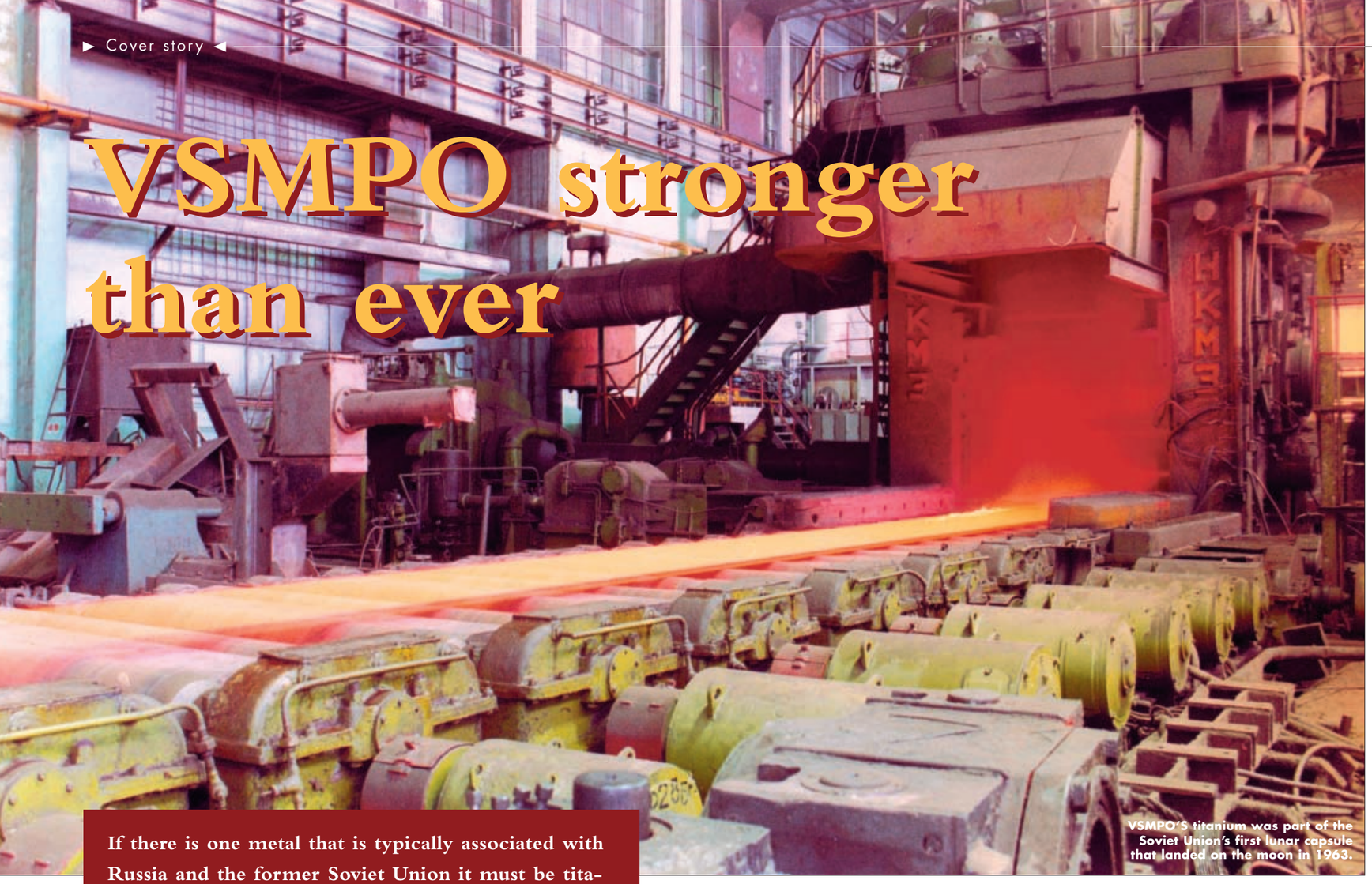
VSMPO stronger than ever



VSMPO'S titanium was part of the Soviet Union's first lunar capsule that landed on the moon in 1963.

