

Self-evaluation Report
about completing a short-term research visit to
The International Academy of Management and Technology (INTAMT)
Astrashabov Igor
Siberian Federal University
Institute of Non-Ferrous Metals and Materials

1. Hosting country: The Federal Republic of Germany
2. City/Town: Dusseldorf
3. Dates of staying from 06.05.2013 till 29.06.2013
4. Goals of visit:

The organizer of the internship program was the International Academy of Management and Technology (INTAMT)

Aims of visit: research on best the european practices in the field of metallurgy and metal forming

Goals of visit:

- training, consultation, exchange of experience, getting practical skills with the equipment, computer programs in the departments and laboratories of universities, research centers in Germany;
- familiarity with the advanced technology of metallurgical manufacture in enterprises;
- collection of material for writing sections of the experimental part of the master's thesis;
- raise the scientific, educational and cultural horizons expansion;
- acquisition of the learning experience and interaction with experts in the English language;
- establishing personal of contacts with foreign experts in the field of metal forming;
- consultations with leading university teachers on the subject of research master's thesis, such as.

5. Initial plan of visit:

- receive training in the departments and laboratories of leading universities, as well as familiarity with advanced technologies in metallurgy and machine-building enterprises in Germany;
- learning new computer programs, methods of operations research metal forming equipment for studying the structure and properties of metals and alloys for writing a master's thesis.

6. Results of visit:

6.1. In the process of internship the following modules have been studied.

The module number 1: "The organization, methods and content of specialists training program" Metal Forming "at the University of Duisburg-Essen.

The module number 2. "Automated Design of tools and industrial equipment for metal forming processes. Software for 3D - modeling "at the University of Duisburg-Essen.

The module number 3 "Combined methods of processing of nonferrous metals and alloys" at the University of Aachen.

The module number 4 "Innovative methods of metal forming" at the University of Aachen.

The module number 5. "Familiarization with wire-pressing-drawing production" at the metallurgical plant of Duisburg.

The module number 6. "Familiarization with the production company SMS MEER, specializing in the manufacture of equipment for metal forming.

The module number 7. "The organization, methods and content of training programs for specialists in the field of" Technology of production of jewelry "and" Technology artistic treatment of metals. "Familiarization with the production of jewelry. Professional College of Essen.

The module number 8. "Familiarization with exhibition display jewelry" in museums and exhibitions of different cities in Germany.

6.2. Have developed new approaches to solving problems in computer modeling of the hot forging of aluminum alloys, allowing complete and submit a report on the international conference "Non-Ferrous Metals of Siberia - 2013".

6.3. Accepted part in the mathematical treatment of an array of data obtained from test results in the deformation of metallic materials in a state of superplasticity using the computer program ANSYS.

6.4. A search and analysis scientific and technical literature to write a literal review of a thesis.

6.5. Accepted part in projects scientific research work carried out by masters and doctors of the Technical University of Clausthal.

7. Evaluating the effectiveness of travel for each of the visited institutions and enterprises:

International Academy of Management and Technology (INTAMT) - developer and organizer of the internship program from Germany. At the Academy INTAMT, apart from German workers, highly qualified professionals with serious luggage vigorous activity in the CIS countries and the European Union, allowing the Academy to successfully implement communication between specialists from different countries.

The developed Academy internship program practically fully compatible with task issued by and conducted in the highest degree of efficiency.

Düsseldorf University of Applied Sciences (Fachhochschule Duesseldorf)

The university is one of the largest in the German federal state of North Rhine-Westphalia and offers training in integrated and interdisciplinary courses. The university offers organization of a network training and research in the fields of design, technology, social sector and information technology. Particular attention is paid to: engineering, process design, media, social and cultural sciences and business studies. The university has about 80 European and 30 international agreements and actively promoting the international exchange of students and teachers.

The university been passed internship in the workplace to explore the software that is used in the educational process and scientific research. It was performed a specific task on the modeling and design of the stress-strain state of the metal piece subjected to stretching loading on different paths.

University of Duisburg-Essen (Universität Duisburg-Essen)

Included in the University Alliance UAMR (Bochum, Dortmund, Duisburg-Essen). Profile areas include research in the field of nanotechnology, genetics, and medical biotechnology, and research in the field of education. The University includes Institute of Metallurgy and Metal Forming, which was an intern.

Wieland Group

Is one of the world leaders in manufacturing of blanks and special products in copper and copper alloys. The company manufactures copper tubes, strips, sheets, rods, finned tube heat exchangers and. Wieland products used as components for the production of a variety of industries. During familiarization with the equipment and technology of plate rolling discussed such technological and scientific aspects as: types of equipment used for rolling, heat treatment is, roll instrument the design features, the composition of grease used, the simulation of the rolling process on a computer, etc.

The Rhenish-Westphalian Technical University of Aachen (Rheinisch Westfälische Technische Hochschule Aachen)

Higher education institution in Aachen, Germany. RWTH technical university is a TOR 9 (Association of the nine best technical universities in Germany), IDEA League (Association of the top five universities in Europe), and the Association of Top Industrial Managers for Europe. RWTH technical university has 10 faculties and 260 departments (410 professors). The university study about 30,000 students 75 different professions. Each year, the university receives about 5,000 new students complete their studies around 2000, about 800 receive doctoral title. In the university 5200 students - foreigners from 130 countries.

