

Shapeline

Products & Applications

We are Shapeline

Shapeline is 100 % focused on optical flatness measurement for the steel and metal industries.

Our sensors and systems in the Veri-series will help you to keep your product flatness under control from hot rolling and different process lines – to finishing, service centers and toll processors.

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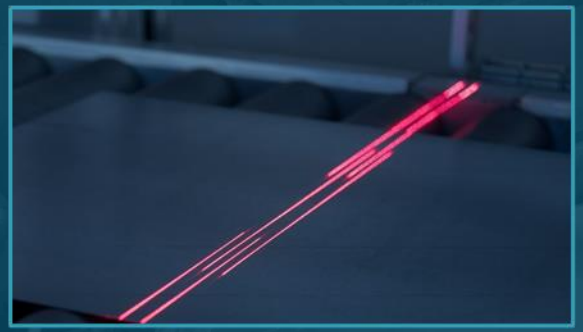
Customers



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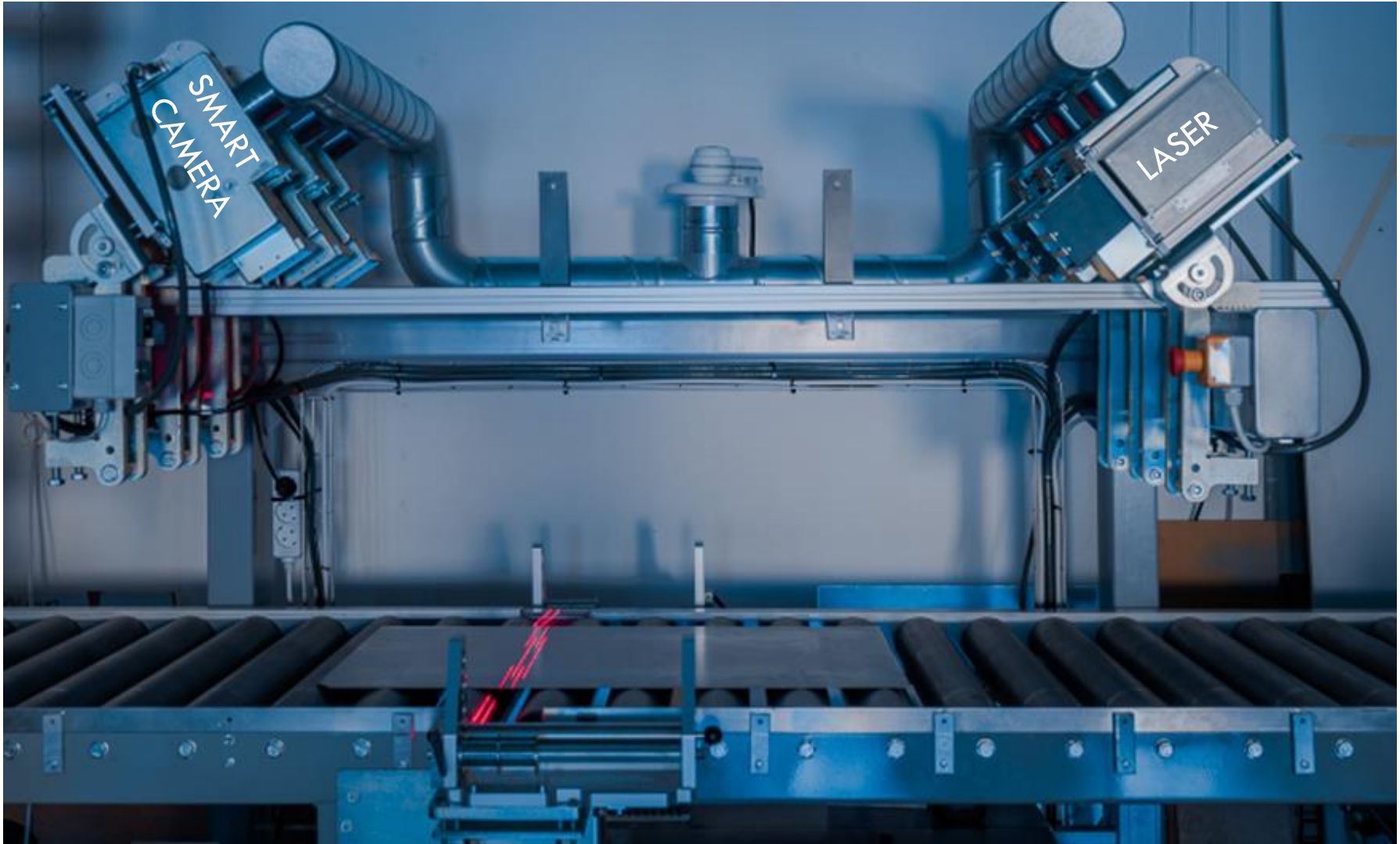