If there is one metal that is typically associated with Russia and the former Soviet Union it must be titanium. Without a doubt this is because of the VSMPO Joint Stock Company. With a yearly production of 100,000 tonnes of titanium VSMPO is reputedly far and away the largest producer of titanium and its alloys in the world. *Stainless Steel World* spoke to Mr Vladimir Smirnov, Vice President of the Metallurgical Department, who explained the ins and outs of the company to us.

Every now and then you will find world leading companies in places where you do not really expect to discover them. One of the most important titanium producers in the world is probably the best example. Today VSMPO Joint-Stock Company is remotely located in Verkhnaya Salda close to Sverdlovsk in central Russia and there is a good reason for that. During the Second World War, only shortly before the Axis troops were fighting in the outskirts of Moscow with the Soviet army, Stalin decided to move all vital industries that were established in areas threatened by the rapidly advancing enemy to a safe destination. Here they resumed production in order to support the defence of the country. In VSMPO's case this meant relocating to Verkhnaya Salda on the other side of the Ural Mountains, a place far beyond the reach of Hitler's troops.

From then on the company in Verkhnaya Salda even took on the name of the town as VSMPO stands for Verkhnaya Salda Metallurgical Production Association. Today the company is more than flourishing and has definitely made the transition from being a company strongly oriented on the home market to being a truly international player. For some inside information we talked to Mr Vladimir Gregorijevitsj Smirnov, Vice President of VSMPO's metallurgical department. Mr Smirnov is a candidate of technical sciences and attained his doctorate with a thesis on the production of titanium pipes. He has been working for VSMPO for 27 years. Mr Smirnov explained in detail to *Stainless Steel World* what it means to be the largest titanium producer in the world and how the company adapts to the ever-changing demands of the market.

Facilities

VSMPO was founded in 1932 as an aluminium mill. Due to the developments in aviation and rocket engineering in the fifties there was a need for new materials possessing unmatched levels of physical and mechanical properties. Titanium and its alloys proved to possess these characteristics and VSMPO was one of the first companies in the world which started serial production of the material over 40 years ago. The unique properties of titanium combined with the high workability contributed significantly to the broadening of the applications for the material. During the Cold War most of VSMPO's production went to the defence industry and the material was extensively used in fighter planes and submarines. Today the number of industries served by the company is much larger though and VSMPO sells titanium to countries across the globe. This should not come as a surprise as VSMPO with a yearly production of 100,000 tonnes of titanium is by far the largest producer of titanium in the world. The company owns approximately 3 million square metres of which some 800,000 are being used as a working area today. The company employs around 14,000 people which means that there is close to no one in Verkhnaya Salda that is not in one or another way involved with VSMPO. Although most of the equipment goes back to the Soviet-era, due to careful design and proper maintenance it still belongs to the best in the world according to Mr Smirnov: "Our facilities here are still state of the art. For one VSMPO has the world's largest foundry complex equipped with unique presses that can exert a force of some 10,000 tonnes. We use these presses for the manufacturing of compact electrodes with a diameter up to 650mm and a length of up to 5500mm. The facility also features no fewer than 86 vacuum-arc furnaces allowing the manufacturing of ingots with a diameter of no fewer than 900mm and weighing some 10 tonnes."

Also VSMPO's press-forging complex is impressive. The complex encompasses a wide range of forging and die forging presses including the world's largest 75,000 tonnes die forging press. There is a sheet-rolling complex equipped with mills for hot, warm and cold rolling of plate, sheet, band and foil. Furthermore the bar-rolling complex has a unique "radial-shift" mill, a section mill and a swaging mill for the production of light section products. Finally the company boasts a scientific and technical centre whose activities are aimed at the development and support of technological processes, new products and quality improvement. All in all the company has developed a complete technological cycle of titanium manufacture that runs from ingot melting to the production of a wide range of semi-finished products and finished goods.

