Intensive piggeries are a type of factory farm specialized in the raising of pigs. Within large warehouses, stalls are located in which high numbers of grower pigs are kept. The temperature within the buildings is kept high so that the pigs spend less energy keeping warm, thus maximizing the efficiency of the pig growing process.

As pigs lack sweat glands and cannot cool themselves, it is important that the buildings are ventilated and their temperature regulated. Maintaining a more specific temperature within the pig-tolerance range also maximizes growth and growth-to-feed ratio.

Italy breeds some nine million pigs per annum and one of the country’s major pig producing regions is Lombardy.

In Lombardy, one farm is breeding 10,000 pigs per annum using three warehouses. Within each building, 42 fans are installed into five or six groups, with each group designed to circulate and exchange air while keeping the temperature fixed.

**Ventilation control reduces energy costs**

Traditionally, the ventilation fans were controlled by simply turning them on or off. This proved to be energy inefficient as the fan motors were operated at full speed regardless of the temperature. Furthermore, this technique was crude as there was no sensor to accurately monitor the true temperature level.

The farm engaged the services of FR Sistems of Bagnolo Mella, an original equipment manufacturer (OEM) that produces electronic control devices for climatic regulation throughout industry and agriculture.

**AC drives ensure accurate temperature regulation**

FR Sistems suggested using 2.2 kW, ABB low voltage AC drives as part of its ventilation system design. The system consists of 126 fans, each of 1.5 kW, that keep the air moving and exchanges the fresh air while maintaining a fixed temperature. The drives vary the speed of the fan motors to ensure the temperature remains at its fixed point.
The drives are arranged in groups of five or six, each drive controlling a fan. A temperature sensor measures the ambient temperature and feeds this back via a FR Sistemas’ programmable logic controller (PLC) which is monitoring each group. The fan speed is then adjusted according to the ambient conditions.

**Remarkable energy savings**
The system has reduced energy costs by 60 percent, on average, with payback estimated to be within 15 months.

AC drives control the fan motor’s speed and ensure that it runs no faster than the air flow requires. This results in the reduced noise level.

The drives with IP66/67 protection class means they can operate safely in the wet and humid environments such as when pigs are hosed down with high pressure warm water.

The shape of the heat sink fins allows water to drain away, allowing easy and complete cleaning.

The drives are easy to install, program and start-up, ensuring the installation was commissioned with minimum delay.

As the drives have no external moving parts they are easy to service, thereby minimizing maintenance time and ensuring the pigs are kept at the right temperature at all times.

**Challenges**
- Maintain adequate air flow and temperature in warehouses
- Wet and dusty environment
- Need for low noise levels

**Solution**
- 126 ABB drives controlled by PLC to vary air flow and maintain set point temperatures
- Drives with IP66/67 protection class for use in wet and humid environments
- Fan motor’s speed runs no faster than the air flow requires, thereby reducing noise

For more information please contact:

www.abb.com/drives
www.abb.com/drivespartners

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