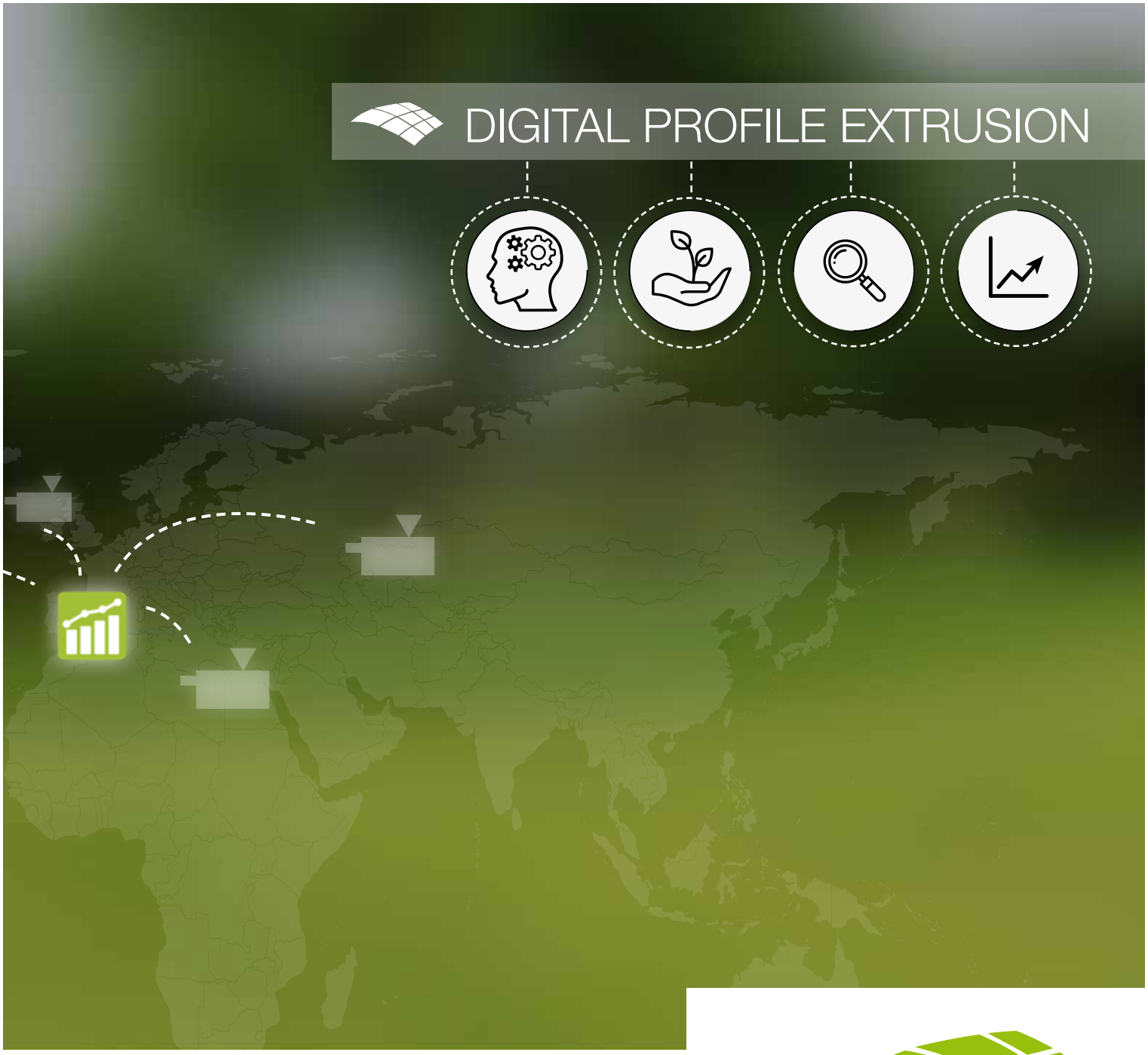

[EXTRU]SION / AUTOMATION / [NET]WORK

extrunet. The spirit of digital extrusion

extru net

trends for extrusion at extru[net]

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DIGITAL
profile extrusion

BENEFIT

[extru]sion / automation / [net]work

EXTRUSION 2020

MORE MONEY

BY INCREASING THE PRODUCTIVITY

TRANSPARENCY

THROUGH ACTUAL DATA AVAILABILITY

MORE PRODUCTION KNOW HOW

THROUGH REPRODUCIBLE PROCESSES

LOW COSTS

BY REDUCING THE OPERATING RESOURCES

AUTOMATION

BY REGULATING THE EXTRUSION PROCESS

PROFILE EXTRUSION BECOMES 100% DIGITAL

Until now, profile extrusion was an exclusively analogue process. The dependency on the personal know-how of the staff during the production process is enormous.