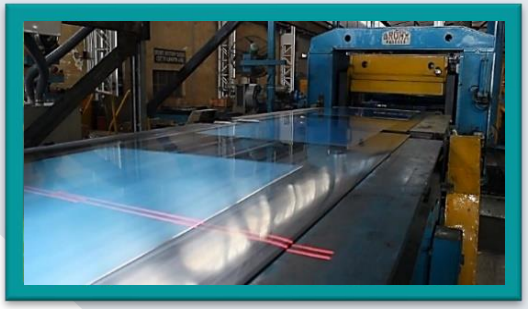
Product line / Technology

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SMART CAMERA
LASER

Products and Applications









- Heavy plate
- Sheet
- Process lines
- Hot rolling
- Quench and temper

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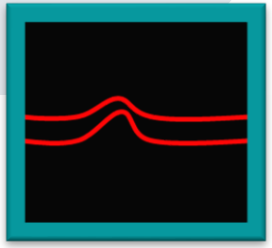
Measurement principle

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Measurement principle overview

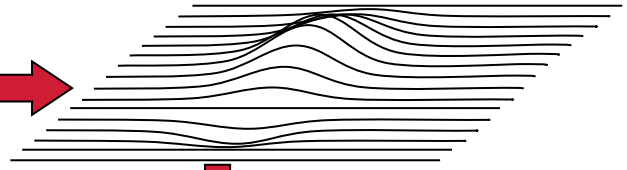
Camera image





