Self-evaluation Report
about completing a short-term research visit to Delcam plc
by Nadezhda Kucherenko
Polytechnic Institute

1. hosting country
United Kingdom of Great Britain, England
2. city/town
Birmingham
3. **Dates of staying** from 02.06.2013 till 28.07.2013
4. *Visit details*:

- ***Official name of the hosting University/institution***

Delcam plc

- ***Name of Hosting Faculty/Department***

Customer department

- ***Aims of visit***

  - To study advanced automated design technologies of products, their production, inspection and re-engineering;
  - To exchange experience.

- ***Goals of visit***

  - To obtain qualification of a certified user of this program complex, leading in the world market of CAD/CAM/CNC of systems.

5. *Initial plan of visit:*

Date	The summary of the performed works
	1-st week
03.06	Arrival in Delcam PLC. Presentation of the plan of training
04.06	Studing of the interface of PowerMILL Pro and its features. Technology of roughing
05.06	PowerMILL Pro. Studying of technology of finishing processing and work with ViewMill
06.06	PowerMILL Pro. Optimization of tool paths, work with macros, creation of libraries
07.06	PowerMILL Pro. 2D - processing, generation of NC codes
08.06	Excursion programme (Birmingham)
	2-nd week
10.06	Studing of the interface of PowerSHAPE and its features. Create primitives, 2D-modeling
11.06	PowerSHAPE. Working with local coordinate systems
12.06	PowerSHAPE. 3D-modeling, surface modeling
13.06	PowerSHAPE. Working with drawings, design matrices
14.06	PowerSHAPE. Re-engineering, work with layers, analysis and detailing of models
15.06	Excursion program (Oxford)
	3-rd week
17.06	Studing of the interface of FeatureCAM and its features. Technology of creation of geometry
18.06	FeatureCAM. Creating 2.5D-elements and processing
19.06	FeatureCAM. Turning technology
20.06	FeatureCAM. Milling Technology
21.06	FeatureCAM. 3D-modeling
22.06	Excursion program (London)
	4-th week
24.06	Visit the Glyndwr University and the laboratory of the «AirBus»
25.06	Visit the company «CNC Robotics»
26.06	Visit of protection of the master project in Warwick University

27.06	Excursion of the production company «Jaguar»
28.06	Excursion program (Liverpool)
29.06	Excursion program (Coventry)
	5-th week
01.07	Study of functional capabilities PowerMill 5 Axis. 3+2 axial machining. Tool positioning
02.07	PowerMill 5 Axis. 5 axial machining
03.07	PowerMill 5 Axis. 4 axial machining
04.07	Excursion of the enterprise «Renishaw»
05.07	The excursion programme (Bristol)
06.07	Self-study (scientific work)
	6-th week
08.07	Study of interface, functional capabilities PowerInspect MMM. Work on hand-operated CMM and portable CMM type of «hand»
09.07	Study of PowerInspect CMM. Work on CMM. Development of technologies of simple and complex parts control.
10.07	Study of interface, functional capabilities PowerInspect OMV. Cooperation between PowerInspect OMV and PowerMill (Correction of the machining strategy)
11.07	Development of the active control method with application of PowerInspect OMV.
12.07	Development of the active control method with application of PowerInspect OMV.
13.07	The excursion programme (Warwick)
	7-th week
15.07	Study of interface, functional capabilities ArtCAM Pro. Work with vectors
16.07	ArtCAM Pro. Work with reliefs, one's machining and texture
17.07	ArtCAM Pro. 2D machining, scratch
18.07	Study of interface, functional capabilities ArtCAM JewelSMITH. Work with vectors. Technology of modeling and jewel machining
19.07	Study of interface, functional capabilities ArtCAM JewelSMITH. Work with vectors. Technology of modeling and jewel machining
20.07	Self-study (scientific work)
	8-th week
22.07	Excursion of the enterprise «Zytec»
23.07	Excursion of the enterprise «JCB»
24.07	Excursion of the enterprise «Mazak»
25.07	The excursion programme (Wales)
26.07	Self-study (scientific work)
27.07	Self-study (scientific work)

