



Reifenhäuser

REICOFIL

The Extrusioners

**Reifenhäuser
Reicofil**

Digital Product Portfolio

Index

| | | | |
|---|---|--------------------------------|---------------------------------|
| Digitalization at Reicofil 03 | c.Hub Platform 04 | ExtrusionOS | ExtrusionOS Suite 06 |
| ExtrusionOS bundles 07 | Trend Builder 08 | Defect Analyzer 09 | Compliance Monitor 10 |
| Benchmark Tool 11 | Stand-alone solutions | Digital Assistant 13 | Pitstop App 14 |
| Reicofil and RE: | Reicofil and RE: partnership 16 | Contact 17 | |

Digitalization at Reicofil

We keep your production safe

Connecting machines does not affect your production!

We can connect existing lines and peripheral equipment

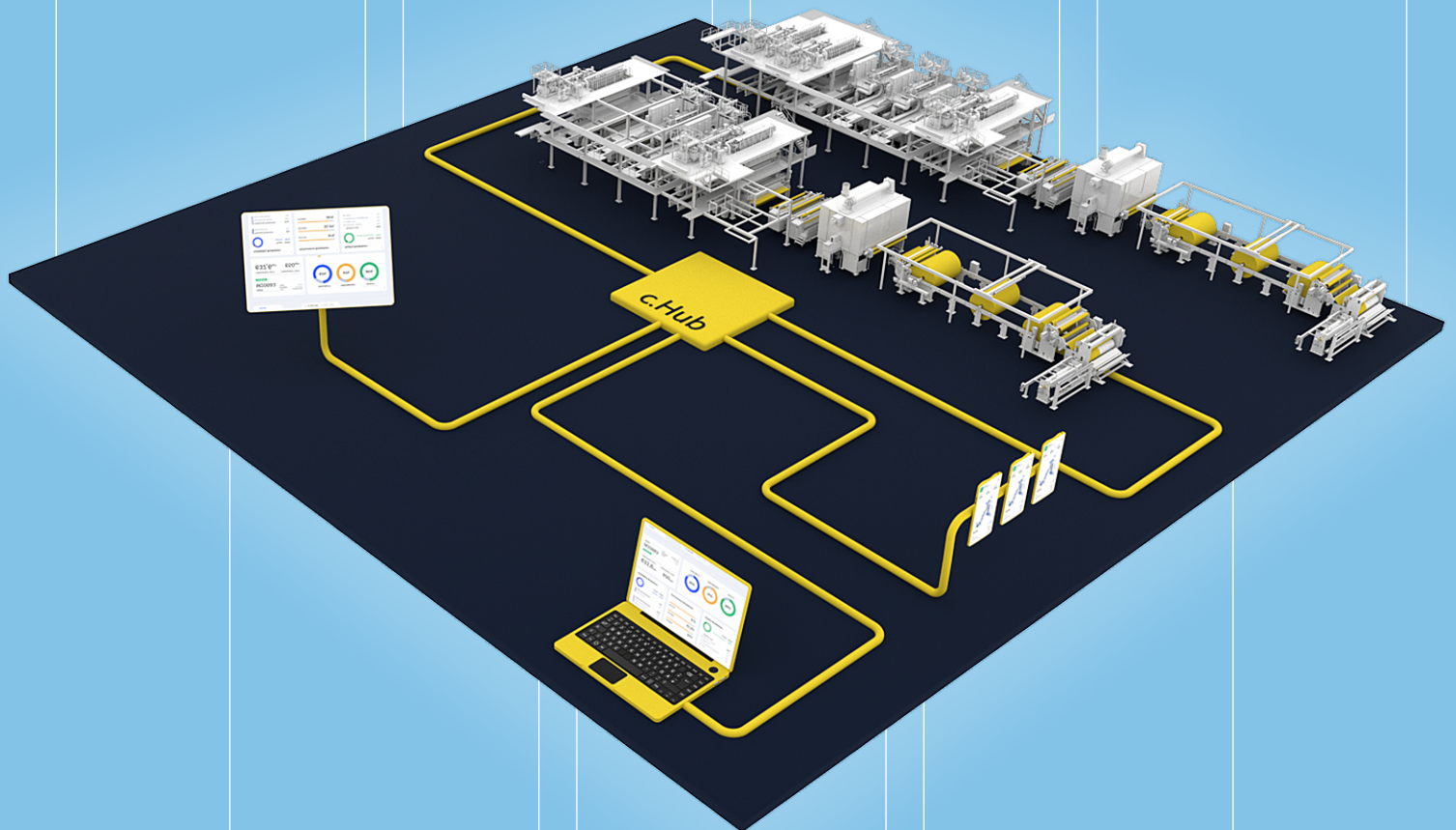
from multiple types and vendors

We deliver on your premises

Your data is secure and under your control

We tidy up the data chaos – and provide transparency

with extrusion- and nonwoven specific apps



We push the data to your laptops and mobile devices

You are always LIVE informed within your manufacturing network

We integrate with existing systems like ERP/MES

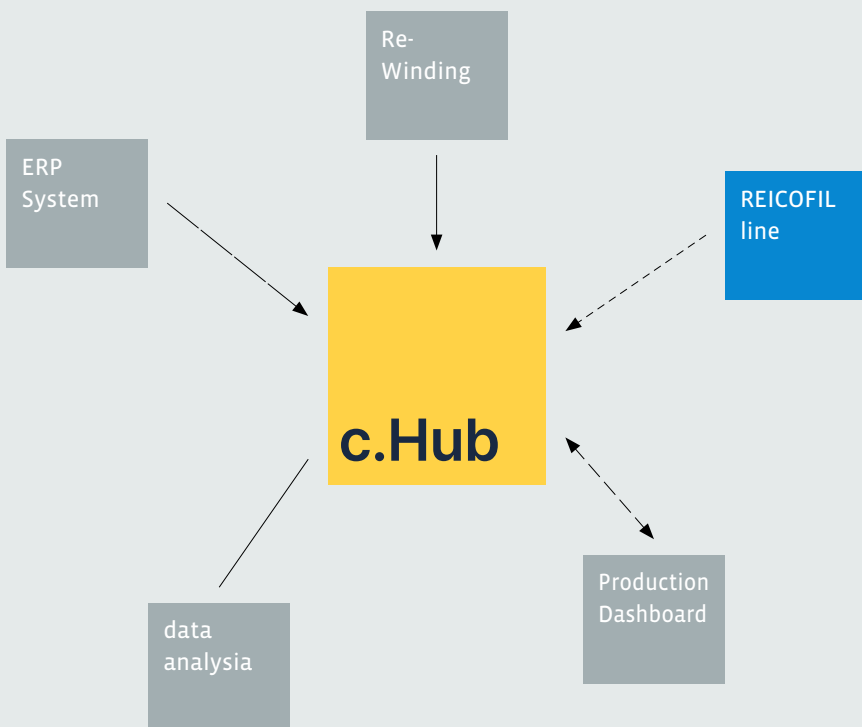
to revolutionize your production processes

We understand the nonwoven production

and can customize the solution to your needs

c.Hub Platform

Gain sustainable insights and process transparency by connecting all your lines and machines. Tailored for the nonwoven and extrusion industry to easily analyze, visualize and optimize your production.



The c.Hub Middleware

- is the 'single point of truth' for all your data. No more data silos!
- is a powerful platform tailored to the nonwovens industry
- helps to connect and harmonize data between different assets, machine types and applications
- enables you to use your production data for further data-analysis

ExtrusionOS

ExtrusionOS

The ExtrusionOS Suite and its features

Our digital products help you to solve the most common challenges in nonwovens production. The ExtrusionOS Suite has been specially tailored to your needs and offers a wide range of different features. These enable you to sustainably increase the quality, performance and availability of your production. The goal is to provide you with a new dimension of transparency on

your data, to support you in troubleshooting and to make your data secure and easy to track. All features described in this flyer except the Pitstop App as well as the Digital Assistant are accessible via the ExtrusionOS user interface.

You can choose from four software bundles

Core & c.Hub Middleware

Core platform that allows you to digitally connect your shopfloor, as well as monitor, manage, store, and analyze your process data with intuitive and user-friendly applications and dashboards. Also available: Out of the box connectors for the major industry protocols and an easy integration of Reifenhäuser machinery via “plug & play”. This bundle is a prerequisite for all other bundles.

Machine Health

Supports you to detect, store and historically trace the condition of all connected assets and to optimally set them up based on the gained insights. Optimize your processes along the entire production chain.