The **[extru]sion / automation / [net]work** brings transparency into the world of profile extrusion.

Sensors measure inline data in all areas of the process, in the machines and in the tool. Additional measuring devices also allow inline control of the profile quality.

extrunet is development partner of the new LIT-Factory – a "smart research factory" on the grounds of the Johannes Kepler University Linz.

THE GOAL IS

...a self-learning extrusion line that produces a stable profile quality, within a specified tolerance range, over the entire production period and largely without the intervention of operating personnel.

The start-up and shut-down process as well as the tool change, should be simplified as much as possible.

all over the world

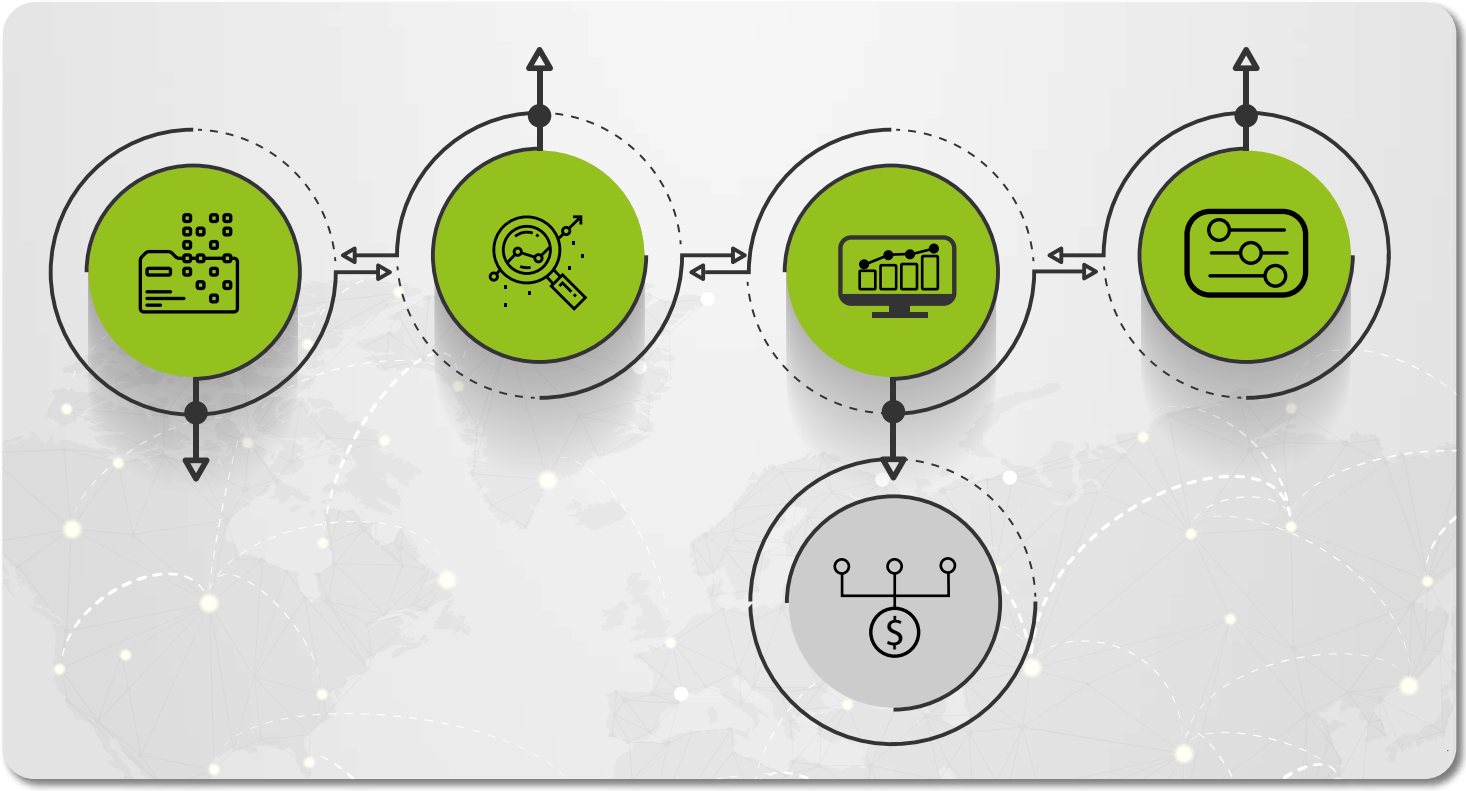
ONLINE, IN REAL TIME

2. process data analysis

Smart Data Mining methods are used to prepare and relativize the data.

4. process control

autonomous control of the extrusion line



1.process data acquisition

Recording of all operating data in the line.

3. process data evaluation

with modern evaluation software such as Qlik-View® or Qlik-Sense®, the data can be prepared as needed.

ERP Data

The data can be entered directly into existing ERP systems (e.g. SAP®).