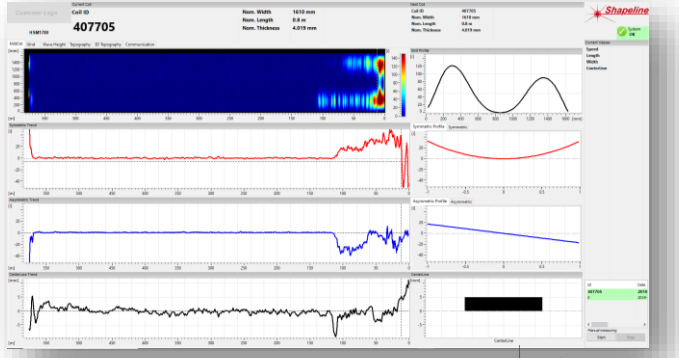
>20 years of software development

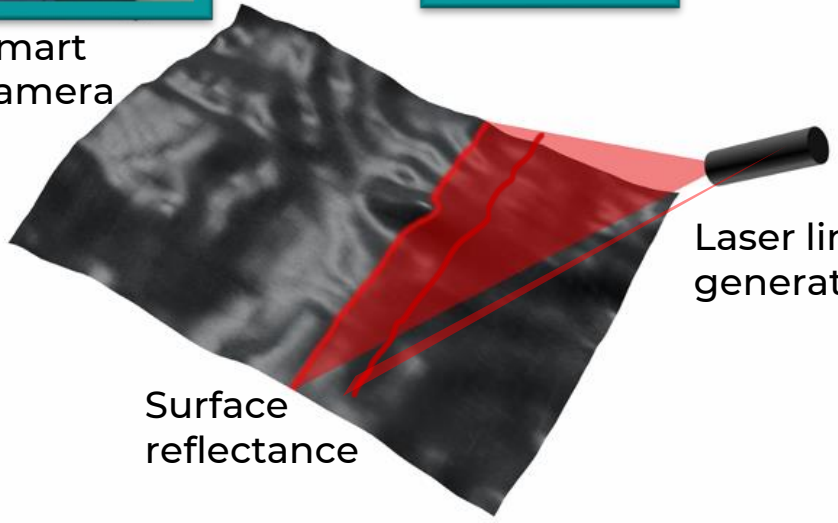
Topographical 3D-data



Smart camera

Flatness metrics, evaluations and UI - presentation



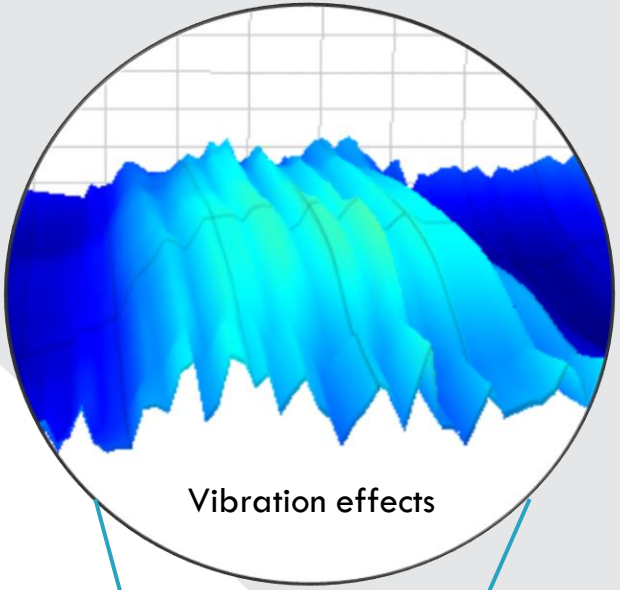


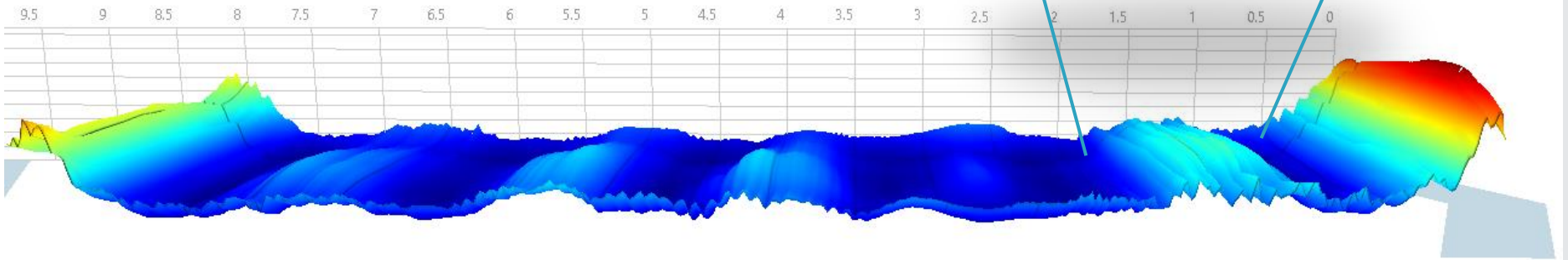
Laser line generator

Surface reflectance

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Vibration/Bouncing



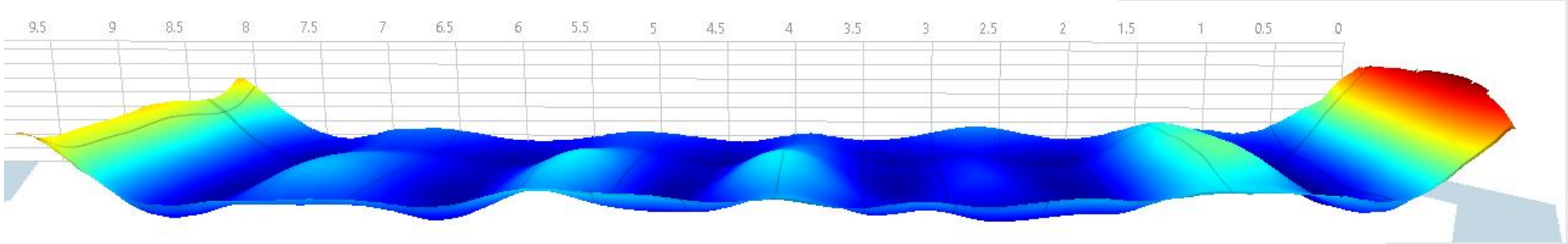


