



Good practices sheet Energy savings in sawmills

COMPRESSED AIR¹ (tracing leaks)

¹ Technical source: <http://www.entreprises.cci-paris-idf.fr/web/environnement/air-energie/economies-energie/economiser-energie-air-comprime>

INVESTMENT LEVEL (FROM 1 TO 3):

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

BACKGROUND AND ISSUES

Compressed air is used throughout enterprises dealing with primary wood processing on account of being required for the operation of many items of equipment (debarkers, jacks, conveyors, etc.). Compressed air, produced by the compressors using electricity, can account for up to 15% of a company's energy costs. However, this type of installation generally has a low performance ratio (around 10% at 7 bar), resulting in a relatively high pneumatic kWh value.

Air leakage rates average from 20 to 25%. These leaks can represent between 40 and 50% of the compressor's electricity consumption. Eliminating leaks is therefore a factor in energy savings.

Paradoxically, compressed air is the least monitored and least maintained network in the enterprise.

PRESENTATION OF THE PLAN AND ITS IMPLEMENTATION

Sawmills have developed strategies to trace leaks in an effort to reduce the impact of the company's inadequately functioning compressed air circuits.

- First of all, staff are made aware of the need to trace leaks;
- The aim is then to discover, if possible, the energy impact (quantity, quality, optimum pressure level, etc.) of each sector and to prioritise monitoring actions;
- With the existing system, as many leaks as possible must be identified and repaired:
 - Regular inspection of the network (inspection by ear if the machines have been stopped, otherwise using an ultrasonic sensor.) Replace joints, connections, etc.
 - Frequency:
 - from once a month to a minimum of once every 6 months for the network
 - annually for the machinery

Some examples providing a reduction in the impact on the performance of a compressed air system² :

- Introduce a preventive maintenance visit (in house or using an external enterprise);
- Avoid the use of bellows as far as possible (preferably use aspirators or brushes), otherwise use low output bellows (according to regulations, the maximum is 4 bar);
- Adjust the pressures to the precise level required (most machines operate correctly at 6 bar);
- Oversizing the diameter of the pipes in the distribution network improves the air reserves and reduces the speed of the air and, therefore, losses;
- Complete the network: a few metres of extra pipes will reduce losses by lowering the speed of the air;
- Use hand-operated closing valves or electrical isolation of the aspiration when the equipment is not functioning;
- Use an isolation valve on the network to limit leaks when the workshops are shut down;
- Combining an all-or-nothing compressor with an electronic variable speed drive compressor: this combination enables the compressor's idling speed to be reduced;
- Place a valve at the end of the network to purge the water from the circuit (potential savings: up to 15%);
- Use an adsorption air "drier" to obtain consistent air quality;

Only one sawmill has undertaken a full dedicated study (conclusion: oversized installation, air drier, leak detection).

² <http://www2.ademe.fr/servlet/KBaseShow?sort=-1&cid=96&m=3&catid=16081>: Energy savings in compressed air systems – Further Advice can be consulted on the ADEME website



*Air "drier" for compressed air
compressor*

POTENTIAL GAIN

- Energy savings as a result of the technology: up to 40% of overall savings
- Other improvements:
 - Fewer production quality problems due to leaks;
 - Better production time (actuator chambers filled more quickly).
- Difficulties encountered:

These measures rely principally on staff motivation, without which there is no feedback. A certain lack of interest is noticeable, particularly if the necessary repairs are not carried out swiftly.

- Reproducibility:

Each enterprise has its own system, which should be maintained appropriately. The installation of a variable speed drive compressor is possible at any industrial site able to obtain Energy Savings Certificates (ESCs).

Reducing the pressure by 1 bar can reduce the production costs of compressed air by 7%!
