

Sport Centre De Scheg

Athletes at the popular Sport Centre De Scheg in Deventer, Netherlands are assured smooth gliding and warm waters after the vast facility installed a reliable Capstone C200 MicroTurbine® to power its 400-meter (1,312-foot) ice skating track, subtropical recreational pool, and extensive array of technical equipment.

Deventer, founded in the late 8th century, is one of the Netherlands' oldest cities and boasts hundreds of restored buildings and ancient landmarks. While accustomed to embracing the town's history, Centre ownership determined its 17-year-old reciprocating engine was one artifact that could not be salvaged. "Our reciprocating generator was prone to failure, required a lot of maintenance, and cost a lot of money," said Paul Swam, Technical Coordinator for the Sport Centre De Scheg.

"To keep our technical equipment running we need a lot of energy, both electrical and gas," Swam explained. The Centre is one of the largest in the Netherlands. "Annually we need 3 million kW-hours (kWh) of electrical power and 1 million-cubic-meters (35,314,667-cubic-feet) of natural gas." The Centre's massive energy consumption is required to power ice cooling machines for the competition skate track, recreational ice rink, and heat a tropical pool, sauna, competition pool, and the Blue Lagoon waterpark. The waterpark features several pools, water slides, and a lazy river for visitors to float.

Even after the crippled reciprocating generator failed, the Sport Centre De Scheg operated for two years without a replacement. During this time, the Centre bought utility electricity to power the ice machines and generated heat using natural gas boilers. Increased energy bills led Centre officials to explore other power-generation options.

In addition to researching low-emission and highly reliable Capstone microturbines, the Centre considered biogas, biodiesel, and wood burning systems. The final choice was crystal clear. "They chose the Capstone C200 microturbine due to the low maintenance, and, of



At a glance

Location

Deventer, Netherlands

Commissioned

December 2010

Fuel

Natural Gas

Technologies

- C200 Capstone microturbine.
- VG9 Adicomp gas compressor.
- Heat exchanger.
- Vosterman Mf Flex industrial ventilator.

Results

- The cogeneration facility generates about 310kW of thermal energy annually.
- Using an industrial ventilator the system achieves 85% total efficiency.
- The combined heat and power (CHP) system obtains 33% electrical efficiency, and has allowed the site to reduce annual energy costs.
- Since installation of the CHP system the Sports Centre has used 80% of the power generated in the skate track and 100% of the heat in the recreational pool.



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— Paul Swam Technical Coordinator,
Sport Centre De Scheg

course low overall costs when compared to a traditional gas engine,” said the sales manager for the Capstone distributor that installed the system. Eighty percent of the energy can be used within the skate track and the heat can be used year round in the swimming pool.

The system consists of a gas compressor, a Capstone C200 microturbine, heat exchanger, and industrial ventilator. Gas enters the compressor, and is fed to the microturbine. Hot exhaust air generated by the microturbine’s normal operation is diverted through the heat exchanger to increase overall efficiency. Instead of 290kW the system produces around 310kW of thermal energy annually.

Installed in a CHP application, the Centre’s C200 delivers ultra-low emissions. “An important part of our decision was we wanted clean energy production, and the emissions are very low from this microturbine,” Swam added.

Because of the CHP application overall efficiency is 85 percent when the microturbine’s exhaust energy is used to produce hot water via the heat exchanger.

Onsite CHP is far more fuel efficient and environmentally beneficial than utility power. Along with low emissions, the C200 features low noise levels, low maintenance costs, a small footprint, and industry-leading reliability – signature features of all Capstone products.

In addition to daily energy cost containment, the CHP application provides secure, reliable power to keep the facility operational and occupants safe during a utility power outage. In a country where two-thirds of the population over age 15 participate in weekly physical activity and one-third are sports club members, constant use of the Sport Centre De Scheg does not allow for the power system to be down for maintenance, repair, or a utility outage.

The C200’s patented oil-free air bearing technology, remote monitoring and diagnostic capabilities, and integrated utility synchronization and protection, ensure maintenance is minimal and the Sport Centre De Scheg’s visitors enjoy its amenities without interruption.

The Centre caters to two of the country’s top Olympic sports. The Netherlands is home to two-time Olympic speed skating gold medalist Jochem Uytdehaage, triple gold medal swimmer Pieter van den Hoogenband, four-time Olympic swimming champion Inge de Bruijn, and Marleen Veldhus, 2012 50-metre freestyle world-record holder. ■



The ice skating track and recreational pool at the Sport Centre De Scheg in Deventer, Netherlands rely on a C200 Capstone microturbine installed in a CHP application for operation.