

Poland Institute of Welding in Gliwice



Building of Welding Institute in Gliwice

The Poland Institute of Welding has started its operation in a period directly after the end of the Second World War. The Institute was founded in 1945, and its first task was training of gas- and electric welders, which were desperately necessary for the country ruined as a result of war.

Since 1949 the Institute started to be transformed into a scientific-and-research organization. The first research departments were created. They solved the problems in the field of welding technologies, weldable materials and consumables.

The deciding step in the Institute development was formation in 1954 a department on design of welding and auxiliary equipment as well as department of prototypes of welding equipment. After the war the material resources of welding engineering in Poland included only one plant on welding electrode production, one factory on manufacture of gas welding equipment and several tens of enterprises on production of oxygen and acetylene. There was no production of electric equipment for welding at all and the most widespread method of joining in manufacture of heavy steel structures (boilers for power engineering, vessels, ships, bridges) was riveting.

Both departments were located in the Institute premises. Their first achievements were development of a series of pressure resistance welding machines of 2, 6 and 10 kV·A power for wires and acetylene vessel valves as well as 500-ampere welding transformer based on Soviet sample of that period. Two years later both departments were joined in one titled a department on welding equipment production (ZBUS), which designed and developed the prototypes of welding equipment, machines, automatic machines and apparatuses necessary for functioning and development of welding engineering in Poland. Replicated and improved prototypes were sent into serial production at commercial enterprises created in Poland. The examples of the first prototypes are welding transformers, welding power sources based on internal combustion engines, high-pressure acetylene generators, automatic machines for electroslag welding, semi-automatic machines for oxygen cutting, machines for resistance butt welding of rods and tubes, oxygen reducing units including mains ones, flux collectors, devices for welding wire winding and many others.

Due to systematic and purposeful work, all the conditions were created in the Institute for successful development of modern welding engineering in Poland. At the end of 1958–1959 the Institute had an effective system of training and education of welding staff, department on design and manufacture of welding equipment, a team of researches carrying multiple investigations in the field of welding as well as the whole complex of premises and laboratories equipped with not bad equipment and apparatuses for researches. In this period the leaders of the country after carrying the evaluation of work of industrial research centers, took a decision that the Welding Institute should keep the status of the research institute.

The Institute has been carrying multiple, very interesting and quite often complex research works since 1960. Different welding equipment was also developed and manufactured in great volumes.

A bright example can be a flow line, including 12 welding automatic machines, for automatic welding of walls of coal vessel carriages at wagon works. The line was implemented in industry in 1962. The Institute organized the conferences and meetings of the welding specialists, during which the Institute staff presented their reports. It was the period when the first foreign business trips took place, including for participation in the congresses of the International Institute of Welding, in which the Welding Institute in Gliwice is the official representative of Poland since July 1, 1956.

The next expansion of the Institute took place in a period of 1966–1968. Earlier existing and constructed close to them buildings have been modernized a lot of times after that, but they are successfully used in that layout and size up to the moment.

In 1968 the Institute was the organizer of the XXI Congress of the International Institute of Welding. The chairman of Organizing Committee was Prof. Jozef Pilarczyk, the main founder of the Institute in 1945 and its Director for many years. In 1967 Prof. Jozef Pilarczyk decided to concentrate only on activity of a welding chair of the Silesian University of Technology as its leader, keeping at that the position of the chairman of Scientific Council of the Welding Institute.

A lot of new had appeared in the 1970th. In this period Poland got the foreign credits, which in addition to other was used for construction of many modern for that time enterprises as well as promoted significant technological progress. A series of new methods of fusion and pressure welding appeared in the field of welding engineering and the Institute intensively worked with them. The investigations were carried out on CO₂ welding, then in gas mixtures, plasma welding and cutting, electroslag and electrogas welding, friction welding, mechanized and automatic thermal cutting etc. In parallel a wide spectrum of investigations was carried out in the field of weldability of a series of modern structural steels, which were manufactured by Poland metallurgical industrial complexes, as well as consulting services and surveillance of performance of critical welded structures was provided when realizing large investment programs. Multiple stations and lines for mechanized welding and cutting were developed and implemented in commercial production. Significant changes also took place in the field of science due to funding of large research projects within five-year periods directed on so-called key problems (later on Central Research Programs) covering a wide topics of the whole branches. The Institute actively participated in these programs realizing.

An important event in the Institute live was organizing and realizing in cooperation with the Silesian University of Technology the carrier enhancement courses for welder-engineers. The lectures and practical activities for course listeners took place in the Institute premises and the staff members of the Institute with rich scientific and production experience performed duties of the trainers. The courses were hold during 10 years till 1980.

The 1980th were difficult years in the Institute live. A martial law declared in Poland on December 13, 1981, heavy social and political situation, dramatic reduction of commercial production, loss and break of connections, dismissal of large amount of staff members, retirement or termination on health grounds, all these result in the fact that the work in the Institute was performed with jerks, irregularly, and financial situation was very bad that adversely affect low salaries and absence of investments for development. Staff problems were also great, which were explained by absence of young engineers. The consequences of this situation was observed for a long time since in a course of several years the Institute was lack of staff members brought up in the Institute and inspired by its patriotism.