EXTRUSION 2020

EXTRUSION LINE OF THE FUTURE

CAN BE RETROFITTED TO EXISTING SYSTEMS

PATENTED TECHNOLOGIES

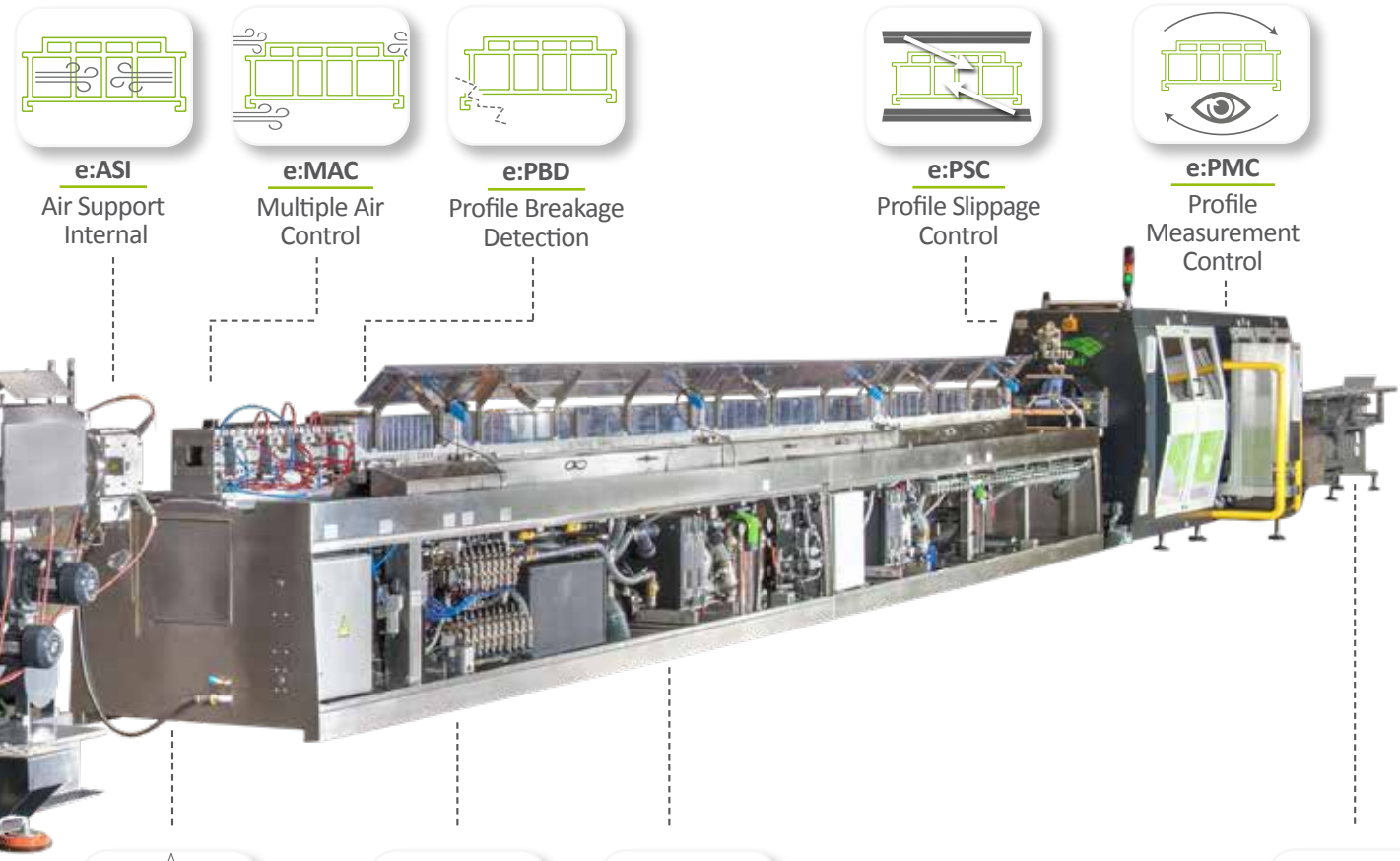
AUTONOMOUS REGULATION

REPRODUCIBLE

EFFICIENT

www.extrunet.com

A fusion Line packed with great features



e:ASI
Air Support Internal

e:MAC
Multiple Air Control

e:PBD
Profile Breakage Detection

e:PSC
Profile Slippage Control

e:PMC
Profile Measurement Control

e:TPS
Table Positioning System

e:MCC
Multiple Cooling Control

ECO+
Central vacuum

e:PWD
Profile Weight Detection

EXTRUSION 2020 Features

ECO
vacuum frequency controlled

ECO vacuum frequency controlled

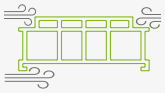
» Vacuum supply in dry area with frequency controlled vacuum pumps
» in wet area with separation tank incl. side channel blower and water pump.
» up to 55% energy savings

ECO+
central vacuum

ECO+ Central vacuum

» State-of-the-art vacuum management with control valves. The required vacuum volume can be made available via one or more FU-controlled vacuum pumps.
» The vacuum levels are set via control valves that draw the vacuum from a large vacuum reservoir – thus there is no mutual interference.
» 90% energy savings!

e:MAC
Multiple Air Control



extrunet: Multiple Air Control

» Digitally controlled cooling of profile sections to influence the profile geometry
» Matched to the profile geometry, reproducible
» The air control unit can be a stand-alone unit or built into the calibration table
» Profile-related data recording in the central control.
» Can be retrofitted to existing tools!

e:MCC
Multiple Cooling Control

extrunet: Multiple Cooling Control

» State-of-the-art cooling water management