6. Results of visit

New approaches/methods/technologies learnt or acquired during the visit

1. Creating and editing of complex surfaces and re-engineering by using PowerShape;
2. Automated control of the geometry of details on the various types of coordinate measuring machines by using PowerInspect;
3. Jewelry design and technology of its automated production by using ArtCAM;
4. Computer-aided design for turning and milling machines by using FutureCAM;
5. Computer-aided design and manufacturing of medical devices in orthopedics by using DentCAD / DentMill;
6. Studying of the automated environment of technological design for CNC machines by using of PowerMill Pro, PowerMill 5 Axis.

Courses/subjects/modules taken during the visit

1. PowerMill Pro;
2. PowerMill 5 Axis;

3. PowerSHAPE;
4. FeatureCAM;
5. ArtCAM;
6. DentCAD / DentMill;
7. PowerInspect.

Involvement into projects/laboratory tests/field research works during the visit: -

7. Evaluation of the visit efficiency (give a paragraph description about each of the following points)
7.1 evaluation of training suggested at the host institution (if applicable)

The educational process lasted for 8 weeks, was organized in the educational classes of Delcam, with using:
- the full set of licensed software on desktops and laptops;
- methodical materials;
- machines and the measuring equipment.

7.2 teaching staff efficiency (if applicable)

Training was conducted by 5 specialists of the company, who left impression of the highly qualified specialists, who able to inform us about difficult things by using available language, friendly in communication, including in the informal communication. It was pleasant to receive an individual assessment to each of us.

7.3 new knowledge and competences

Efficient use of computer-aided design and control facilities and process engineering

7.4 involvement into multicultural and multinational environment/ awareness about other social systems

The corporate staff and tutors, professionals of universities, manufacturing corporations, police and secret service have came across as benevolent, tactful representatives of the successful country.

7.5 awareness of innovative approaches to solving professional problem

All of approaches to the manufacture design and control of the products, realized by the company, are innovative that proves by the leading position on the word market of manufacture software of CAD/CAM/ CNC systems and three Royal awards of quality and innovation. These products had been studied by us within 8 weeks.

7.6 new contacts/expanding professional network

Over the course of the internship we have had business conference (or contacted?) with employers of Delcam and presentation of the company (Delcam Ukraine, Delcam Ural), universities (University of Birmingham-College of Engineering & Physical Science, The University of Warwick, Glyndwr University, Birmingham City University), manufacturing corporations (the research laboratory of «AirBus»), vice-chancellor and chief executive of Odessa National Polytechnic Institute. All contact details is appended.

8. Percentage of completing the initial plan of visit

Part 1 - Studying of products of Delcam. Studying of five products (PowerMill, FeatureCAM, ArtCAM, PowerShape, PowerInspect) was planned. Seven software products were actually studied. One of software products was offered for choice.
Part 2 – Scientific work. Period of execution was actually reduced to one week. Development of the active control method with application of PowerInspect OMV.

9. How much the visit contributed to your future professional/research activities?

All visit schedule was focused on future professional and scientific activity.

10. List of documents confirming your successful completion of the research visit (should be attached)

Upon completion of each training course the corresponding certificates of the user (copies of certificates are attached) were received

11. Overall evaluation of the visit (max 5)

1. Assessment of the received qualification of the software in the field of CAD/CAM technologies – 4 (it's the average mark of the received qualification, but the material was delivered to the full extent);
2. Assessment of the programs of acquaintance to the enterprises of machine-tool construction, aircraft industry, robotics, measuring systems, auto structures, engine-building and universities - 5;
3. Assessment of scientific work- 4.

12. What changes would you have made if you were preparing for the next visit of a similar kind?

I would like to do a real projects with English masters students to improving professional and language skills.

Date of report

Signature