Production Compliance

Data-based monitoring and documentation of production processes help to prove compliance with key thresholds. Data is captured related to orders and rolls in real-time and visible for all relevant stakeholders. This enables you to act fast and significantly reduce errors and customer complaints.

Defect Analytics


Gain transparency on defects that occurred – for each roll produced. Monitor all your defect specific KPIs at all times. Trace and analyze your defect occurrence efficiently and reduce scrap.

ExtrusionOS bundles

| Features | Core & c.Hub Middleware | Machine Health | Production Compliance | Defect Analytics |
|---|----------------------------|--|--|---|
| Production Overview Key parameters of all your assets | ✓ | ✓ combined with equipment-specific thresholds | ✓ combined with product-specific thresholds | ✓ combined with defect-specific thresholds |
| Machine Monitor Act / set values of all connected machines | ✓ | ✓ combined with equipment-specific thresholds | ✓ combined with product-specific thresholds | ✓ combined with defect-specific thresholds |
| Trend Builder Freely configurable trends | ✓ | ✓ combined with equipment-specific thresholds | ✓ combined with product-specific thresholds | ✓ combined with defect-specific thresholds |
| Benchmarking Tool Creation of data snapshots and benchmarking | ✓ | ✓ combined with equipment-specific thresholds | ✓ combined with product-specific thresholds | - |
| Equipment Threshold Manager Defining which thresholds apply to which equipment properties | - | ✓ | - | - |
| Condition Monitoring Pre-defined dashboards for the specific equipment | - | ✓ | - | - |
| Health Notifications configuration of messages when threshold values are exceeded | - | ✓ | - | - |
| Order and Roll Data Management Manage your orders and rolls in context with other production data | - | - | ✓ | ✓ |
| Product Management Set product specific thresholds to meet compliance regulations | - | - | ✓ | - |
| Compliance Monitoring Dashboard to monitor current production vs. product specific thresholds, predefined | - | - | ✓ | - |
| Compliance Reporting Reports if you were within/outside the thresholds of a specific product during production with history of threshold violations | - | - | ✓ | - |
| Compliance Notifications Configuration of notifications when thresholds are exceeded, depending on a running product | - | - | ✓ | - |
| Defect Analyzer Precise defect tracking and analysis per roll produced. Notifications on detected defects to enable faster actions | - | - | - | ✓ |

The Core bundle is the basic version and a prerequisite for the other ExtrusionOS bundles. In the table you can find an overview of the included features. The features listed in **bold and blue** are now available. The other features are currently in the final stages of development and will be

available in early Q3 2022. The products called Digital Assistant and Pitstop App are stand-alone solutions that are not linked to ExtrusionOS. If you have any further questions, please contact your Reicofil representative.


**included in
 ExtrusionOS
 Core & c.Hub
 Middleware**

Trend Builder

Configurable Trends & Dashboards



Example Dashboard that allows to monitor key production parameters in one user-friendly interface.


Key Benefits

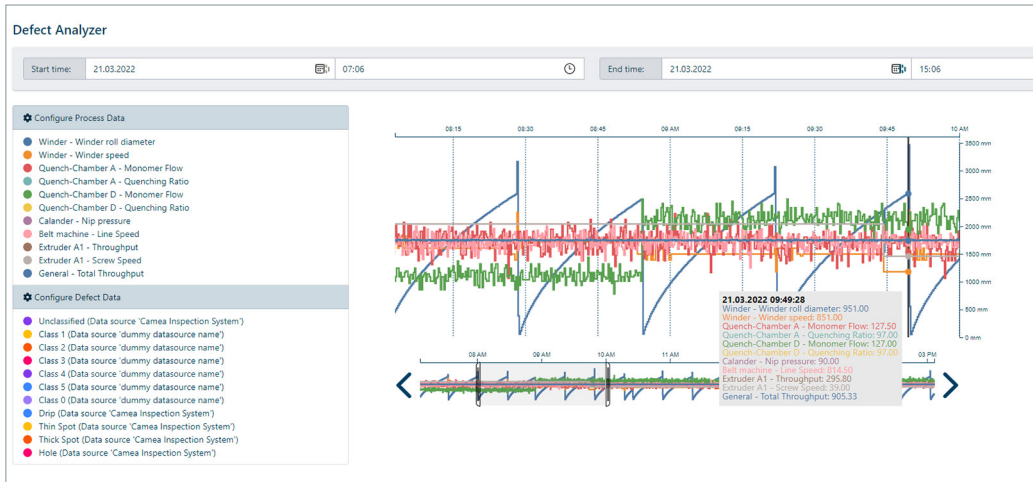
- Easy usage & access from everywhere within your manufacturing network
- All asset and context data (order, role) in one tool (integration with ERP possible)
- Predefined or use case specific dashboards based on Reicofil know-how
- Custom creation of trend charts and convenient troubleshooting

