SMART FACTORY – ROLL FORMING 4.0

Dr. Tilman Traub
DREISTERN GmbH & Co. KG
MEGATRENDS CHALLENGING INDUSTRY

**Sustainability**
- Economically and ecologically
- Transparency and traceability
- E-Mobility

**Complexity**
- More variety
- Tighter tolerances
- More challenging material (MP1500)
- New geometries

**Demography**
- Knowledge retention
- Missing experience
- Choice of suitable countermeasures

---


HOW TO FACE THE CHALLENGES

- Roadmap to digitalize roll forming:
- Challenges
  - Mechanically influenced environment ⇔ Need for information
  - Each department has its own ideas which processes need to be supported
  - After step 3: Crosslinks between companies
    → Till step 3 in the own hands
- Use Cases:
  The machine turns into an assistant for
  - maintenance
  - line operators
  - the production management
**USE CASE 1 - MAINTENANCE**

- When is the best time to act?

- Challenge: More high strength materials → higher loads on tools
  - Higher & less predictable wear
  - Time based approach fails

- Solution: Smart machine predicts the status of wear of a component
  - Replacement of the ideal point in time

---

USE CASE 2 – LINE OPERATORS

- Challenge in everyday use

- Today’s approach to solve it

- How can digitalization support that?
  - Excurse: Criminalistics investigations

\r\n\n[3] https://de.123rf.com/photo_79302271_fingerabdruck-line-symbl-umriss-vector-zeichen-lineare-adi
USE CASE 2 – LINE OPERATORS

- Challenge in everyday use
- Today’s approach to solve it
- How can digitalization support that?
  - Excurse: Criminalistics investigations
  - Errors are linked to characteristic patterns in measurement signals
  - Support independent from experience and knowledge

USE CASE 2 - APPLICATION
USE CASE 3 – MANAGEMENT

- Desire for transparency
  - Status of plant(s)
  - Status of machines
    - Efficiency of machines / lines
    - Status of a job / set up
    - Disturbances
  - Decisions based on proper data
  - Prerequisite for transparency across operational boundaries
CONCLUSIONS

- Roll forming is the most effective manufacturing method for profiles
  - Including steps like punching or welding
  - For various martials, e.g. high strength steels like MP 1500
- Current trends challenge roll forming
- Digitalization is one key to tackle these challenges
  - Assistance systems provide support as needed…
    - in maintenance
    - in line operation
    - in management
FOR MORE INFORMATION

Dr. Tilman Traub
DREISTERN GmbH & Co. KG
tilman.traub@dreistern.com

Werner Wasmer
DREISTERN Inc.
werner.wasmer@dreistern.com