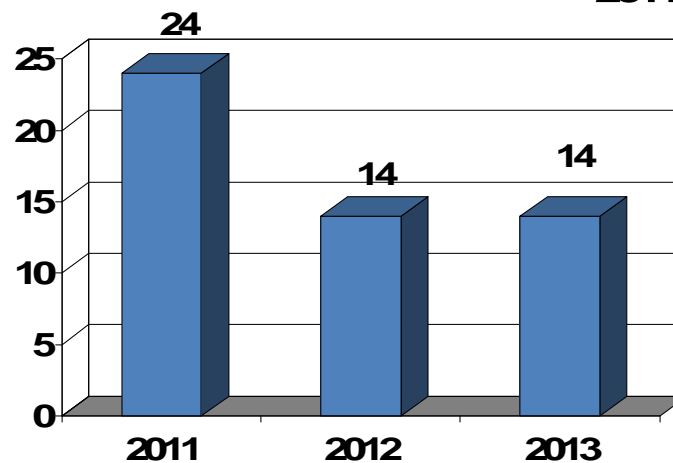
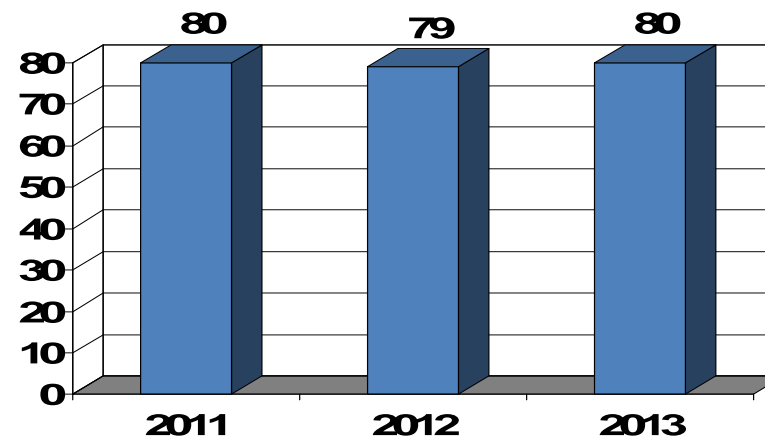
Awarding students  
in Embassy of the  
United Kingdom,  
Kiev



## NUMBER OF PUBLICATIONS



## NUMBER OF PATENTS



## DISSERTATION DEFENCE





## Local Project Team:

- Oleksandr Tarasov
- Oleksandr Nalivajko
- Paul Sagayda
- Konstantin Polschikov
- Oleksandr Denshchykov
- Zinaida Sedykh





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# Contact information

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