Business Value

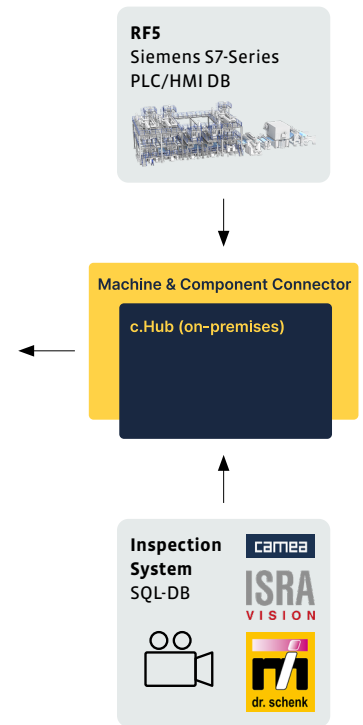
- Historical data can be analyzed
- Efficient evaluation of production – live and history
- Basis to calculate and improve OEE in the future

Defect Analyzer


included in
ExtrusionOS
Defect
Analytics



Example of line process properties mapped over inspection data



Key Benefits

- All in one place: Easily correlate your production data, defects from inspection systems, and in the future quality data from the laboratory
- Fewer mistakes by reducing manual data analysis & transfer
- Real-time alerts help to react immediately
- Quickly find defects and remove defective rolls

Business Value

- Efficient analysis of defect occurrence
- Reduction of scrap
- Transparency on defects per roll produced
- Increase of plant efficiency and OEE



**included in
ExtrusionOS
Production
Compliance**

Compliance Monitoring

Production Compliance Monitor

Notifications

- ⚠ 01.01.2021 - 09:21 pm
Variable 1 has crossed the first threshold limit
- ⚠ 01.01.2021 - 10:36 pm
Variable 1 has crossed the critical threshold limit

Editing Recipe

Name:

Unit:

Comment:

Thresholds

| Name | Very low | Low | Target | High | Very high | Threshold group |
|------------------------------|----------|--------|--------|--------|-----------|-----------------|
| Line speed | 1000 ✓ | 1800 ✓ | 1200 ✓ | 1800 ✓ | 1600 ✓ | Productivity |
| Mattliner base weight | 10.0 ✓ | 11.5 ✓ | 15.0 ✓ | 16.5 ✓ | 20.0 ✓ | Quality |
| Extruder throughput | 1900 ✓ | 2000 ✓ | 2500 ✓ | 2700 ✓ | 2800 ✓ | Productivity |
| Temperature before melt pump | 190 ✓ | 200 ✓ | 220 ✓ | 230 ✓ | 2500 ✓ | Quality |
| Melt temperature die | 190 ✓ | 200 ✓ | 220 ✓ | 230 ✓ | 2500 ✓ | Quality |
| Working pressure extruder | | | 100 ✓ | 150 ✓ | 1500 ✓ | Maintenance |

Showing 1 to 6 of 6 entries

Materials

Example of monitoring product related thresholds, including notifications when limit values are crossed.

Key Benefits

- easily define products and assign specific threshold values
- enter your target, warning, and limit values based on all available process parameters
- monitor the limit values and take immediate action if necessary
- quickly prove quality compliance, since all relevant information is clearly stored and easily found

Business Value

- Proof of production for brand owners and your customers
- Minimization of processing when complaints arise
- Minimization of scrap through continuous threshold monitoring
- Individual assignment of quality parameters



**included in
ExtrusionOS
Core & c.Hub
Middleware**

Benchmarking Tool

Edit Benchmark 'IDEA Benchmark Expert Mode'

Asset 1: R-5 SMM5 HHL Simulation | Name 1: IDEA Benchmark Expert Mode

Created at: 2022-03-21 09:38:05 UTC | Created by: IDEA Merve | Updated at: 2022-03-21 14:13:26 UTC | Updated by: | Mode: Fajent Master (N to N)