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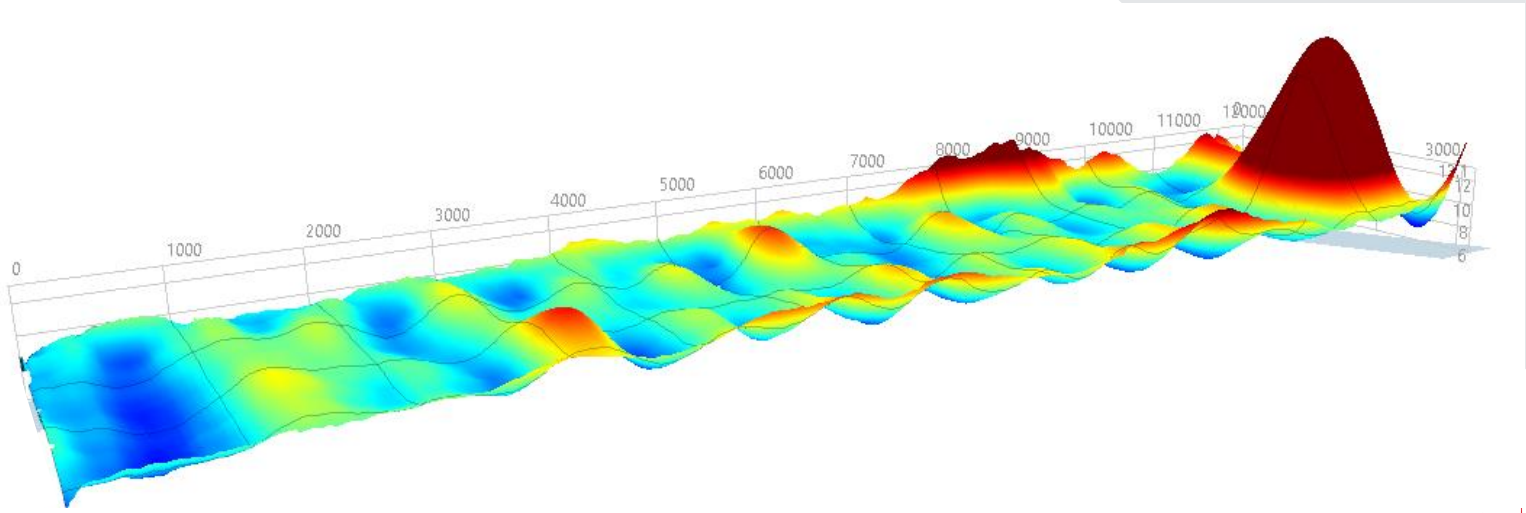
Shapeline's state-of-the-art technology for detecting and removing vibration/bouncing effects has been developed and continuously refined for 20 years!

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Flatness Measurement & Evaluations

Topography

- The shape of the material
- Complete surface – every mm^2

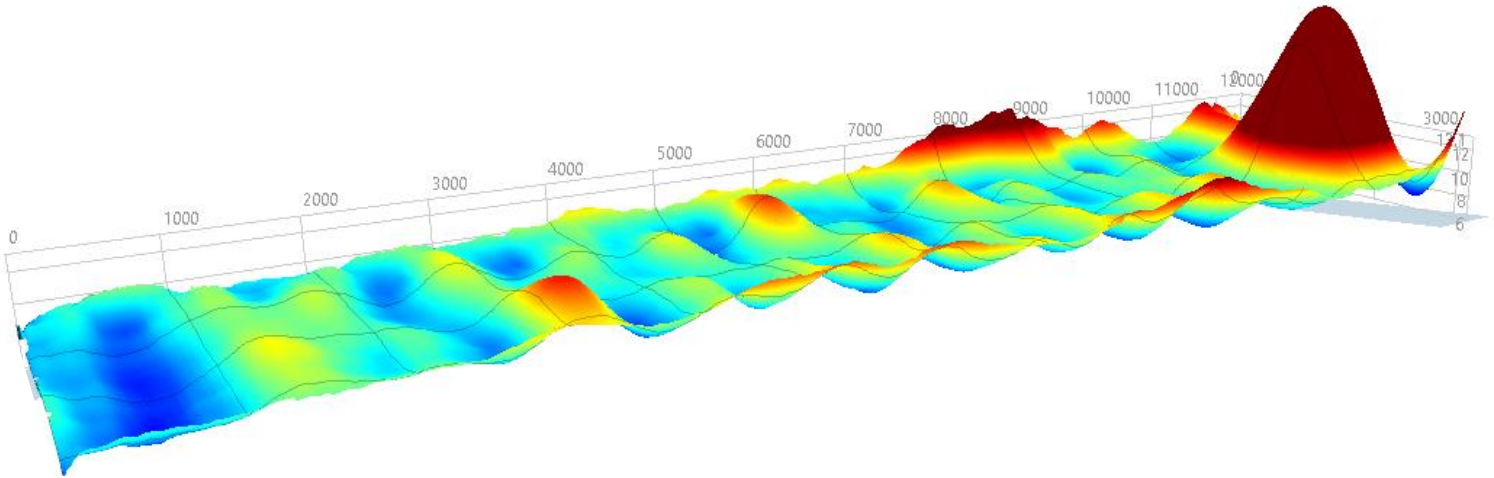


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Flatness Measurement & Evaluations

