

## “First IPP Project in the Urals and in Russia based on energy-performance contract”

The Ural Mountains in western Russia are considered the „Gateway to Asia” and Russia’s most important mining region after Siberia. There are mining operations here for coal, crude oil and natural gas, as well as ores, precious metals, gems and mineral salts. And it is where a CHP pilot project was established with five MWM gas gensets that deliver electricity and heat for one of the largest copper smelters in the region.

“MWM gas reciprocating units, which generate electric and heat power, have high electric power weight ratio and low fuel gas consumption rate. They can operate on gases different in composition both in offline mode and parallel to an external network. For example, application of lean mixture firing significantly reduces the content of harmful substances in exhaust which decreases load on environment” – SUMZ Chief Power Engineer, Oleg Borzunov said.

The Ural Mining and Metallurgical Company (UMCC) is a holding company for more than 40 companies in 12 regions in Russia, controlling some 40% of Russian copper production, 25% of the precious metals market, and more than 50% of the European market for copper powder. UMCC is among the world’s leading manufacturers of ready-made copper products. With the Sredneural'sky Copper Smelter (SUMZ), UMCC operates a large copper smelter operation near the city of Yekaterinburg in the Urals. As copper processing is very energy-intensive, a contract was concluded in 2012 to establish a cogeneration power plant on the SUMZ site. The special feature: The SUMZ cogeneration



power plant is the first project for independent power production (IPP) in the Urals based on energy performance contract. The contract partner was the Russian energy service provider Stark Energy LLC. The MWM gas gensets used for power production came from Mannheim and were delivered via the Russian MWM sales office in Moscow. Vladimir Voronov, Managing Director at MWM Russia: “Prior to our cooperation with Stark Energy, the company had been working with a competitor for a long time. On this project, we were in the position to present a package that convinced the Stark Energy experts more than all other offers.”

## “The first year of operation confirms the economic attractiveness of the system”

The centerpiece of the cogeneration plant, put into operation at the end of 2014, are five MWM TCG 2032 V16 gas gensets, together producing 21.5 MW<sub>el</sub> and providing the copper smelter with electricity and heat.



Oleg Borzunov,  
SUMZ Chief Power Engineer

Creating a reliable supply of electricity off-grid from the national power network was the key objective in this project, involving an investment of roughly 1 billion rubles. All the power generated is for own use in the copper smelter of SUMZ. Apart from the fact that independent power production (IPP) is still a unique concept in the region, the cogeneration power plant at SUMZ also offers another special feature. As a so-called BOT (Build, Operate, Transfer) model, construction of the plant was led and financed by Stark Energy, which is also the operator of the power plant on the SUMZ site.

Through the sale of electricity and heat to SUMZ, the investment is expected to be amortized in a few years. This operator model is a novelty in the Russian power generation market. After completing the first year of operation, Stark Energy has a favorable assessment of the project. The economic targets, as well as the financial objectives, have been met – a critical aspect for Stark Energy as the investor.

## “Novelty in the Russian power plant market”



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### Technical specifications for CHP plants

<b>Commissioning in</b>	July 2014
<b>Engine type</b>	5 x TCG 2032 V16
<b>Generator</b>	Marelli MJH 800 MC6
<b>Electrical output</b>	5 x 4300 kW
<b>Electrical efficiency</b>	44,1 %
<b>Thermal output</b>	5 x 4153 kW
<b>Thermal efficienc</b>	42,6 %
<b>Overall efficiency</b>	86,7 %



### Details: Award-winning

The unique concept of the SUMZ cogeneration power plant received a special award in 2014. The CHP plant, led by Stark Energy, was recognized with the national „Small Energy – Great Achievements” prize as the best project in the field of small-scale energy production (over 6 MW). The award was donated by the Association of Small-Scale Power Producers in the Urals, with support from the Energy Technology Committee of the State Duma of the Russian Federation.

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