» digital control of the cooling water flows in the cooling calibers
» influence of the profile geometry by local increased or partial cooling
» Flow direction reversible during operation (self-cleaning)
» Cooling problems can be identified by the flow rate before any damage occurs to the profile!
» Different cooling water temperature levels for special cooling
» cooling in dry caliber and cooling in the tool tanks can be realized. This allows enormous savings to be achieved in cooling water circulation
» Cooling mode can be stored for each tool and is therefore reproducible
» Early warnings in case of malfunction (cooling problems)
» 85% water savings
» 5% additional energy savings

e:ASI
Air Support Internal

extrunet: Air Support Internal

» Digitally adjustable air volume as supporting air for the inner workings of complex profiles (narrow hollow chambers, sealing profiles with hollow chamber).

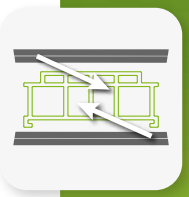
extrunet: Profile Breakage Detection

- Early warning of profile breaks and partial profile breaks – optical, acoustic and digital – already within dry calibration.
- The automatic movement of the calibration table (increases the distance between die and calibration table) leads to relaxation and prevents material accumulation between die and caliber.

e:PBD
Profile Breakage Detection

extrunet: Profile Slippage Control

- Digital equipment for detecting slippage on the profile with the initiation of countermeasures.
- Only in conjunction with an external length measurement (measuring wheel).
- Difference measurement between the encoder of the trigger and the measuring wheel indicates slippage of the profile. The regulation influences the back pressure.