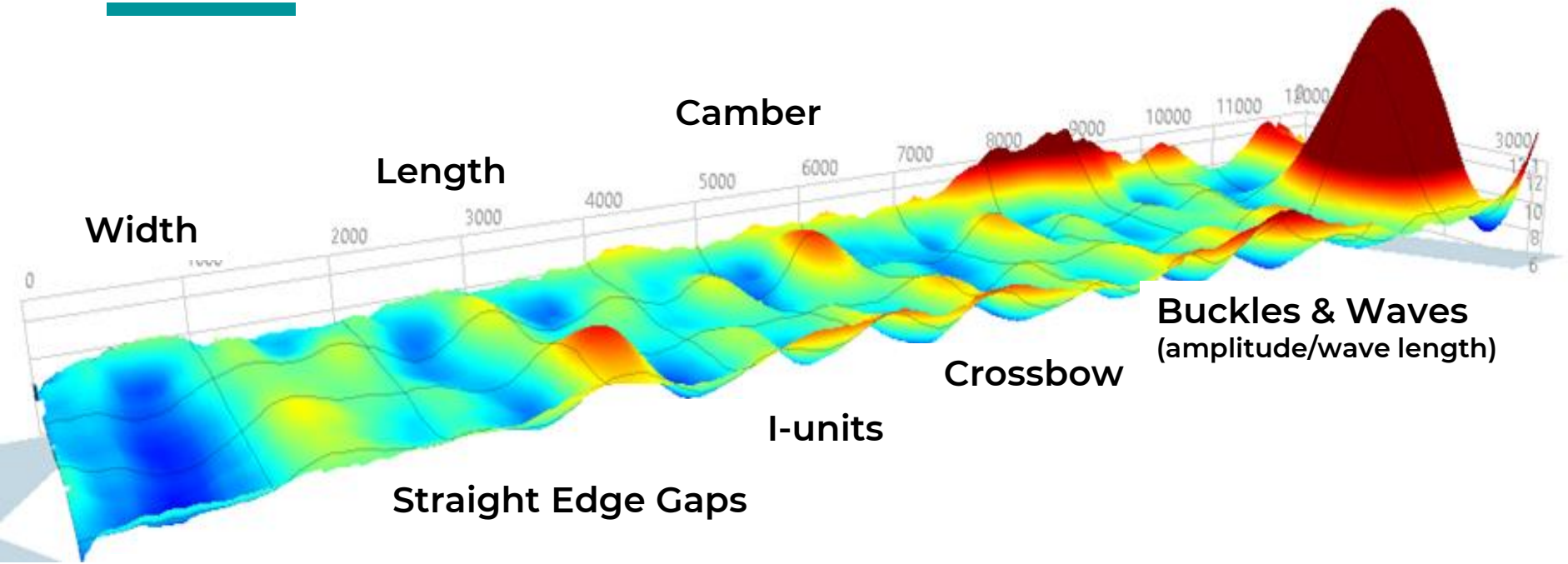
Flatness metrics

- **What is a flatness metric?**
  - All flatness metrics are derived from the topography/shape of the plate or strip surface, i.e. you always need an accurate measurement of the plate/strip surface in order to calculate a flatness metric and/or do an evaluation.



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What we measure?



Every square mm is measured!

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Applications

- Production
- Process improvement / development
- Sales / Customer support

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Applications – Production

- **Quality assurance / control**
  - Fully automated flatness quality control of all produced material
  - Flatness evaluations against defined standards
  - Flatness evaluations against internal standards
  - Flatness evaluations against customer specific standards

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Applications – Production

- **Process feedback – Control**
  - Real-time / automated – Closed loop
  - Near real-time / semi-automated – Human in the loop

- **Process feedback – Flow decisions (ready, rework, scrap etc.)**
  - Automated – Flatness evaluation data to L2 used for automatic decision
  - Manual – Flatness evaluation data presented to Operator is used for manual decision

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Applications – Process

- **Process improvement / development**
  - Setup/recipe improvements through analysis
  - Statistics gathering
  - Statistics output in real-time

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Applications – Sales

- **Sales / Customer support**
  - Reclamation support
  - Tolerance analysis

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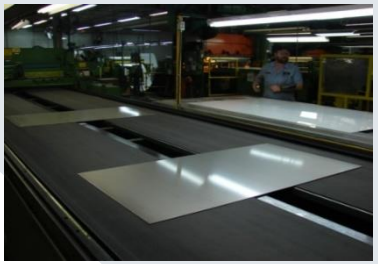
Applicable locations



Heavy plates



Strip process lines



Cut-to-length lines



Hot strip mills



Precision strips

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Product & system line

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Main product line



- **VeriFlex**
  - Hot & cold leveling, wide strip, quenched and tempered, finishing lines, any material width.



