

INTERNATIONAL CONFERENCE «TITANIUM-2010 IN CIS»

Traditional annual International Conference «Titanium in CIS», organised by Inter-State Association «Titan», was held on 16–19 May 2010 in Ekaterinburg (Russia). Over 230 people from Russia, Ukraine, Kazakhstan, Tadjikistan, China, Germany, France, Italy, Japan, Luxemburg, Poland and other industrialised countries attended the Conference. Scientists and specialists in the field of titanium from leading R&D organisations and industrial enterprises of Russia and Ukraine (Federal State Unitary Enterprise CRISM «Prometey», Federal State Unitary Enterprise «All-Russian Institute of Aviation Materials», Open Joint Stock Company «All-Russian Institute of Light Alloys», USTU UPI – «Ural State Technical University – B.N. Eltsin Ural Polytechnic Institute», MATI – K.E. Tsiolkovsky Russian State Technological University, Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Institute of Structural Macrokinetics and Materials Science of the Russian Academy of Sciences, Open Joint Stock Company «Corporation «VSMPO-AV-ISMA», Federal State Unitary Enterprise «Giredmet», Open Joint Stock Company «Uralredmet», Joint Stock Company «Sukhoi Design Bureau», Open Joint Stock Company «Elektromekhanika», Open Joint Stock Company «Kaluga Turbine Factory», E.O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine, G.V. Kurdyumov

Institute for Metal Physics of the National Academy of Sciences of Ukraine, I.M. Frantsevich Institute for Problems of Materials Science of the National Academy of Sciences of Ukraine, Donetsk O.O. Galkin Institute of Physics and Engineering of the National Academy of Sciences of Ukraine, State Research and Design Institute of Titanium, Antonov Aeronautical Scientific-Technical Complex, etc.). Totally, over 90 papers were presented at sessions «Raw Materials. Metallurgy» and «Metal Science and Technologies of Titanium Alloys». In addition, the Conference included sessions of the «Current Peculiarities of the World Titanium Market» Discussion Club and «Melting of Titanium» Thematic Workshop.

The plenary session of the Conference was held in Verkhnyaya Salda (Sverdlovsk Region). Then participants of the Conference visited production shops of Corporation VSMPO-AV-ISMA, which is one of the world-leading manufacturers of the entire range of critical-application titanium semi-finished products (forgings, tubes, rods, plates, etc.), covering 100 % of the demand of defence and aircraft engineering enterprises of Russia and Ukraine for titanium components, and about half of the demand of foreign civil aircraft manufacturers for titanium semi-finished products.

M.V. Voevodin, Director General of VSMPO-AV-ISMA, noted in his presentation that despite the world





economic crisis the Company continues its upgrading program towards increasing the titanium output and proportion of high-processing products. For example, cooperation between the joint venture companies and «Boeing» has been started in 2010 in the field of machining of titanium alloy forgings for gas-turbine engine disks and airliner landing gears. Titanium sponge production capacities should amount to 44,000 t per year.

Specialists of CRISM «Prometey», one of the world-leading centres in the field of development of titanium alloys and technologies for their welding, melting, heat and deformation treatment, presented a large number of papers. Out of a wide variety of welding technologies, the focus at the Conference was on argon arc and electron beam welding of thick-walled titanium alloy structures. Scientists from USTU UPI and MATI, involved in intensive R&D efforts in the field of titanium and titanium-base alloys materials science, including for application of titanium in medicine, took an active part in the work of the Conference.

Institutions of the National Academy of Sciences of Ukraine, including the E.O. Paton Electric Welding Institute, presented their scientific-and-technical developments. They were described in papers dedicated to magnetically controlled arc narrow-gap and vertical-plane TIG welding of titanium alloys in argon atmosphere, electron beam melting of large ingots of titanium-base refractory alloys, electroslog melting and welding of titanium with controlled hydrodynamic processes, and investigation of floating zone recrystallisation of titanium aluminide.

Specialists of the G.V. Kurdyumov Institute for Metal Physics considered physical, technological and economic aspects of manufacture of parts from titanium alloys by the powder metallurgy methods. Representatives of the Donetsk O.O. Galkin Institute of Physics and Engineering presented their developments in the field of production of nanostructured titanium billets by screw extrusion methods.

Presentations at a session of the «Current Peculiarities of the World Titanium Market» Discussion Club were made by A.V. Aleksandrov (CJSC «Inter-State Association «Titan»), A.N. Stroshkov (VSMPO-AVISMA), Turgyn Rahman (Advanced

Materials Japan Corp.), Steven Hancock (TiRus International SA, Switzerland), T. Nishimura (NTC Corporation for Titanium, Japan) and many other specialists operating in the titanium market. Almost all speakers noted growth of the volumes of orders for titanium products in 2010 both in civil and military aircraft engineering, and in civil industrial sectors, although the production level of 2008 has not been achieved so far.

New technological processes for production of pure titanium have not yet exceeded the bounds of laboratory studies. Hence, the key method for production of titanium is still the expensive Kroll process. In this connection, at present one might not expect any substantial reduction in costs of manufacture of titanium. This is confirmed by the fact that in the crisis year of 2009 the up-to-date factories manufacturing titanium sponge, which were constructed in China, could not reduce the costs of their products below the average world level. Therefore, the world titanium market is characterized by a high competition, where the decisive factors of success are a high quality of products and their low manufacturing costs, which can be achieved through applying new advanced technologies.

Analysis of different technologies for melting of titanium at the «Melting of Titanium» Thematic Workshop allowed a conclusion that the vacuum-arc remelting technology remains to be the key method for production of ingots of titanium-base alloys, whereas the electron beam melting technology has been finding an increasingly wider application for melting of ingots and slabs of unalloyed titanium. This is proved by the fact that new electron beam furnaces for melting of titanium have been launched in the last three years in the USA (TIMET), Germany (ThyssenKrupp), China (Bao Ti Group) and Ukraine (Zoporozhie Titanium-Magnesium Integrated Plant), and several new units have been constructed in these countries.

In conclusion, we would like to note a high level of the Conference and express gratitude to its organisers represented by the «Inter-State Association «Titan» and its chairman A.V. Aleksandrov.

Prof. S.V. Akhonin, PWI