At the University of are best presented the laboratory's metal. It was conducted familiarization with the equipment of laboratories, as reeling stations to produce bands of steel; complex rolling equipment, equipped with tensometric, measuring and other equipment with a display of process parameters on the computer display,

Hydraulic press for hot forging steel forgings, etc.

Research laboratory equipment used in the processing of metals in the Rhine-Westphalian Technical University of Aachen (Werkzeugmaschinenlabor WZL, Rheinisch-Westfälische Technische Hochschule Aachen)

Laboratory equipment Aachen University is known around the world and is a leader in research and innovation in the field of production technology. In particular, the laboratory is engaged in the calculation and production of equipment and their parts and components, metrological examination and evaluation of manufacturing systems, process monitoring and diagnostic equipment, the principles of human-machine interaction, control and automation, etc.

Clausthal University of Technology (Technische Universität Clausthal)

The basic direction to be studied at university - this production, processing and saving resources such as materials, energy and information. This is accompanied work in the fields of chemistry, physics, earth sciences and applied sciences such as chemical engineering, materials technology, etc. It should be noted that up to one third of the total budget of the University, is a result of research activities. The Institute of Metallurgy conducted research on molding and metal forming. In particular, studying the processes of stamping steel parts with coatings, drawing copper pipes, sheet rolling, etc.

Is possible practice this place meets all the requirements of the internship program on the study of metal forming processes.

Professional College of Essen (Berufskolleg der Stadt Essen Ost)

All the departments have well-equipped laboratories and workshops. Internship was conducted in the laboratories of jewelry manufacturing with the acquisition of practical skills.

Casting production Institute, Duesseldorf (Institut für Gießerei)

Is one of the leading research and educational institutions in the world in the field of foundry technologies. This position is achieved through the implementation of three key principles: unity of research and teaching, the diversity of research topics, as well as constructive and close cooperation with partners from industry and science. The main objectives of the research institute are research projects in the field of metallurgy, crystallization, foundry materials, the casting process and applied problems of casting technology for the production of preforms used in metal forming processes.

Metallurgical Works of SMS in Mönchengladbach

Division SMS Meer in Mönchengladbach is the leader of metallurgical machinery for the production of long-length steel products, such as the production of equipment for pipes, rolled, non-ferrous metals and heating equipment. In its program, the production of press and forging equipment SMS Meer offers innovative production methods. SMS Meer also manufactures automated forging and pressing equipment. Great experience in the field of technology and materials accumulated over decades, forms the basis for the technological systems that control the forging equipment, and hydraulic presses, stamping presses, plate rolling and rolling mills, etc.

Metallurgical enterprise CD Walzholz

Managed by a family dynasty for 150 years. The company has subsidiaries in the United States, Brazil, Germany, Switzerland, France and China. Specializes in manufacturing cold-rolled sheets, strips and strips of various steel grades. Production company: aircraft construction parts, garden tools, edging skis (company holds about 60% of the world market of the product), the details of household appliances and road transport, automotive (70% of the products manufactured by companies involved in the industry), as well as details of wind power plants . Annual output of the enterprise is 500 thousand tons, is planned to produce 800 thousand tons in 2020.

Were familiarized with the technology of production of steel sheets, which are made from different types of steels. A demonstration of the mill Quarto, equipped with two coilers, rolling sheet material with a thickness of 1 mm. Carried visiting lines cutting and packaging of finished products as well as automated warehouse for storage.

Nizhnereynsky University of Applied Sciences in Krefeld (Hochschule Niederrhein Krefeld)

The university is one of the largest universities of applied sciences in Germany, has a good national and international reputation. It has about 10,500 students, and the proportion international students coming to the university from more than 90 countries, accounting for 16%. The University consists of 10 deans, which are located in two campuses in Krefeld and Mönchengladbach. During the internship were shown the possibility of using for metal forming processes several computer programs, demonstrate the operation of a 3-D printer and a unique milling machine equipped with a robot with five degrees of freedom. In particular, it was gleaned that a computer-controlled machine can be used for the manufacture of tools used for metal forming.

University of Siegen (Universitat Siegen)

University of Siegen corresponds to representations of the modern institution of higher education: it provides a high level of education, contributes to the fundamental and applied research and is a center of creative development and training of qualified staff

The university is a lot of institutions, one of which Institute of Technology modeling and scientific computing engaged in the development of algorithms and methods for the use of large parallel systems for the simulation. The aim is to cover a wide range of applications simulation enforce them to massively parallel systems. 8. Percentage of completing the initial plan of visit:

The original plan of internship is made in full. Also visit was organized to additionally metallurgical plant of SMS.

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

During the program, the results of learning new computer programs were developed computer models of the process of hot forging of aluminum alloys have been prepared and sent a report to an international conference, written in two partitions of a thesis.

10. List of documents confirming your successful completion of the research visit:

By the results of internship received a certificate of participation in the seminar "Study of the best European practices in the field of metallurgy and metal forming", a copy of which is attached.

11. Overall evaluation of the visit:

11.1. Internship possible to meet with new technologies, equipment, tools and software equipment for metal forming.

11.2. Were obtained skills to work on laboratory equipment for metal forming and acquired work experience with the software ANSYS.

11.3. Has been studied system of organization of education in Germany, in particular, in teaching students on a metallurgical profile.

11.4. Были установлены личные контакты со специалистами в области обработки металлов давлением.

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

In preparing for internship would be necessary to conduct a more detailed preliminary study of each of the visited organizations and attempt to install the preliminary contacts with specialists on the relevant profile.

Date of report

Signature