



AIR BEARING SHAPEMETER

SHAPE MEASUREMENT FOR THE ROLLING INDUSTRY

The Air Bearing Shapemeter, provided by Primetals Technologies, is designed to provide accurate on-line shape measurement of rolled metal sheet and foil material.

The modular construction of the instrument enables it to be tailored to any specific application without compromising its full operating capability.

CONSTRUCTION

The Air Bearing Shapemeter roll comprises a series of hardened, precision ground rotors, supported by an air film on a stationary stainless steel arbor. This design results in low inertia rotating elements with negligible frictional resistance, inherent of air bearings, thereby eliminating the need for helper drives. Connected by a detachable pneumatic umbilical cord the electronics are mounted remotely from the roll for easy access and protection from harsh mill environments.

RELIABILITY

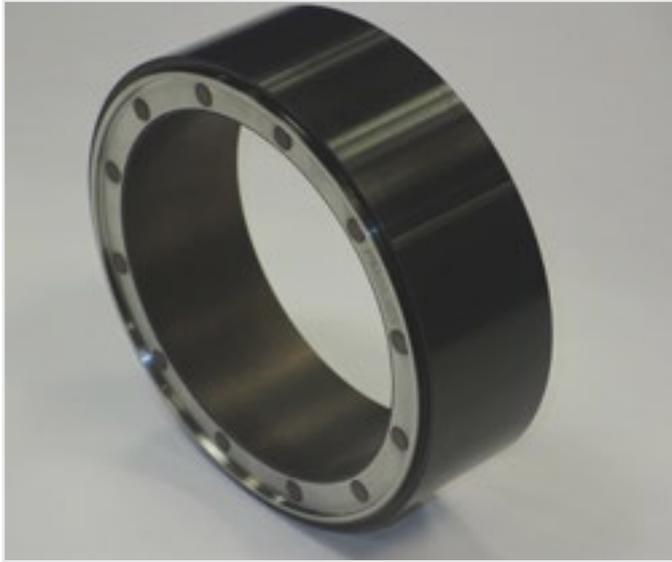
Reliability has been proven over the past 40 years through sturdy construction and simple design.

REFERENCES

With circa 700 references worldwide, the Air Bearing Shapemeter is one of the most sensitive measuring devices for the shape measurement of rolled sheet material.

BENEFITS

- Highly accurate on-line shape measurement
- Low on site maintenance
- Robust, modular design
- Small installation envelope
- Proven reliability
- No helper drive required
- Highly sensitive
- Continuous output
- Worldwide on-site service and process support



Plasma Coated Rotor



Mirror Finish On Stainless Process Line

Specifications	
Roll O/D	147 mm, 164 mm or 200 mm
Number of rotors	To suit application
Rotor width	25 mm to 120 mm
Strip Width	Up to 3 m
Strip thickness range	2 x 0.005 mm to 5 mm
Roll speed	>3000 m/min
Signal response time	<30 ms
Signal resolution	0.11 N
Signal output	Profibus / Profinet
Operating temperature	Up to 200°C

OPERATING PRINCIPLE

An array of jets supply each rotor with air from a common plenum chamber in the centre of the arbor. The differential pressure measured between the top and bottom of the inside of each bearing is proportional to the load applied to the rotor. Hence, the tension is calculated at each rotor position across the width of the strip to provide the tension profile or 'shape' of the rolled strip.

Each differential pressure output is measured by means of a high integrity pneumatic transducer, which is remotely located in the transducer housing attached to the end of the Shapemeter arbor via an armoured signal umbilical. Each measuring channel has a single moving part, the rotor. All other parts are stationary, including the measurement and signal transfer elements.

The signal outputs provide continuous readings that are independent of mill speed allowing a fast signal response and high accuracy even at low rolling speeds.

FEATURES

The Air Bearing Shapemeter, provided by Primetals Technologies, provides the user with the following features and benefits:

- Roll diameters available to suit various applications
- Rotor widths available from 25mm to 120mm to suit resolution requirements
- Low inertia and negligible friction eliminates the need for an external drive
- Bearing exhaust air prevents ingress of contaminants
- Small installation envelope provides flexibility for fitting in confined spaces
- Simple design and modular construction allows straightforward on-site maintenance
- Continuous signal output provides a fast response to minimise control delays
- Remotely located electronics
- Quickly detachable signal umbilical

OPTIONS

- Multi-position retraction mechanism for accurate vertical positioning
- Automatic trend alignment for optimum signed integrity
- Various rotor coating choices including chromium, flash chrome and our recently introduced Plasma-Enhanced Chemical Vapour Deposition (PECVD) option providing a surface three times harder than traditional hard chrome

Primetals Technologies Limited
A joint venture of Mitsubishi Heavy Industries and partners

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