e:PSC
Profile Slippage Control

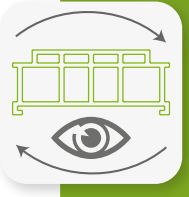
extrunet: Profile Weight Detection

- Digital recording of the actual profile weight on the tilting table.
- Material savings -> costs.
- Left/right ejection of the profiles (separation production/waste)

e:PWD
Profile Weight Detection

extrunet: Profile Measurement Control

- In conjunction with an in-line profile measurement, the functions of e:MAC and e:MCC can be used to keep dimensions permanently within predefined limits.



e:PMC
Profile Measurement Control

extrunet: Table Positioning System

- All axles motor driven
- Measuring system on all axes
- Profile-related data storage
- Accurate reproducibility

e:TPS
Table Positioning System

we make extrusion digital

www.extrunet.com

UTILITY

DIGITAL
profile extrusion

...PRODUCES PROFILES ACCORDING TO **SPECIFICATION** AND SIZES **AUTOMATIC** MEASURES TO KEEP THEM THERE

...OPTIMIZES THE **AUTOMATIC PROFILE WEIGHT AUTOMATICALLY** (WITH FULL TOLERANCES)

...**AUTOMATICALLY** OPTIMIZES **ENERGY** AND **COOLING WATER CONSUMPTION**

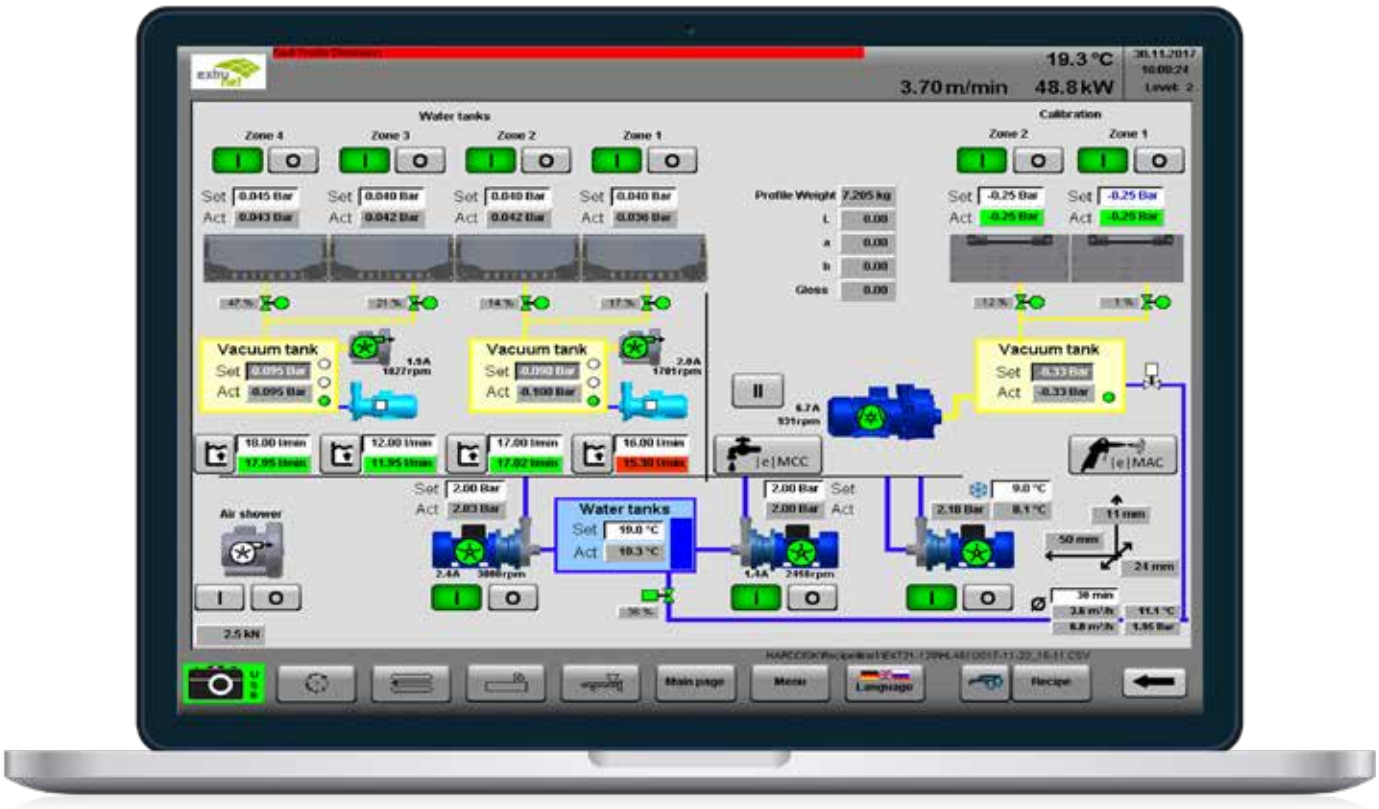
...**DETECTS** ALARMING **PROFILE BREAKS OR PARTIAL BREAKS** AND TAKES COUNTER-MEASURES

