



Good practices sheet
Energy savings in sawmills

HEAT EXCHANGER ON AIR COMPRESSOR

INVESTMENT LEVEL (FROM 1 TO 3):

- ▼ HUMAN INVESTMENT : ✎
- ▼ RETURN ON INVESTMENT : ⌚
- ▼ COSTS : € TO €€

BACKGROUND AND ISSUES

Compressed air, produced by the compressors using electricity, can account for up to 15% of a company's energy costs.

Present in all sawmills to ensure the operation of many key production machines (debarkers, band saws, edgers, etc.), the compressors convert a large proportion of their absorbed energy into heat. With some integrated energy recovery systems, 75% of this energy can be reused.

PRESENTATION OF THE PLAN AND ITS IMPLEMENTATION

For most compressors currently on the market, the heat recovery systems are integrated in the compressor block (see photo below). The installation can be carried out by the manufacturer of the compressor (usual case), by a specialist company or by the sawmill itself.



Heat exchange system for the compressor

Comment: the recovery process can be adapted to suit any existing compressor by adding a duct and a fan. The energy recovered can be reused as hot water (heating, drying, etc.).

POTENTIAL GAIN

- Energy savings as a result of the technology: 20% (recovery of the heat)

Example of energy savings calculation¹:

A properly designed heat exchanger recovers approximately 50% of the available thermal energy to convert it into practical use for heating air or, less frequently, water.

Nominal power of the compressor	Recoverable heat (approx. 80% of the nominal power)	Annual fuel savings (for annual operating time of 4,000 hrs)	Potential annual savings (€1/litre of fuel)
kW	kW	Litres/year	€/year
90	72	36,330	36,330

Cases observed during visits to sawmills in France:

Heating for the band saw operator's booth (sawmill no. 5), the maintenance room and the crosscut workshop (sawmill no. 2), the sharpening workshop (sawmills no. 9 and no. 17) and the planing room (sawmill no. 18).

- Other improvements

The investment provides greater comfort, which is much appreciated by the operators concerned and creates a very positive image of a company that is concerned about the working conditions of its staff.

- Points to note:

Due to loss of pressure, this process will not be appropriate if the compressor is a long way from the location intended to receive the heat produced.

- Reproducibility:

This operation can easily be used in any sawmill or enterprise with a compressed-air compressor.

In France: Possibility of receiving a bonus for installing a heat exchanger. This is paid by the energy suppliers within the framework of the "Energy Savings Certificates" (ESC) programme. This bonus can vary from one supplier to another.

17% of industrial fuel consumption is lost in residual heat² of more than 100°C, according to studies by ADEME

¹ Source: theoretical calculation according to p. 133, BAT reference documents for Energy Efficiency (EC)

² Residual heat: This is the heat resulting from a process that remains unused by the process