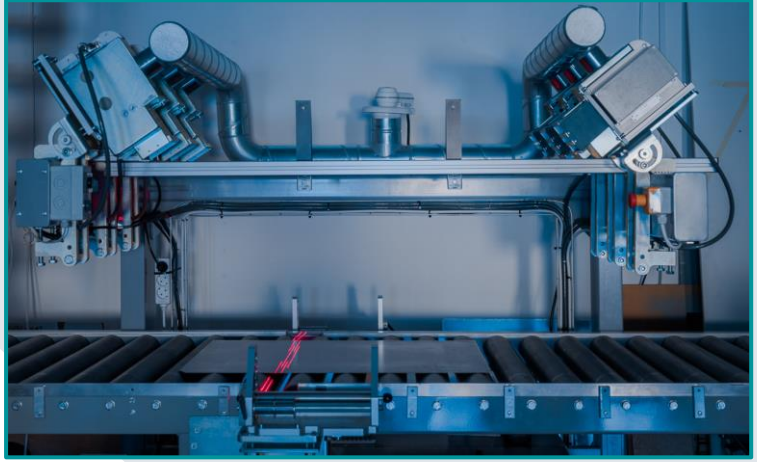
- **VeriFlat**
  - Strip processing, CTL lines, steel service centre's, material width <2m.



- **VeriShape**
  - Hot Rolling/Strip Mill control, after finishing mill and/or accelerated cooling.

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VeriFlex



- High accuracy & high resolution.
- Flatness & width gauge for any hot and cold plate and strip application.
- Shapeline’s proprietary solution for detecting and removing vibration effects.
- Modular design
- Powerful SW tools

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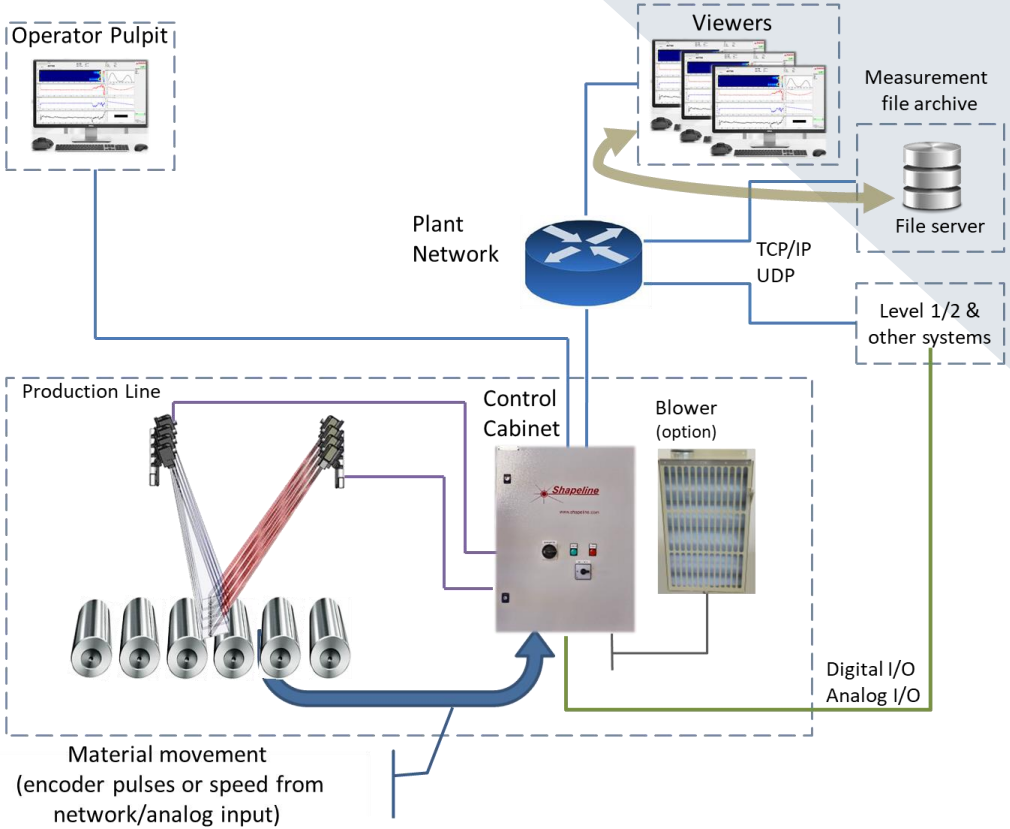
VeriFlex – Leveler Application example





