The image shows a complex industrial machine, likely a heat treatment furnace, used for processing band knives and steel rules. The machine features several large, dark-colored cylindrical chambers or rollers. A prominent blue hose is connected to the top of the machine. The background is filled with various mechanical components, including pipes, valves, and structural frames, all in a clean, industrial setting.

## BAND KNIVES / STEEL RULES

**ALO 152**

**ALO 192**

**ALO 192-HD**

CUT TO LENGTH LINE FOR BAND KNIVES

HARDENING / TEMPERING OF EDGES FOR STEEL RULES / BAND KNIVES

HARDENING / TEMPERING OF EDGES FOR STEEL RULES / BAND KNIVES"HEAVY DUTY"

## ALO152

### Cut to length line for band knives



#### THE SYSTEM COMPRISES:

Double payoff coiler  
Demagnetizer  
Side straightening units (2 ea)  
Flat straightening unit  
Twist straightening  
Ink-jet printer  
Width and camber classification system  
Length measuring and feeding unit  
Shear  
Out feed / sorting unit  
Magazine or coiler

#### CAPACITY:

Band width:	20 - 100 mm	¾ - 4"
Band thickness:	up to 2.54 mm	up to 0.1"
Band speed coil to coil:	up to 45m/min	150 ft/min
Band speed, coil to blade:	25 - 28 blades/min (L=1m / 3 ft)	



*Operator panel*



*Width and camber classification system*



*Double turnable payoff coiler*

## MACHINE DESCRIPTION

### Payoff coiler

The powered payoff coiler are equipped with an enforced coil retaining ring covered with an edge protective material. Adjustable friction brake and disc brakes. Coil speed are controlled by a ultra-sonic loop system.

### Straightening

2 powered camber straightening units with carbide rolls are mounted on a inspection bench that can be equipped with pneumatic shear and inkjet printer.

The flat straightening rolls of both upper and the lower roll frame are supported by back-up rolls and are surface-hardened. The upper roll frame are easily adjusted with four turn wheens and gauges. The upper and lower straightening rolls are driven synchronously by two high torque hydraulic motors. A twist straightening unit are aslo included.

### Classification system

High speed and high resolution photodiode/laser system width and camber classification.

### Feed/measuring system

Robust 4-wheel drive system with integrated length measurement via pulse transducer. Lengths and number of blades are ordered on a touch screen OP interface.

### Shear

The shear blades are made of hardened and ground powder tool steel and can be reground. The design admits adjustment of both slides and cutters.

### Magazine

Number of blades can be chosen in multiples of ten for each section of the magazine. The blades will then be distributed into respective section according to numbers chosen.

## TECHNICAL SPECIFICATION:

Band width:	9 - 50 mm	3/8 - 2"
Band thickness:	0.5 - 1.5 mm	0.02 - 0.06"
Blade length(depending on magazine length):	500 - 1500 mm	20 - 60"
Magazine capacity:	60 blades /section (1.42mm thick) or 100 blades/section (0.8mm thick)	
Air pressure:	6.2 bar	91 psi
Voltage:	220 - 500 VAC, 3-phase, 50 - 60 Hz ± 1%	
Power consumption (at max output power):	17 kVA	
Feed speed:	Up to 45 m/min or 25-28 blades/min (L=1000mm)	



## ALO 192

### Induction hardening and tempering of edges for steel rules and band knives



#### THE SYSTEM COMPRISES:

- High efficiency and low energy consumption generators with air-cooled oscillator tubes.
- Automatic anode current control keep the anode current constant during the whole coil.
- Automatic flash guard protect the system against damage from flash-overs.
- Band feeder with a pulling 4-wheel drive system designed for accurate speed and guiding.
- Electromagnetic brake for optimal control of band tension.
- Parameters for speed, effect and power settings can be saved in HMI giving high reproducibility
- Fast and easy start up and change over.