Regardless the difficulties in 1981–1985 the Institute continued coordination of the key problem «Methods and means of mechanization and automaton of welding works» and in 1986–1990 the Central Scientific-Research Program «Welding technologies». Together with the Institute all the most significant scientific-and-research Poland centers working in the field of welding were engaged in these programs realizing.

The Institute has started functioning in completely new conditions since 1990. In 1989 Poland turned to the way of free development and passed from center-controlled low-effective socialistic economy to competitive market economy. Everyone was dreaming about such changes, however, not everybody realized the principal difference between the life in modest, but nevertheless socially guaranteed conditions of socialist state, and life probably on higher level under market economy conditions, that, though was related with heavy and responsible every day work.

In 1990 the Institute was the innovative institute. The same year a decree about such enterprises was published. It provided them larger freedom of action, but simultaneously formed the grounds for complete self-financing and responsibility for taken decisions. Thus, the funds stopped arriving on the Institute accounts for their functioning and corresponding ministries providing in the last vital activity and surveillance over these organizations, remained only as their founders. A lot of scientific-and-research institutes couldn't survive under such new conditions.

The changed decree on the innovative institutes indicated that new director would not be appointed anymore, but should be selected for a position by running a competition, besides the period was not unlimited anymore, but made 5 years. The Director should express the agreement to take up the position not by order, but

based on his/her own choice with complete understanding that the destiny of the Institute is determined based on his/her individual decisions.

As a result of first in the history carried competition the Director of the Institute on November 1, 1990 became Prof. Jan Pilarczyk, son of Prof. Jozef Pilarczyk. The Institute started rapidly adapting to new situation passing the difficult way from flexible transformation and work in accordance with the principles of free competitive market. Big rearrangement of the Institute covered the organization structure, personnel, activity topics, available equipment and condition of the premises.

The Institute buildings constructed in a period from 1945–1970 were fundamentally modernized in 1990–2015 and got a new modern appearance and were filled with state-of-the art apparatuses and equipment. All the elements of Institute infrastructure were also repaired. New staff, which could work on new principles taking into account new requirements, was searched.

The Institute intensified its activity directed on development and improvement of different methods of welding and welding technologies, structural materials, welding consumables and equipment as well as made the new steps, exclusively in the field of welding, bringing income to the Institute. Among them are training of welding personal in accordance with national and European programs, surveillance of welding education in Poland, evaluation and certification of the enterprises producing welded structures, performance of the tests in certified and accredited laboratories, examination and qualification of welding technologies, certification of welding products, personal and quality systems, development of PN-EN standards, implementation in practice the rules and legal acts as well as elaboration of instructions and requirements. Simultaneously, the Institute stopped development and implementation in commercial production of welding equipment, stations and production lines for mechanized and automated welding and cutting. Professional welding companies, Poland and foreign ones, which stated to appear in Poland, became engaged in these matters.

The main task of the Institute. i.e. work in accordance with the principles and requirements of the free market, was expanded by no less important second task, namely rearrangement of Institute functioning taking into account European standards. European Union was formed in 1992 and Poland got the status of observer-state. A series of European organizations appeared in scope of the Union. One of them was the European Welding Federation (EWF). The main task of the Federation was creation of the single system of training and education of welding personnel recognized by all partners. The system was then distributed due to cooperation with the International Institute of Welding in the countries out of the European Union borders, and in 2001 was recognized as a global system for welding staff training. The Welding Institute as an exclusive body in Poland was included in a harmonized system for education, testing, qualification and certification of welding personnel and had the right to issue European and international diplomas and certificates to the enterprises and welding staff. Several thousand of such documents have been issued up to the moment. They allow enterprises to function in European market and struggle for receiving export contracts.

On October 1, 2010 the Institute changed the status from «innovative» to «research». It became possible due to acceptance of a new decree on research institutes.

The Institute is equipped with very good level modern equipment and apparatuses, which are not inferior to similar in the welding institutes all over the world. The Institute has got up-to-date equipment for arc welding, very good lasers with wide spectrum of possibilities for performance of welding, cutting and many other related processes, new unit for electron beam welding, machines for modern pressure welding by all methods, equipment for brazing and, besides, wide spectrum of reference and measurement devices as well as unit and software for welding thermal cycles simulation. The Institute has good data base, which was developed in course of last decades, and creates good working conditions for all members of the Institute providing direct contact with all the most important clients and external partners.

The Institute realizes a series of research projects in cooperation with the National Research Center and National Science Center as well as many industrial partners and foreign research centers. After more than 70 years of active work, the Welding Institute in Gliwice can be proud of a series of meaningful achievements. Such a progress in the research departments, laboratories and centers of the Institute were received due to fruitful and self-denying work of several generations of the Institute staff.

Prof. Jan Pilarczyk