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Normal system configuration



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VeriFlat

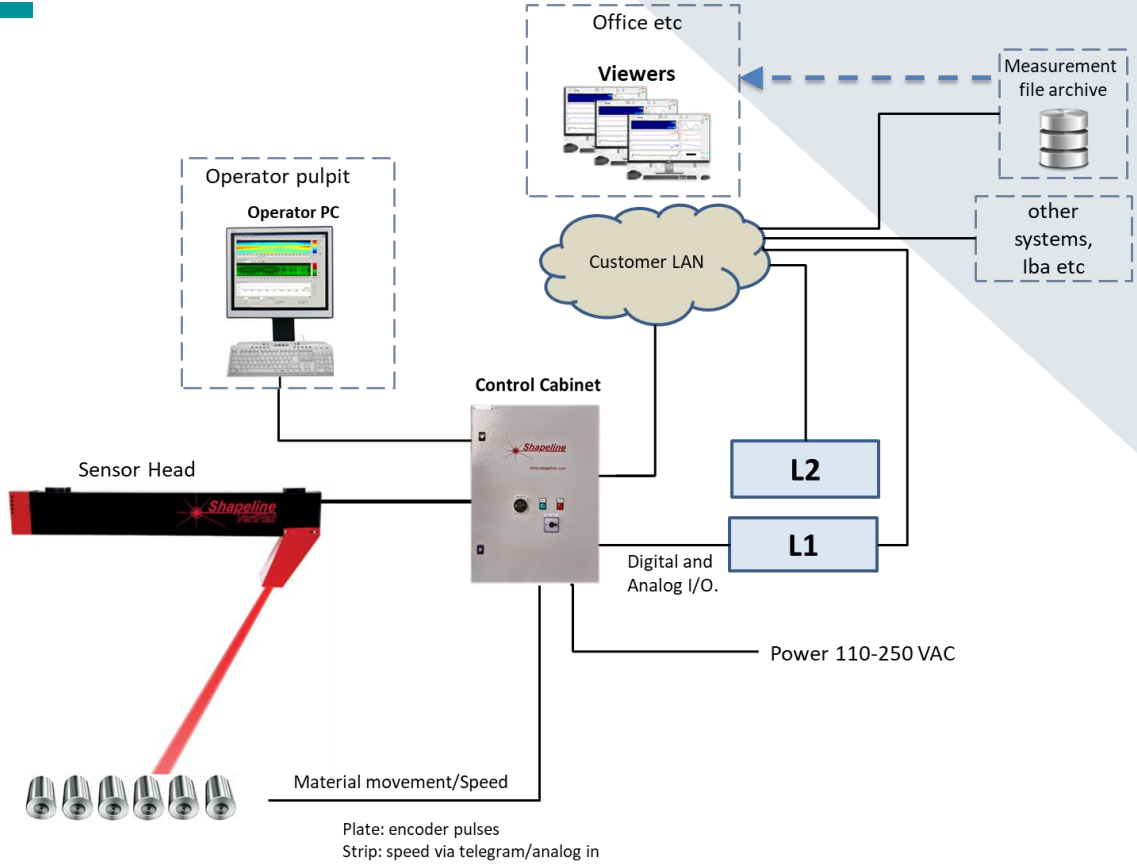
- Flatness & width gauge for strip processing lines & CTL lines up to 2m.
- Comes pre-calibrated from factory.
- Simple installation & easy to use.
- Shapeline’s proprietary solution for detecting and removing vibration effects.





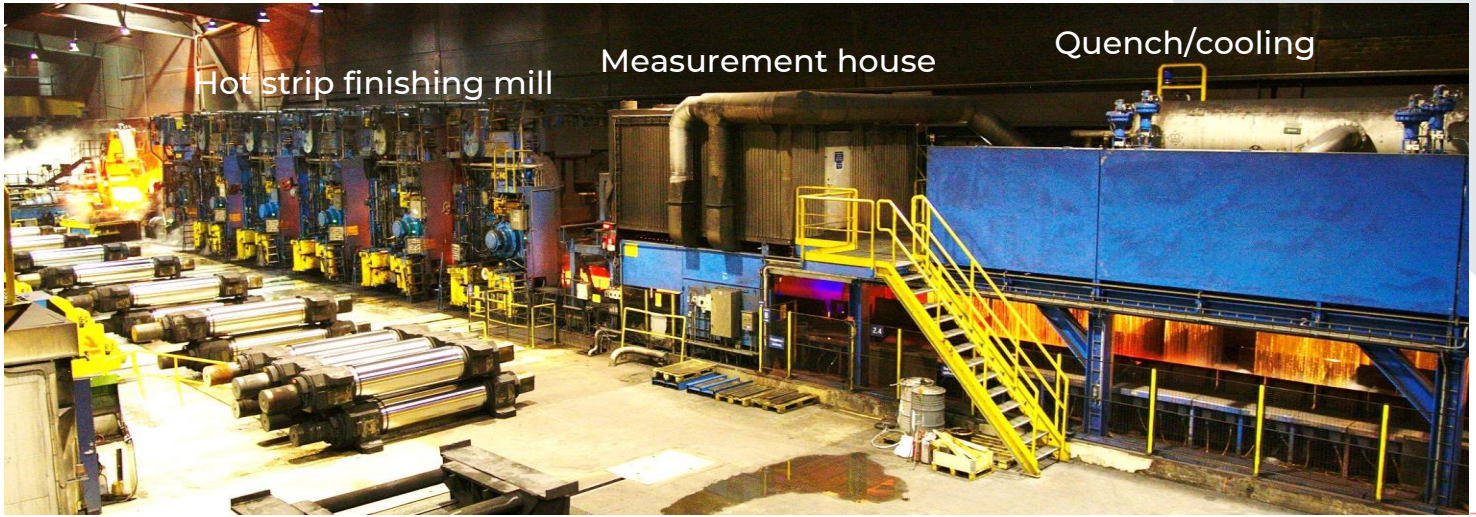
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Veriflat system configuration