Alloys

The product portfolio of VSMPO is downright impressive. According to Mr Smirnov just about every titanium alloy in the world is produced. Next to the 30 to 40 grades that comply to international standards such as ASTM and BS the company produces some 40 grades according to Russian specifications. Likewise the number of products is dazzling and runs from bars and billets to purpose designed tubes for riser applications.

Through the years these products have found their way into a wide range of fascinating applications. VSMPO's titanium was part of the Soviet Union's first lunar capsule that landed on the moon in 1963. Today's International Space Station also uses considerable amounts of VSMPO's titanium and Russia's Energia rocket–booster uses up to 18 tonnes of the company's titanium. Also more conventional branches of the aerospace industry make use of the material of the Russian company. Both Boeing and Airbus are loyal customers of VSMPO and modern airliners such as the Tupolev 204 with 9 per cent and the Ilyushin 96 with no less than 9,5 per cent of its total weight are examples of successful application of VSMPO's titanium.

A field of application that is of particular interest for the readers of *Stainless Steel World* is the oil & gas industry. At the beginning of the new millennium those hydrocarbon fields which were first to be developed have been considerably depleted. Therefore new and often more difficult to reach oil and gas fields have to be exploited. Next to the more demanding locations and often difficult climatological conditions these fields in many cases feature significantly more aggressive types of oil and gas. Therefore material requirements are often high. Not only is there a need for higher strength materials but also weight and corrosion resistance when exposed to hydrogen sulphide, carbon dioxide, chlorides and brines at ambient and elevated temperatures up to 200°C and more are required. Conditions that make titanium an obvious choice.

Also the fact that many new fields are discovered offshore suits titanium.

An overview of VSMPO's facilities

There are only few materials that can match titanium's performance in offshore operating conditions and it is considered the material of choice for many applications such as offshore pipelines, heat exchangers, fire water systems and ancillary equipment. Often the underwater system in the upper parts of the floating systems incorporates in between 50 and 100 tonnes of titanium alloys. Conoco for example used a high-strength titanium for the water separating drill pipe strings on the Heidrun platform. Norsk Hydro has even more challenging views. The Norwegian company plans to utilise 60 tonnes of titanium in floating operating and drilling platforms and up to 500 tonnes of high strength titanium alloys in underwater flexible vertical pipelines for the transport of oil from the well to the floating platform Mr Smirnov says.

Taking the opportunities for offshore oil & gas production and the materials requirements for water separating pipe strings, pipelines and hydraulic systems for drill hole control equipment into account VSMPO has developed a new deformable titanium alloy named Gr9M for tube applications. They also developed a new process for the manufacturing of large diameter tubes from high strength alloys. Mr Smirnov remarks that these new developments are just a few examples of VSMPO's continued research and development in the field of oil & gas production both for shelf as well as deep-water deposits.

VSMPO is expanding its presence on the world market.

INTERNATIONAL

There is one aspect about VSMPO that Mr Smirnov is particularly enthusiastic about. "One thing of our company that keeps fascinating me is the fact that our titanium and our titanium alloys are used all across the world. Be it the United States or Singapore, the Arctic or South Africa there is always an application where VSMPO's titanium is utilised. Especially the US market has become important for us in recent years. Therefore the company has its own sales organisation called VSMPO Tirus, which stands for titanium from Russia, in the US and the United Kingdom. Furthermore the company has planned to open up its own production centre in the US, close to Los Angeles."