Search priorities: | Show act & set | Show only act | Show only set

| Equipment | Property | A: Snapshot "Production XC35 3 A25" ● 16/03/2022 11:38:40 | | B: Snapshot "Production XC35 5 A01" ● 14/03/2022 09:42:42 | | C: Snapshot "Production XC35 2 A56" ● 11/03/2022 12:38:17 | | D: Comparison (B to A) Difference in percent | | E: Comparison (C to A) Absolute difference | |
|------------------|------------------------------------|---|-----------|---|-----------|---|-----------|---|-----------|---|-----------|
| | | Act value | Set point | Act value | Set point | Act value | Set point | Act value | Set point | Act value | Set point |
| Winder | Winder roll length | 1670.00 | - | 14442.00 | - | 11910.00 | - | 760.15% | - | 10231.00 | - |
| Winder | Winder roll diameter | 313.00 | - | 758.00 | - | 694.00 | - | 147.49% | - | 381.00 | - |
| Quench-Chamber A | PA1 Process Air Flow | 1887.00 | - | 1835.00 | - | 1886.00 | - | 0.01% | - | 22.00 | - |
| Diffuser A | Suction Air Pressure | 1958.00 | - | 1948.00 | - | 1997.00 | - | -0.51% | - | 29.00 | - |
| Extruder A1 | Melt Pressure before Screenchanger | 80.00 | - | 86.00 | - | 102.00 | - | -4.44% | - | 12.00 | - |
| Quench-Chamber A | Cabin Pressure | 3497.00 | - | 3492.00 | - | 3507.00 | - | -0.14% | - | 10.00 | - |
| Quench-Chamber D | Cabin Pressure | 3496.00 | - | 3505.00 | - | 3504.00 | - | 0.26% | - | 8.00 | - |
| Extruder D1 | Melt Pressure before Screenchanger | 89.00 | - | 111.00 | - | 95.00 | - | 24.72% | - | 6.00 | - |
| Filtruder A1 | Drive Power | 30.00 | - | 30.60 | - | 32.90 | - | 3.00% | - | 2.90 | - |
| Extruder A1 | Main Component Throughput | 215.10 | - | 213.50 | - | 215.30 | - | 0.79% | - | 2.20 | - |
| Extruder A1 | Screw Speed | 39.00 | - | 39.00 | - | 41.00 | - | 0.00% | - | 2.00 | - |
| Quench-Chamber D | PA2 Process Air Temperature | 23.00 | 23.00 | 23.00 | 23.00 | 25.00 | 25.00 | 0.00% | 0.00% | 2.00 | 2.00 |
| Winder | Winder speed | 854.00 | - | 853.00 | - | 836.00 | - | 0.12% | - | 2.00 | - |
| Filtruder D1 | Main Component Throughput | 214.80 | - | 215.00 | - | 216.30 | - | 0.09% | - | 1.50 | - |
| Extruder A1 | 1 Side Component Screw Speed | 15.00 | - | 17.00 | - | 16.00 | - | 13.33% | - | 1.00 | - |
| Extruder A1 | 4 Side Component Throughput | 37.40 | - | 37.60 | - | 38.40 | - | 1.07% | - | 1.00 | - |
| Extruder D1 | Drive Power | 31.10 | - | 35.10 | - | 31.80 | - | 12.86% | - | 0.70 | - |
| Extruder D,C | Main Component Throughput | 123.60 | - | 123.20 | - | 123.90 | - | -0.32% | - | 0.30 | - |
| Filtruder A1 | 1 Side Component Throughput | 0.90 | - | 0.70 | - | 1.00 | - | -22.22% | - | 0.10 | - |

Creating snapshots of a production at a certain point in time to benchmark and to replicate the golden run.

Key Benefits

- Easily replicate your 'Golden Run'
- Recall all process parameters from any production in the past
- Visualize and benchmark different machine states at a glance
- Filter to determine differences, both in actual and set parameters
- Speed up your product development

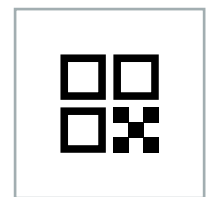
Business Value

- Efficient product optimization enables competitive advantage over competitors
- Shorter product to market time
- Long-term and secure knowledge management

Stand-alone solutions

Stand-alone
solution,
not linked to
ExtrusionOS

Digital Assistant



Scan QR code with your tablet and view equipment documentation.