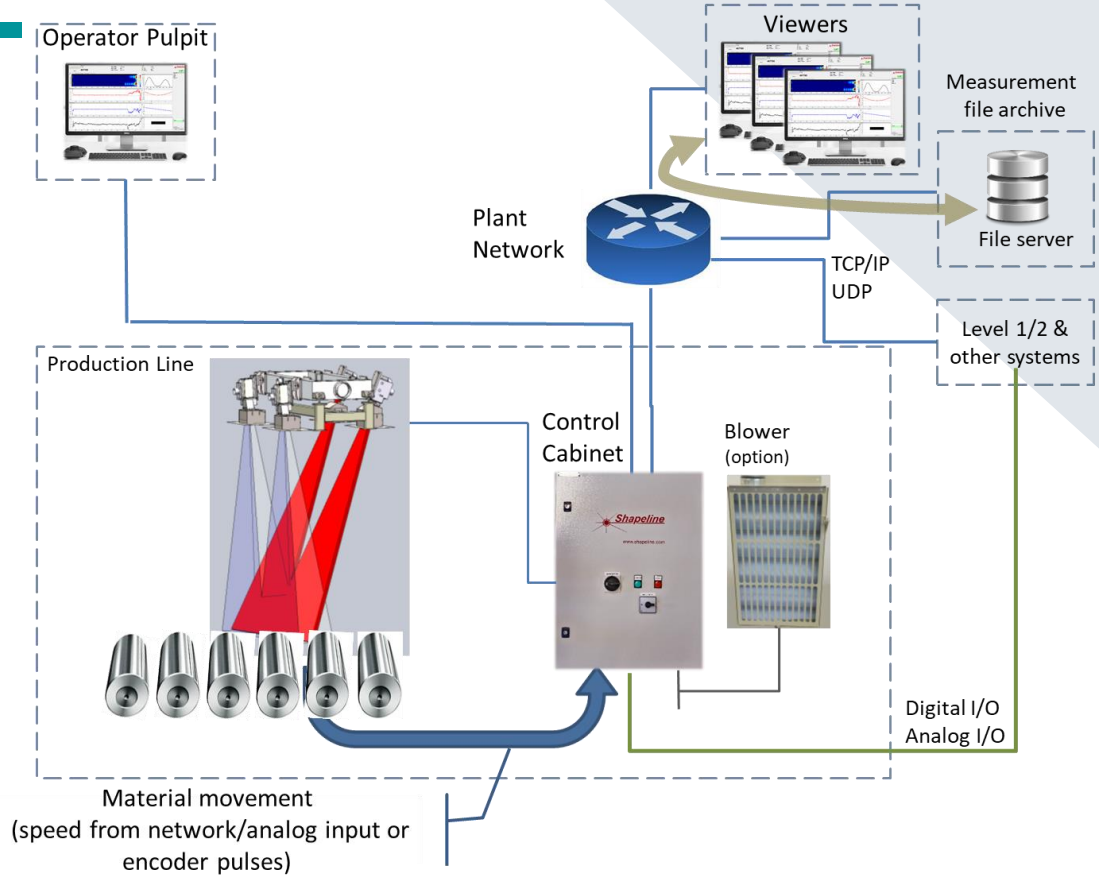
VeriShape

- Width, flatness and shape
- For hot rolling mill control
- Process development



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VeriShape system configuration



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Summary – benefits with Shapeline

- Provides unsurpassed accuracy
- Tailored for wide range of applications
- High profile resolution for the detection of finest details
- Robust design, no moving parts, long last components
- Detection and removal of vibrations and continuous edge tracking effectively removes unwanted effects from strip movement and vibrations
- Real-time evaluation and 100% quality control
- Intuitive 3D visualization
- Remote diagnostics and maintenance
- Global network and service support

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Let's Talk!
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