Over recent years the issue of waste management in Russia, and particularly Moscow, has been problematic. With landfill space running out, and anger over the situation growing, a consortium including HZI is now set to develop four large-scale waste to energy plants to serve the capital.

By Ben Messenger

The Ministry of Natural Resources and Environment of the Russian Federation estimates that around 60 million tonnes of MSW is generated each year, amounting to more than 400 kg per capita. Over 25 million tonnes of waste is produced each year in Moscow. This includes bulk waste, residential solid waste, industrial and construction site waste as well as waste from water treatment facilities.

In the Soviet era, large-scale recycling programmes were developed during the 1970s. During the 1980s, almost 30% of all paper used was recycled and consumers routinely visited glass recycling centres to return glass bottles. However, the 1990s saw the collapse of most of these programmes and nationally, Russia currently landfills around 96% of its waste.

Between 2000 and 2015 landfilling increased from 151.2 million to 282.3 million cubic metres. In 2012 the World Bank estimated that Russian landfill space was already 65-70% full. If waste generation continued to grow, by 2025 the country would need to double its capacity to accommodate waste.

Predictably, by 2017 space was running out at many key landfill sites and a decision was made to close the Kuchino landfill, one of the largest serving the Moscow region. As a result, the capital was left short of capacity. Protests followed and
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of landfill sites by treating the residual waste of around 5 million inhabitants, while at the same time delivering some 300 MW of electricity, enough for around 1.5 million people.

The developments are backed by a consortium of investors, including the Russian Direct Investment Fund (RDIF, Russia’s sovereign wealth fund) as well as Middle Eastern sovereign wealth funds. "The investments made by RDIF and our partners in RT-Invest’s project are aimed at implementing the tasks set out by the national project ‘Ecology’,” says Kirill Dmitriev, CEO of the Russian Direct Investment Fund. "The new plants will help improve the efficiency of waste processing and create additional energy-generating capacity. They will also be able to apply best practices in the sector, with the potential of further deployment across the Russian regions.”

“The urgent need to address environmental issues has led to a growing interest in innovative Russian projects from international businesses,” adds Andrey Shipelov, CEO of RT-Invest. “Cooperation with international partners helps to introduce the most advanced and science-driven technologies to the waste management industry. These investments from our international partners are testament to the project’s quality, highlighting its environmental character-istics and compliance with international quality standards.”

Construction of the first plant has already begun around 80 km southeast of the city centre. The new plants form part of the Green Tariff, a programme to promote renewable energy that was launched in 2017. In addition to subsidies, the new facility will be funded by waste disposal fees and the sale of electricity and bottom ash.

According to HZI, the waste to energy plants will help the city optimise its waste management by closing and steadily reducing its many landfill sites. Each plant will process some 700,000 tonnes, totalling around 2.8 million tonnes, of residual waste per year.

**ADAPTING TECHNOLOGY TO LOCAL NEEDS**

The four plants will all feature a similar design and have incorporated HZI technology that is already in use at several hundred sites around the world. This includes combustion with the HZI Grate, the water-steam cycle, and a multi-stage HZI flue gas treatment system that meets all European emissions standards and even falls well below the current limits.

However, geographical factors pose additional challenges in terms of construction and installation. “The weather and climate here are different to Central Europe, for instance, and we have had to take account of this in the structural design,” explains Urs Altenburger, the sales manager responsible at HZI. “Some technical systems that are normally placed outdoors have been moved indoors in order to protect them from the extreme cold in winter.”

Once operational, the four plants will bring benefits to the Moscow region in terms of waste management – the project will help reduce the share of MSW disposal in the Moscow region by 30%. The local economy will also profit, since much of the equipment and materials used will be Russian. A large number of jobs will also be created. Around 130 people will be needed to operate each completed plant, and up to 800 will be working on each site at any given time during construction.

Commissioning of the plants is planned for 2021-2022. Watch this space.