APPLICATION NOTE: Saw blade cutting Machine for Tie Bars and Metal Profile WPP-A Magnetostrictive Position Transducer

Overview

- **Application criticality**: Real-time, precise and repeatable position control of the saw blade
- **Product**: WPP-A Magnetostrictive transducer - 750 mm stroke – aluminium profile
- **Results**: WPP-A enabled the real-time position control of the saw blade - thanks to the position reading refreshed every 1 ms with a linearity error ≤ ±0.02% FS and a repeatability of 0.01 mm

The process

A saw blade cutting machine can be used to cut tie bars and metal profiles precisely and automatically.

Usually the cut is made by circular saws or hacksaws with the cutting speed that can vary, depending on the material and profile shape.

The saw blade can move up and down on the vertical plane (red arrow in Figure 1).

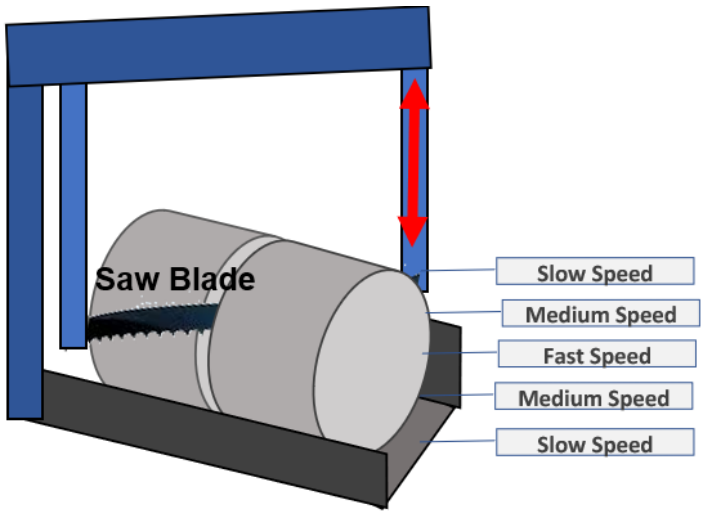

Figure 1 – Process scheme

The challenge

To obtain a uniform and regular cut of the workpiece, production saws must cut at high speed and reduce potential vibrations of the blade at the same time.

In order to reduce the cutting time and to preserve the sharpness of the blade, knowing accurate and real time position of the blade is very important.

For example, in the case of a cylindric profile the blade starts cutting slowly, increases the speed up to a maximum at the centre and finally slows down again towards the lower edge.

Product benefits

- The WPP-A Magnetostrictive transducers in combination with the sliding cursor PCUR210 yields a linearity error ≤ ±0.02% FS.
- The position reading is refreshed every 1 ms – this allows to know the position of the blade in real-time.
- This transducer can withstand vibrations with accelerations up to 12 g.

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Solution

Position control of the saw blade for tie bars and/or metal profiles:

WPP-A Position Transducer - profile type – 1 No.

- Transducer stroke/material: 750 mm, profile in aluminium
- Position reading refresh time: 1 ms
- Cursor: slide cursor PCUR210
- Repeatability: 0.01 mm
- Signal linearity (error): ≤ 0.02 % FS
- Shock Resistance: 100 g
- Vibrations Resistance: 12 g

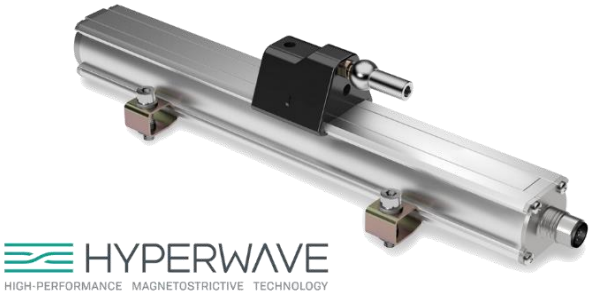

Figure 2 – Product: WPP-A magnetostrictives position transducer