

### The Challenge

Valagro S.p.A., a leading company in the production and marketing of biostimulants and nutritional specialties for the care and nourishment of plants, was founded in the early 1980s. The company currently operates two business areas – farming and agriculture and industrial goods – and is constantly innovating in both local and international markets. Valagro's mission is to meet the agricultural and industrial demands for sustainable plant nutrients while using fewer chemicals in their products and fewer natural resources to produce them.

As the business eventually grew and expanded into the international market, so too did Valagro's desire to improve their sustainability practices and reduce their environmental impact. With new practices in place for water, waste and metal emission reductions, the company started exploring low-emission solutions for onsite heat and electricity generation. At the same time, Valagro was in need of a solution that would reduce or eliminate the number of micro-interruptions and blackouts experienced with the less reliable national power grid.

### The Solution

In 2017, after completing a comprehensive site evaluation, Valagro turned to IBT Group, Capstone's Italian distributor, to commission a clean-and-green combined heat and power (CHP) system for its main production site in the municipality of Atessa (CH), Italy. Each of the company's production lines were soon equipped with Capstone C200 microturbines (200kW). The total system now provides prime power for the facility and captures the thermal energy from the exhaust – at a temperature of 300°C (572°F) – for industrial use.

Through the installation of microturbines, combined with a rotating uninterruptible power system (UPS) and customer-installed emergency

### Power Profile

#### Customer

Valagro

#### Location

Atessa (CH), Italy

#### Commissioned

May 2017

#### Fuel

Low Pressure Natural Gas

#### Technologies

- Two Capstone C200 Microturbines for CHP (Grid Connect, Dual Mode Capable)
- Two Air Vein Gas Burners
- Rotating Uninterruptible Power System (UPS)

#### Capstone Turbine Distributor

IBT Group



“This is a cutting-edge application — besides saving money on energy consumption, the configuration completely avoids any production losses caused by previous micro-interruptions and blackouts.”

— Ilario Vigani, President and CEO  
IBT Group



*Two natural gas-fueled C200 microturbines, along with a rotating UPS and emergency generator, combine for a clean and reliable CHP microgrid for the nutrient production facility.*

generator, Valagro was able to implement a CHP microgrid for the entire site. The unique application means that in the event of a power outage, the rotating UPS never stops providing voltage, which allows the microturbines to run consistently in grid connect mode. The dual mode functionality of the microturbines was disabled during commissioning to allow for a more custom approach to lowering energy costs and avoiding unnecessary downtime.

Furthermore, the natural gas fired microturbines connect to an updated air vein gas burner system to optimize the direct air-drying process for their finished products. In order to guarantee a continuous supply of hot air to the drying process – independent of the state of operation of the microturbines – the system was fitted with a fan for the suction of all combustion air and a sizing of the burner suitable to supply all the thermal power necessary to heat the process air. The upgrade has also allowed the customer to obtain the economic benefits of cogeneration without heavily modifying the facility.

## The Results

Today, Valagro's microturbine powered CHP microgrid provides an annual savings of around €230,000 with an energy savings of around 4,200 MWh per year – or about 360 TOE (tonnes of oil equivalent). This leads to around 1,000 tonnes of CO<sub>2</sub> not released into the atmosphere. With approximately 7,500 operating hours scheduled, there has been a sharp decrease in production losses caused by the prior power interruptions and blackouts. Valagro is able to continue in its pursuit of sustainable practices with an environment-friendly CHP microgrid system cleanly and reliably powering their operations. ■

## Capstone C200 Microturbine



**A C200 provides up to 200kW of electrical power and contains the world's largest single-unit air bearing microturbine.**