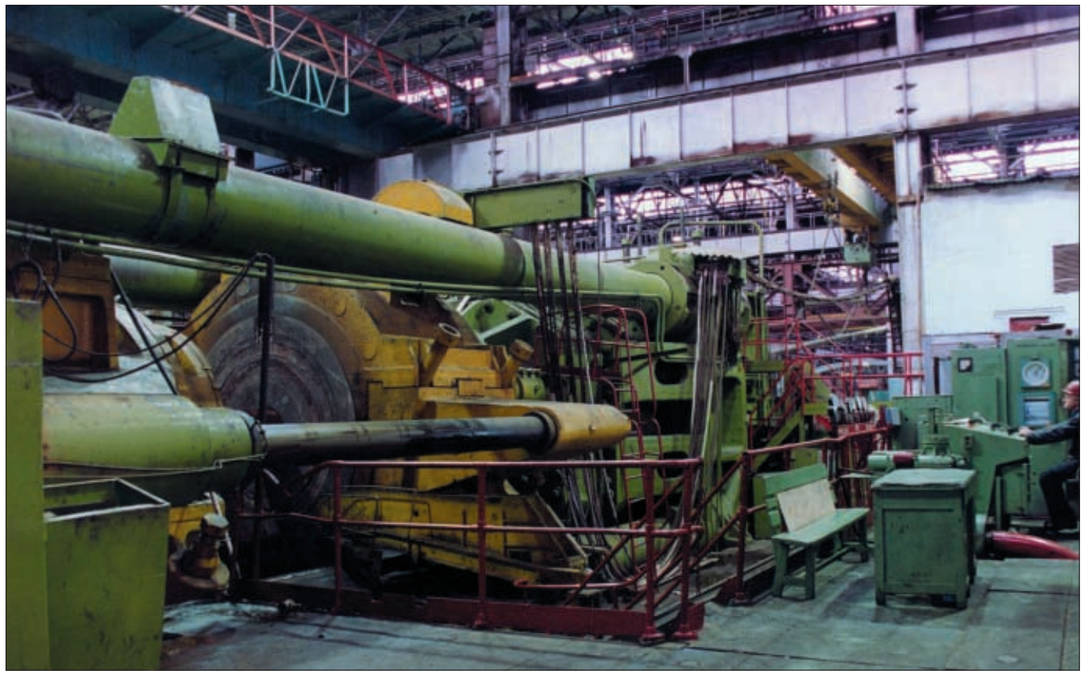
This is a completely different picture compared to several years ago. Not even ten years ago the company exported only around 5 per cent of its production. Now the share of products for export has risen to around 75 per cent since VSMPO started focussing on foreign markets more and more. Mr Smirnov "I think I can say this is an achievement we are particularly proud of and that we have achieved through the high quality of our products that we offer the market at a more than competitive price ratio."

Exporting to other parts of the world has not always been that easy though. Especially back in 1994 and 1995 when the company started actively pursuing foreign markets some shipment and certification problems had to be solved Mr Smirnov explains. These problems definitely belong to the past though. At present VSMPO has orders from over 300 western companies. Every week there are at least several delegations from abroad visiting the company to see for themselves how VSMPO produces the high quality product they are trying to source. Mr Smirnov: "Nowadays we are a certified by over a hundred companies that all have their own special requests and demands. We are particularly pleased to know we can meet our customers requirements with ease and to know that renowned companies such as Rolls Royce and General Electric have certified us and use our products extensively."

Looking at the future one thing is clear according to Mr Smirnov; VSMPO is not going to lean back and relax. "It is quite hard to predict what will happen with the market for titanium. What we do know though is that VSMPO will continue to perfect its service to the market. From a technical point of view this means that we will continue to look for new alloys that are even more efficient and cost effective. Our research and development department is working on new high strength alloys for instance. At the same time VSMPO will continue to grow. Only two years ago we bought 75 per cent of the shares of a company located some 400 kilometres away which produces base materials for titanium production and recently we bought the remaining 25 per cent. Through this acquisition we have strengthened our supply side and are less dependent on outside companies. Whichever way you turn it VSMPO is expanding its presence on the world market. We have a strong and competitive product, we continuously work on improving our products and our organisation is ready to meet any customer's demand. Somehow there has always been a close link between titanium and Russia and I am confident that this association will only become stronger in the future." ◄

FACTS & FIGURES

Name:	VSMPO Joint Stock Company
Location:	Verkhnaya Salda, Russia
Number of employees:	14,000
Products:	VSMPO produces a wide range of titanium and titanium alloys in an extensive range of product forms
Applications:	Aerospace, oil and gas, petrochemical, chemical, power generation, defence
Sales proceeds in 2000:	4624 million roubles



Due to careful design and proper maintenance, VSMPO's equipment belongs to the best of the world.