



Good practices sheet
Energy savings in sawmills

VARIABLE FREQUENCY DRIVES

INVESTMENT LEVEL (FROM 1 TO 3):

- ▼ HUMAN INVESTMENT : 
- ▼ RETURN ON INVESTMENT : 
- ▼ COSTS : €€

BACKGROUND AND ISSUES

The operation of electric motors can account for up to 70% of the industry's consumption. By adjusting the rotation speed of the motors to the required output, it is possible to achieve a substantial reduction in energy needs and, therefore, in the consumption of equipment fitted with electric motors (debarkers, band saws, canters, edgers, compressors, sorting lines, etc.).

In the light of constantly increasing operating costs, sawmill can profit from the replacement of one of its main motors with the installation of an adapted variable-frequency drive (VFD).

PRESENTATION OF THE PLAN AND ITS IMPLEMENTATION

The installation of a VFD optimises performance and enables the equipment involved in the process to be accurately regulated.

In particular, a VFD provides:

- Savings related to a reduction in the power used (during start-up and during long-term operation),
 - Savings in energy consumption arising from the constant adjustment of speed in line with requirements.
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Variable frequency drives for production machinery

POTENTIAL GAIN

- Energy savings as a result of the technology: 20 to 30% depending on the characteristics

Set-ups observed during visits to sawmills in France

Sawmill numbers	Relevant equipment	Comments
1	Band saw	Replacement motor
2 ; 4 ; 5	Canter, compressor	Purchase of new equipment
12	Boiler, aspirator, edger and finger joint machine	
9	Conveyor	Limits speed if there are no products
15	Planing machine	Propulsion speed of machine with VFD
16	Edger, compressor and sorting line	Purchase of new equipment
17	Log yard, band saw, edger line	Two speed on the band saw

- Other improvements:
 - Improved flexibility and regularity of cut;
 - Winter sawing: band speed adjusted in line with the level of frost penetration of the wood (control on band saw console);
 - Reduction of pressure irregularities and mechanical stress by the provision of stability and accuracy;
 - Reduced operating costs (increased working life of tools: period between sharpening doubled, reduced maintenance costs, reduced stoppage times, etc.);
 - Productivity increased by better balance of propulsion speed.

- Points to note:
 - This equipment is likely to produce harmonic currents. These place demands on the network: it is possible to counter these currents by installing anti-harmonic filters.
 - A compressor with a variable frequency drive will have little effect unless air leak detection is carried out at the same time.

- Reproducibility:

This operation can be used in any sawmill. However, priority should be given to high power motors with a significant annual operating time that have not previously been fitted with a VFD (compressors, cyclones, pumps, fans, etc.).

It is advisable to carry out a feasibility study before undertaking this type of investment.

- In addition:

A variable frequency drive can be paired with a high-efficiency motor (e.g. type EFF2) to increase savings in electricity consumption. Investment aids (Energy Savings Certificates) can represent up to 30% of the purchase price of the motor.

A soft start management system can be used to reduce consumption peaks when installations are started up.

Halving the output of a pump or fan by using a variable frequency drive means dividing its energy consumption by 8!