Key Benefits

- Access to assembly and component information, drawings or maintenance plans
- Create secured photos and videos for documentation purposes
- Share relevant documents directly with other colleagues and do not waste time
- Remote connection of other persons or experienced service technicians of the Reifenhäuser Group

Business Value

- Increased efficiency by having more information available on the spot
- Reduction of downtime during maintenance work
- More efficient troubleshooting through remote service

Pitstop App

Stand-alone solution, in pilot phase, not yet linked to ExtrusionOS

Workflow Template Overview

| Workflow | Category | Duration | Asset | Tags | |
|--|--------------------|----------|-------------------|---------------------------|---------------------------|
| Dynisco Zero calibration | Maintenance | 4.5 min | Extrusion | Dynisco, Zero, Pressure | [Edit] [Calendar] [Trash] |
| home position screen changer | Operationen | 0 min | Bildschirmwechler | Fehlerbeseitigung | [Edit] [Calendar] [Trash] |
| Reset Dassi group | Maintenance | 3.5 min | General RP | Fehlerbeseitigung | [Edit] [Calendar] [Trash] |
| determine tensile strength | Operationen | 0 min | Andere | tensile strength | [Edit] [Calendar] [Trash] |
| cleaning spunbond plates | Reinigung | 0 min | Strip SB | Cleaning | [Edit] [Calendar] [Trash] |
| setup auto heat up | Operationen | 2.5 min | Extrusion | Auto heat-up | [Edit] [Calendar] [Trash] |
| monatliche Rückmeldung der Stunden | Produktionsplanung | 0 min | General RP | Stundenerückmeldung | [Edit] [Calendar] [Trash] |
| die pressure change level | Operationen | 0 min | Strip MB | die pressure change level | [Edit] [Calendar] [Trash] |
| Embossing roll reference speed para... | Operationen | 3 min | Caander | regular work | [Edit] [Calendar] [Trash] |
| Purging MB extrusion with 25-35 M... | Cleaning | 75 min | Die MB | Customer, MB, Purging | [Edit] [Calendar] [Trash] |
| Screen Changer Operation MB | Maintenance | 45 min | | | [Edit] [Calendar] [Trash] |
| Die Installation MB | Maintenance | 171 min | | | [Edit] [Calendar] [Trash] |

Schedule workflow

Workflow : home position screen changer

« < März 2022 > »

| Mo | Di | Mi | Do | Fr | Sa | So |
|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | 1 | 2 | 3 |

Schedule

Scheduled Workflows

Flow_230586_SB_A

Completed [Calendar] [Sep. 23]

Flow_230586_SB_A

Pending [Calendar] [Dec. 31]

Complete Workflow (2/12)

Create and schedule your workflows on your shopfloor.

Key Benefits

- Define and manage your workflows in your production environment
- Schedule recurring activities and keep track of work performed
- Manage knowledge among your employees and empower new operators on the job
- Analyze your planned and unplanned downtime and find optimization potentials

Business Value

- Reduction of downtime during maintenance work
- Minimization of human errors and increase of production quality
- Documented workflows, ready for use at any time

Reicofil and RE:

Reicofil and RE:

A strong partnership. We empower you to go digital!



The RE: GmbH is a corporate start-up of the Reifenhäuser Group. Its primary goal is to empower you to successfully digitize your production processes. To this purpose, RE: and Reicofil have jointly developed solutions tailored to the nonwoven industry. Our digital solutions enable you to boost efficiency throughout your entire production. We believe this is the only way to achieve our mission of writing a new chapter of a dynamic nonwoven industry with cutting-edge technologies.

RE: in a nutshell

- founded 2020 as software company
- 100% corporate start-up of the Reifenhäuser Group
- Team: 22 versatile experts in Germany and India, merging industry and process engineering know-how with deep software development skills
- Target: Defining a new industry standard for digital products, being the “speed boat” for extrusion-specific solutions
- Task: Solving core customer requirements of both the nonwoven and film extrusion manufacturing business units of Reifenhäuser

TAKE THE FIRST STEP NOW TO LONG-TERM SUCCESSFUL PRODUCTION.

**For further information,
please contact your Key
Account Manager.**

The products shown in this presentation represent the current state of the product roadmap. We are continuously developing our products, so that there may be differences in the design or naming of the products at a later stage.

Reicofil

info@reicofil.com

www.reicofil.com



[/reifenhausergroup](#)