

CRIDEC SA, Eclépens VD

Comprehensive renewal of its compressed air equipment enables CRIDEC SA in Eclépens VD to save around one-sixth of its overall electricity consumption.

CRIDEC SA is specialised in the disposal and recycling of hazardous waste. With 60 employees at three sites, the company processes an annual volume of some 50 000 tonnes of primarily toxic waste. Materials range from fluorescent tubes through paints, oils, herbicides and leftover medication to residues from the chemical and pharmaceutical industries. These are sorted, analysed in the laboratory, separated into their components and then recycled if possible. For example, organic absorbers are used to process flammable oils and solvents into solid secondary fuels for the cement industry.

For safety reasons, compressed air double diaphragm pumps are used for recycling potentially flammable chemicals. The many metering valves and both pH metering pumps are operated pneumatically. The company's high compressed air consumption reflects this situation: at project launch, compressed air preparation accounted for some 300 000 kWh per year, or one-third of overall electricity consumption.

The compressed air net covers all onsite buildings. Prior to the project, compressed air was fed via three compressors housed in different buildings, with each compressor equipped with its own air dryer. To avoid condensation from forming in the compressed air lines in cold temperatures, two of the three dryers were set up as absorption dryers. Two of the three compressors had reached the end of their service life.



Site of CRIDEC SA; in the background is the Eclépens cement plant. All photos: Márton Varga, Topmotors



Two of the former compressors

Rather than replacing these two compressors, the compressed air facility was completely revamped. Although the system still comprises three compressors, a refrigeration dryer and an absorption dryer, all equipment is now located in a single room and is centrally managed. This ensures that the speed-controlled compressor can use its full power range before the fixed-speed additional compressors come in. Instead of three dryers working simultaneously, only one is in operation at a time: an energy-saving refrigeration dryer in spring, summer and autumn, and an absorption dryer in winter. In addition, the new compressors are significantly more efficient than the former ones: moving up from Energy Class IE1 (or worse) to IE4 for the unregulated compressors and to system efficient IES2 for the regulated compressor has led to an energy saving of 5-10% for the drives.

Operating data for the first three months show that electricity consumption for compressed air generation has been cut in half. In a second phase, waste heat from the compressors will be used for heat production in the adjacent boiler room. Here, all three compressors feature both air cooling and water cooling. It is estimated that using waste heat can save a further 100 000 kWh of natural gas.

The measures have been developed as part of an objectives agreement with act Cleantech Agentur Schweiz by the energy specialist Marc Gubser, p+p project solutions SA, a partner of Romande Energie.



«The objectives agreement showed clearly that the biggest potential is here.»

Olivier Richoz,
Safety Officer,
CRIDEC SA, Eclépens



The new compressor room

Topmotors

About one-third of the electricity consumption in Switzerland comes from industry. More than 70% is due to electric motor systems. Topmotors' priority is to give an impulse by encouraging the use of highly efficient motors and intelligent controls. All the Topmotors events, together with practical information, can be found here: www.topmotors.ch

Comparison before / after		
	Before	After
Compressors	1x Kaeser ASD 37 T SFC 2x Atlas Copco GA22	1x Kaeser ASD 60 SFC 2x Kaeser ASD 50
Motors	1x 22 kW with frequency converter, built in 2004 2x 22 kW, built in 1994 resp. 1995	1x 30 kW with frequency converter, IES2 2x 25 kW, IE4
Dryer	2x absorption dryer 1x refrigeration dryer operating continuously	1x absorption dryer 1x refrigeration dryer operating alternately
Management	each compressor separately	centralised for all components
Operating time	8 760 h/a	8 760 h/a
Electricity consumption	300 968 kWh/a	148 452 kWh/a
<ul style="list-style-type: none"> ■ Investment costs: 165 000 CHF, with waste heat utilisation approx. 175 000 CHF ■ Savings par year: 152 516 kWh/a electricity and approx. 100 000 kWh natural gas ■ Cost savings per year: 26 995 CHF/a for electricity and approx. 9 000 CHF/a for natural gas ■ Payback: 6.1 years, with waste heat utilisation approx. 4.9 years 		