#### THE SYSTEM COMPRISES:

- Feed unit
- Hardening generator and inductors
- Tempering generator and inductor
- Closed coolant system

#### CAPACITY:

Band width 9 - 50 mm  
 Band thickness 0.5 - 1.5 mm  
 Maximum depth of hardness 0.3 mm  
 Hardening generator frequency is 27 MHz.  
 Tempering generator frequency is 1.5 MHz

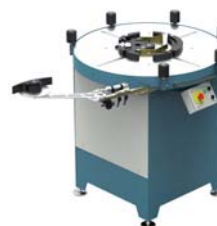
#### OPTIONS / ACCESSORIES:



ALO 822  
Double coiler



ALO 831  
Double coiler



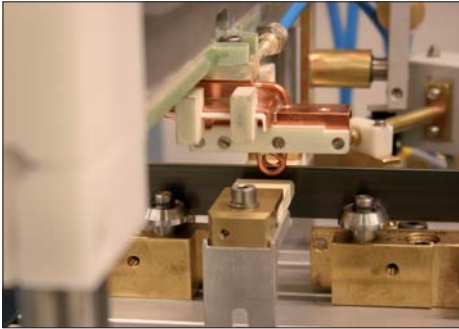
ALO 880  
Electrical coiler



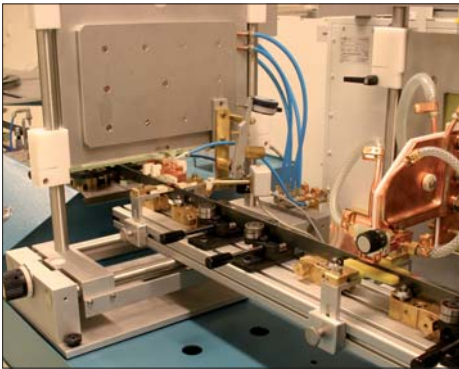
ALO 106 CUBE  
Coil handling system

## MACHINE DESCRIPTION

### Band feeder



*Hardening unit with flash guard*



*Hardening generator with automatic anode current control and tempering unit*

The band feeder consists of two units, one 4-wheel feed unit, the other as an adjustable brake to control the band tension by using an electro magnetic friction brake. Both units are equipped with two pairs of inclined rolls. The four rolls on the feed unit are driven by a servomotor, and the speed is controlled by a servo controller. The oscillating circuits with the inductors are located between the brake and the feed units such that the band is pulled through the inductors at a controlled tension.

### Generators

The hardening and tempering generators are enclosed in separate aluminium cabinets, equipped with separate oscillating circuits connected to the cabinets via coaxial cables. The generators are air cooled, thus limiting the cooling water requirements to inductors and oscillating circuit only. The hardening generator is equipped with an automatic anode current regulator, thus ensuring a stable power during the hardening operation. The tempering generator is equipped with a chopper for infinitely variable control of the output power.

### Inductors

The interchangeable inductors are made of copper tubing and can be custom made for different pitches and band gauges. Adjustable in height for different blade widths and sideways for different blade gauges.

## TECHNICAL SPECIFICATION:

Band width:	9 - 50 mm
Band thickness:	0.5 - 1.5 mm
Capacity:	0 - 25 m/min
Air pressure:	6.3 bar
Standard voltage:	400VAC $\pm 10\%$ 3-phase, 50-60 Hz $\pm 1\%$ directly earthed system, other voltages available upon request.
Space requirement (l x w x h):	4 x 2 x 2m
Weight:	1600 kg
Power consumption (at max output power):	20 kVA
Other customer requirements may be discussed between customer and ALO.	

## ALO 192HD

Induction edge hardening and tempering of steel rules and band knives



### THE SYSTEM COMPRISES:

Feed unit  
Hardening generator  
Tempering generator  
Closed coolant system

### CAPACITY:

Band width 10 - 100 mm  
Band thickness 0.4 - 1.5 mm  
Maximum depth of hardness 0.3 mm  
Hardening generator frequency is 5 MHz.  
Tempering generator frequency is 0.7 MHz.

- High efficiency and low energy consumption generators with air-cooled oscillator tubes.
- Automatic anode current control keep the anode current constant during the whole coil.
- Automatic flash guard protect (the system) against damage from flash-overs.
- Band feeder with a pulling 4-wheel drive system designed for accurate speed and guiding.
- Electromagnetic brake for optimal control of band tension.
- High reproducibility due to accurate digital/analogue settings of power, speed and work coils.
- Fast and easy start up and change over.

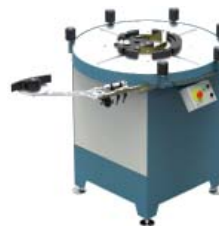
### OPTIONS / ACCESSORIES:



ALO 822  
Double coiler



ALO 831  
Double coiler



ALO 880  
Electric coiler



ALO 106 CUBE  
Coil handling system



*Operator panel and hardening unit*



*Picture showing tilt able take up coiler*

## MACHINE DESCRIPTION

### Band feeder

The band feeder consists of two units, one 4-wheel feed unit, the other as an adjustable brake to control the band tension by using an electro magnetic friction brake. Both units are equipped with two pairs of inclined rolls. The four rolls on the feed unit are driven by a servomotor, and the speed is controlled by a servo controller. The oscillating circuits with the inductors are located between the brake and the feed units such that the band is pulled through the inductors at a controlled tension.

