

Five power plants **IN SIXTEEN MO**

This is the story of a world record by Wärtsilä and the people of Azerbaijan. A power plant rose in the desert at a former Soviet military base in just five months, and four more plants will be completed in 2006.

TEXT: PEEP EHASALU PHOTOS: PEETER SIRGE/AHMED ABDULLAJEV



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According to Dr Majid R. Aliyev, a commercial and financial adviser with Azerenergy, Azerbaijan has another world record – the country's economy grew by 26% in 2005. The need for energy resources is correspondingly greater. Demand is also seasonal, with a 20% energy reserve in summertime but shortages in winter. Sometimes, electricity has had to be switched off in winter for several hours a day. The quality of old power plants, some of which have operated for as much as 45 years, is poor and generation capacity is inadequate. Energy cuts and power fluctuations are a drag on development.

Azerbaijan's **President Ilhan Aliyev** assigned Azerenergy the task of satisfying the energy needs that would allow the country to develop its economy. The aim of the president's programme was to create 600,000 new jobs in five years, but every workplace requires an additional 1.5 kW of energy capacity, and new factories and other commercial establishments add to the total.

Locations with strategic importance. An agreement has been made with Wärtsilä for the supply of five power plants with a total capacity of more than 450MW. The sites for the new plants are in strategically-important locations – Astara, the first, is in the south of the country and is already up and running. Sheki between the borders with Russia and Georgia, Khachmaz in the north, Nakhchivan near Turkey and of course Baku, the important capital region.

The aim is to keep Azerbaijan independent of foreign energy and to take advantage of the country's own reserves of energy. After four years, there should be sufficient power to allow exports to Iran and other neighbouring →

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solution

countries. "What we signed with Wärtsilä was not just an energy agreement," says Dr Aliyev. "For our country it has both strategic and social implications."

In situations where people can't even watch television in the evenings, a stable energy supply is a very important issue. "Both general welfare and public opinion will improve, which is more important than figures can show," says Dr Aliyev.

Good cooperation with Wärtsilä. Wärtsilä was chosen as a partner because of the technologies it offered. According to Dr Aliyev, the advantages of Wärtsilä technology include on-time delivery, very good levels of efficiency (up to 46%), and engines which need gas at only six bars pressure, not 26 bars.

In Astara, Site Manager **Marek Fijalkowski** proudly presents the results achieved by his international team. "We have people here from Finland, The Netherlands, Russia, Poland and Azerbaijan," he says, "We had to find a common language, and we did."

Jorma Mäkelä from Wärtsilä's construction office in Azerbaijan gives most praise to local people - the majority of the construction workers came from Azenko, a local company. For them, the importance of the power plant was twofold - their own welfare, and proving they can do things better and faster than anybody else in the world. "The people of Azerbaijan are proud of their history, their president and their country," says Mäkelä. "They are anxious to learn and to learn quickly."

All commercial activities depend on energy. Azerenergy is the state-run company responsible for providing Azerbaijan's energy. Total generating capacity is more than 5000 MW. By the end of 2008, USD 2.3 billion will have been invested in the country's energy system. Azerenergy employs more than 17,000 people and



Site Manager Marek Fijalkowski monitors operations at the Astara Power Plant.

The noise of the engines is kept inside the engine room, and very little can be heard outside.

Reserves of heavy fuel oil (HFO) are maintained so the power plant can be kept running if the electricity supply is interrupted.



has its own research and development institute in which scientists are exploring new energy opportunities such as biogas. Activity in all the country's commercial sectors depends on energy.

"Wärtsilä personnel understood our needs very well," says Dr Aliyev, "And for the locals, it was also a good lesson in quality working." The next manager of the Astara station will be Teimur Ahmedov, who started as fitting manager just five months ago and was promoted to head of shift. When he looks at the computer screen, he knows the location of every single wire the screen is monitoring. According to Ahmedov, his young specialist team had the best possible experience in these five months.

99.9% complete in just five months. President Ilhan Aliyev visited the Astara power plant twice: on the first occasion he placed the foundation stone. Five months later he turned on the engines. "He waited patiently till the red light on the screen turned to green," says Fijalkowski. "There was this marvellous moment when the engines started up."

Wärtsilä has almost completed work on the Astara project, but two men will stay on for 24 months to guarantee power-plant performance. The rest of the team members are travelling to other locations in Azerbaijan or elsewhere in the world. "99,9% is complete," says Fijalkowski with a satisfied smile. →

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solution



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On time and on schedule. Wärtsilä's delivery to Astara included all the plant equipment and required more than 100 containers: ten engines, pipes, all screws and fixings and everything right down to the very smallest parts. Construction materials, including the flooring plates, were also delivered from Finland. Mikko-Petteri Nieminen and Pedro Alvarez at Wärtsilä's head office in Baku made significant contributions to the timely delivery of this extraordinary amount of equipment and materials to the Astara site.

ABB supplied five transformers, and computer programs designed specifically for the Astara power plant were written at Wärtsilä's facility in Vaasa, Finland. Local personnel handled fitting, welding and construction work. More than 500 specialists worked on the plant under Wärtsilä supervision.

Neighbouring markets are also interesting. From a 20-30-year perspective, Azerbaijan wishes to be a developed and harmonised western nation with a strong economy. This requires energy capacity sufficient to fulfil the program. In the current situation, the five new power plants will be sufficient, but new resources always create new needs.

For Wärtsilä, five power plants in Azerbaijan is just the beginning. According to Mäkelä, there are other projects in Azerbaijan in which Wärtsilä is very interested, and also new possibilities in Kazakhstan and Uzbekistan. "The expansion of an energy system is a dynamic process," says Dr Aliyev. "Wärtsilä has proved itself to be a very reliable partner, and we represent the same values – I hope we can work together in the future." ●



The foundation stone of the Astara power plant was laid by İlham Aliyev, President of Azerbaijan, in September 2005.