...DETECTS **PROFILE SLIPPAGE** AND **PREVENTS** THIS AUTOMATICALLY

Competitiveness by

technical advancement!

EXTRUSION 2020



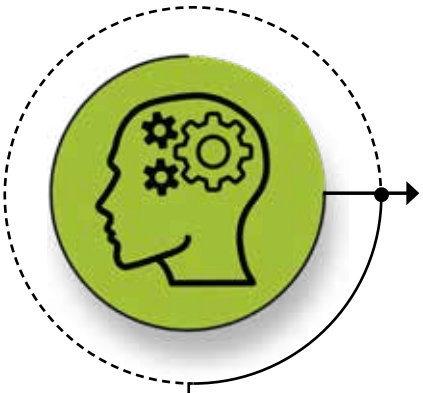



Production Know-How… Sustainability… Transparency… Efficency…

[extru]sion / automation / [net]work

UTILITY of digital profile extrusion

Innovation is not a vision



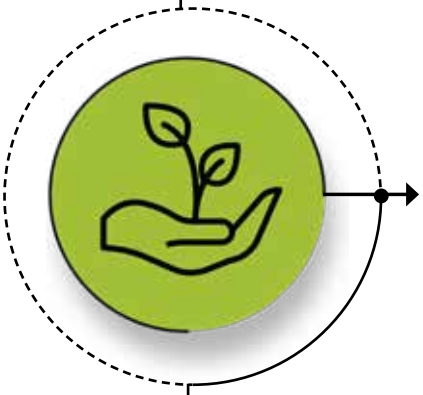
PRODUCTION KNOW HOW

Company Know - How instead of employee Know - How

automation

self-explanatory operation

self-control



SUSTAINABILITY

100% quality tested

80% less cooling water

45% less total energy

minimal material costs

think ahead

INCREASE IN MACHINE UTILIZATION

reproducible data

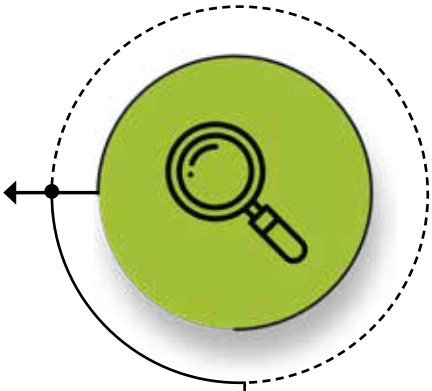
TRANSPARENCY

process data storage

Product contains quality information

Inline profile measurement

Maintenance online



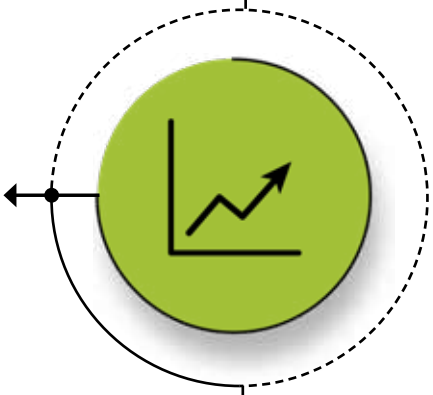
EFFICIENCY

fast commissioning

Alarm in case of malfunctions

Timely intervention possible

more lines - less staff



higher productivity

↓

OPTIMIZATION OF GOOD PRODUCTION

Contact us!

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