Nuclear Session on prospects for domestic welding industry of participating in the building of the first nuclear power plant in Poland was held in Expo Silesia, Sosnowiec, on 19 October 2016, during 58th International Welding Conference and EXPOWELDING fair (18 – 20.10.2016). Main organiser of the Session was Instytut Spawalnictwa (Institute of Welding) with support of the Ministry of Energy. The aim of the Session was to inform the representatives of metal industry in Poland about the issues concerning main equipment of nuclear island, steel containment liner and many structural metal components which should be welded while building a nuclear power plant depending on reactor type and its supplier as well as applied codes and standards.

The presentations were delivered by the representatives of the Department for Nuclear Energy and companies, potential suppliers of nuclear technology, i.e.: AREVA/EDF, HITACHI-GE and WESTINGHOUSE, as well as Instytut Spawalnictwa.

Nuclear Session aroused interest of the representatives of welding branch and was attended by about 270 specialists.

The Session was opened by Jerzy Niagaj, PhD, Assoc. Prof. of Instytut Spawalnictwa and Andrzej Sidło from the Department of Nuclear Energy. In total, 5 presentations were given, namely:

- Nuclear Energy Programme in Poland – Andrzej Sidło, Chief Specialist, Department for Nuclear Power Engineering, Ministry of Energy, Poland;
- Welding issues in the construction of the EPR reactor – Ethienne Bianquinch, Welding Engineer, AREVA NP, RCC-M Sub-committee, France;
- Welding Technology for Advanced BWR – Yukihiro Soga, Yoshio Yada, Hitachi-GE Nuclear Energy, Ltd., Japan;
- Westinghouse AP1000® PWR Module Welding – Michael Pelle, Manager NSSS Installation and Repairs, Westinghouse, Belgium;
- Scope and prospects for contribution of Polish welding industry to construction of the first nuclear power plant in Poland – Jerzy Niagaj, Assoc. Prof., PhD, Representative for Nuclear Energy, Instytut Spawalnictwa, Poland.

In the first presentation Mr. Andrzej Sidło characterised the Nuclear Energy Programme in Poland and presented the state of works on the preparation of the home industry for constructing the first nuclear power plant in Poland. Special attention was paid to the potential of the enterprises in Poland for manufacturing equipment and products as well as rendering services for nuclear power engineering. Mr. Sidło said that many Polish companies have worked as the subcontractor at nuclear power plants

being constructed in Europe and worldwide. Significantly larger group comprise companies who as producers of products for conventional power generation could prepare themselves in a very short time and join the chain of the qualified suppliers for nuclear power engineering. The Department for Nuclear Power Engineering of the Ministry of Energy has prepared and published the list of Polish enterprises being able to join the process of building nuclear power plant in the future.

In the next presentations the representatives of the potential suppliers of the nuclear technologies: AREVA, HITACHI-GE and WESTINGHOUSE in a very professional way presented the issues connected with construction of the reactor and reactor coolant system as well as production of steel and modular structures used while construction of the nuclear reactor steel containment.

Ethienne Bianquinch, the representative of AREVA company, in the first part of the presentation, characterised the requirements of RCC-M code in the range of welding and surfacing and next surveyed selected equipment and welded parts of the reactor EPR™ with pointing out the chapters of RCC-M codes containing the requirements both on welding and quality inspection and non-destructive testing (NDT). The attention was paid to the fact that the requirements connected with welding are based on European standards of EN type or international standards of EN ISO type, and in relevant sections and paragraphs of RCC-M or RCC-CW codes only describe specific additional requirements.

Next presentation was concerned with the welding issues at construction of the nuclear power plant with Advanced BWR reactor of Hitachi-GE. Lecturers Yukihiro Soga and Yoshio Yada in a very detailed way presented the problems of welding of reactor pressure vessel and nozzles as well as characterised modular construction system of the nuclear power plant with ABWR reactor basing on the already completed projects. Listeners had the opportunity to familiarise themselves with numerous technical details of manufacturing welded products and adequate requirements of ASME code. The attention was paid to large participation of automated welding processes not only during welding at a workshop but also on a construction site. It was also signalled the prospective areas of the participation of Polish enterprises in the constructing of ABWR reactor if Hitachi-GE company wins the tender for construction of the first nuclear power plant in Poland. The tender is expected to be announced in 2017.

The third presentation was given by the representative of Westinghouse company, Mr. Michael Pelle, who concentrated mainly on the issues concerned with the welding of a steel containment liner, and supporting and modular structures occurring during construction of AP1000 nuclear power plant. The author presented the sections and paragraphs of ASME code and AWS standards containing

requirements on welding such structures. Thanks to the photographic documentation the stages of construction of nuclear power plants with AP1000 reactors being built in the USA and China were presented.

At the end of the Session Jerzy Niagaj, PhD, Assoc. Prof. of Instytut Spawalnictwa analysed welded equipment and metal structures for all three potential nuclear technologies (EPR, ABWR and AP1000) and selected equipment and welded steel structures which from technological point of view could be produced by Polish companies. Prof. Niagaj also indicated the possible areas of cooperation of Polish industry with the suppliers of nuclear technologies as well as the advantages of involving home companies in the construction of the first nuclear power plant in Poland. The attention was also paid to the possible risks which could occur due to the very high requirements connected with the quality of produced components, detailed documenting of all production processes and constant improving of the qualifications of welding and NDT personnel.

Jerzy Niagaj, Assoc. Prof., PhD Eng.


58.
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4. Fabrication of RPV (1/3)
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(1) Fabrication Procedure and Materials
Vessel Portion
Fabrication Procedure
58.


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