### Generators

The hardening and tempering generators are enclosed in separate aluminium cabinets, equipped with separate oscillating circuits connected to the cabinets via coaxial cables. The generators are air cooled, thus limiting the cooling water requirements to inductors and oscillating circuit only.

The hardening generator is equipped with an automatic anode current regulator, thus ensures a stable power during the hardening operation. The tempering generator is equipped with a chopper for infinitely variable control of the output power.

### Inductors

The interchangeable inductors are made of copper tubing and can be custom made for different pitches and band gauges. Adjustable in height for different blade widths and sideways for different blade gauges.

## TECHNICAL SPECIFICATION:

Band width:	10 - 100 mm
Band thickness:	0.4 - 1.5 mm
Capacity:	5 - 35 m/min
Air pressure:	6.3 bar
Standard voltage:	400VAC $\pm 10\%$ 3-phase, 50-60 Hz $\pm 1\%$ directly earthed system, other voltages available upon request.
Space requirement (l x w x h):	4 x 2 x 2m
Weight:	2000 kg
Power consumption (at max output power):	20 kVA
Other customer requirements may be discussed between customer and ALO.	



**POWER HACK SAWS**

**ALO 283**

SETTING MACHINE FOR POWER HACK SAWS



## ALO 283

### Setting machine for power hacksaw blades



#### THE SYSTEM COMPRISES:

Setting unit  
Infeed magazine  
Outfeed magazine

#### CAPACITY:

Band widths:	20 - 75 mm
Band thickness:	Up to 2.5 mm
Overall setting accuracy:	±0.02 mm
Symmetry accuracy:	±0.02 mm
Max. group length:	80 mm
Tooth pitch:	¼ - 32 tpi



Picture showing infeed magazine



Picture showing collect magazine

## MACHINE DESCRIPTION

This setting machine is fully automatic and all functions are controlled by a programmable controller. The in feed magazine, separates and feeds one blade at a time to the setting unit. The whole length of the blade may be set, or portions at each end may be left unset.

Setting symmetry and over all set is easy to adjust with micrometers. During the setting operation the blade is clamped by clamping jaws to make it possible for the oscillatory moving setting tools to set the teeth to perfection. Control panel allowing machine to be operated in manual, auto and step by step mode.

The setting speed is variable by use of a thyristor control. With custom made setting tools the machine will set all known tooth forms and setting patterns with a repeated pattern within a length of 75 mm or less. After the setting operation the blade will be transported out to a screw collect magazine.

Both infeed and collect magazine takes approx.200 blades.

### OPTIONS:

#### **ALO 283/186 Automatic set gauge.**

A CCD camera for automatic set control can be built in line with the setter. The camera controls the set blades against custom set tolerance. Continuous information will be shown on the PC screen about the blades set within tolerance. If the set exceeds any of the set-up tolerances the machine stops and reason why is showed on the screen.

The set values are stored and/or can be printed out at any time by user request, or automatically after a predefined batch, or at an automatic out of tolerance stop. At system startup time an automatic self test of the set gauge computer and the camera is done.

The system also includes a speed and blade counter.

### TECHNICAL SPECIFICATION:

Blade width:	20 - 75mm
Blade thickness:	Up to 2.5mm
Blade length:	270 - 510mm
Tooth pitch:*	¾ - 32 tpi
Setting tolerance:	±0.02 mm
Symmetry tolerance:	±0.02 mm
Max. feed length:	125 mm. See remarks.
Capacity:	20 - 30 blades / min
Approx. magazines capacity:	200 blades.
Air pressure:	6.3 bar
Voltage:	230 VAC ±10 %, 1-phase, 50-60 Hz ±1%, directly earthed system
Weight:	325 kg

### REMARKS:

ALO 283 can set all forms of groups and teeth with a repeated pattern of max 125 mm

Max. VIP setting/band thickness:	1.1 mm	2/3, 3/4, 4/6, 6/8, 6/10, 8/12, 10/14 VIP
	1.8 mm	2/3, 3/4, 4/6, 6/8 VIP
	2.5 mm	2/3, 3/4, 4/6 VIP

