



Jagenberg Converting Solutions

Advanced Energy Technologies

Agenda.

-
- 01 Introduction of Jagenberg Group
 - 02 Introduction of Jagenberg Converting Solutions
 - 03 Turnkey solutions for energy applications
-

01
Introduction of
Jagenberg Group



Key facts.

2022: ~330

Turnover in Mio. €

Locations in Europe,
China, India and the
USA

Locations

2022: ~1.300

Employees

Kleinewefers GmbH
85 %

Jagenberg AG
83 %

Equity ratio

100 %

Private ownership

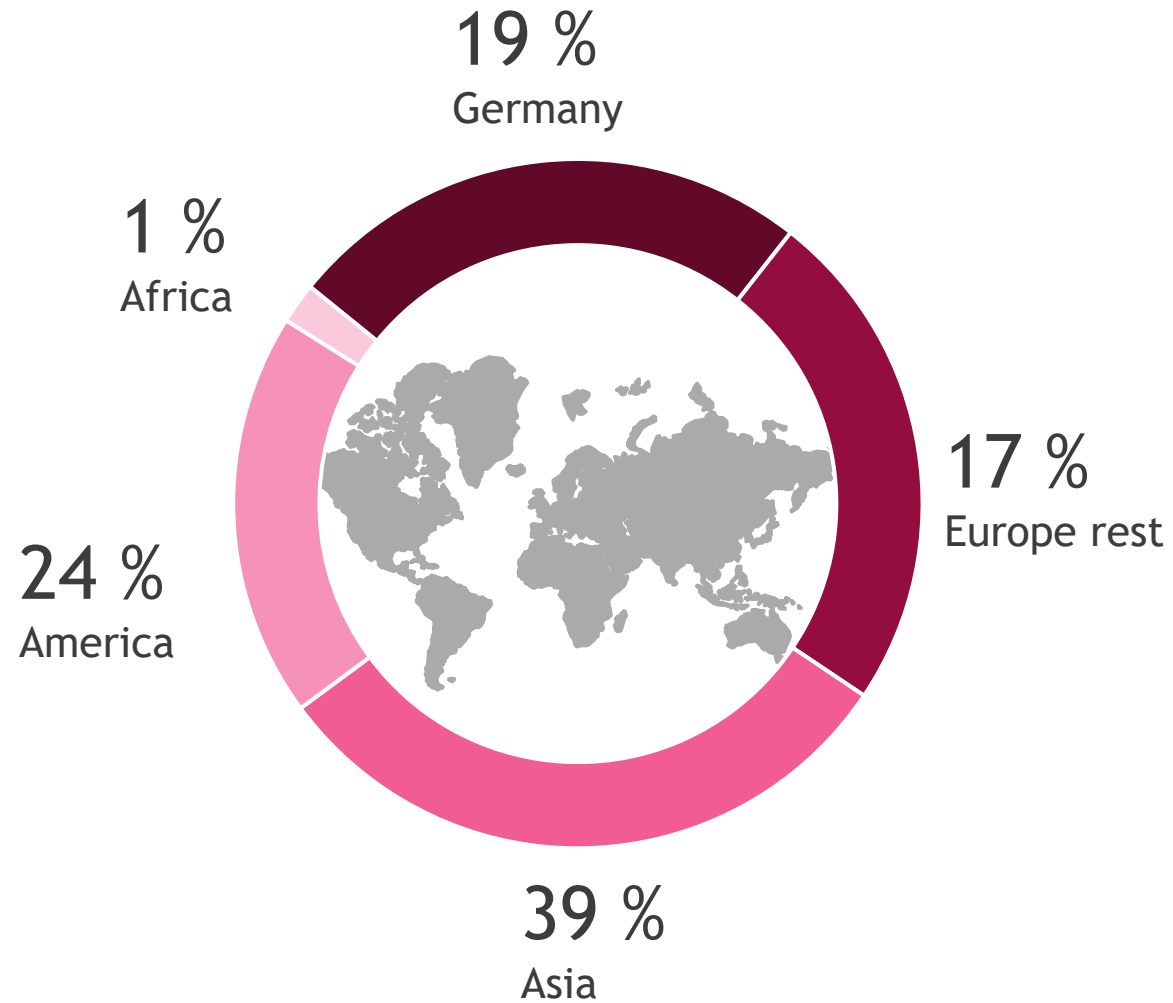
7

Business parks



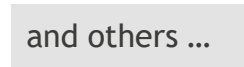
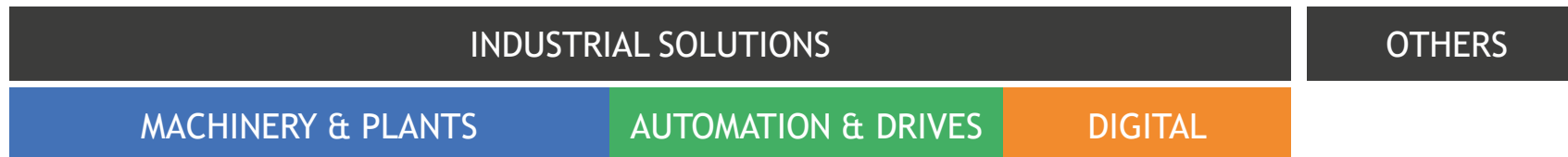
Executive Board
Dr. Christian Jostes
Dr. Stephan Witt

Sales by region.

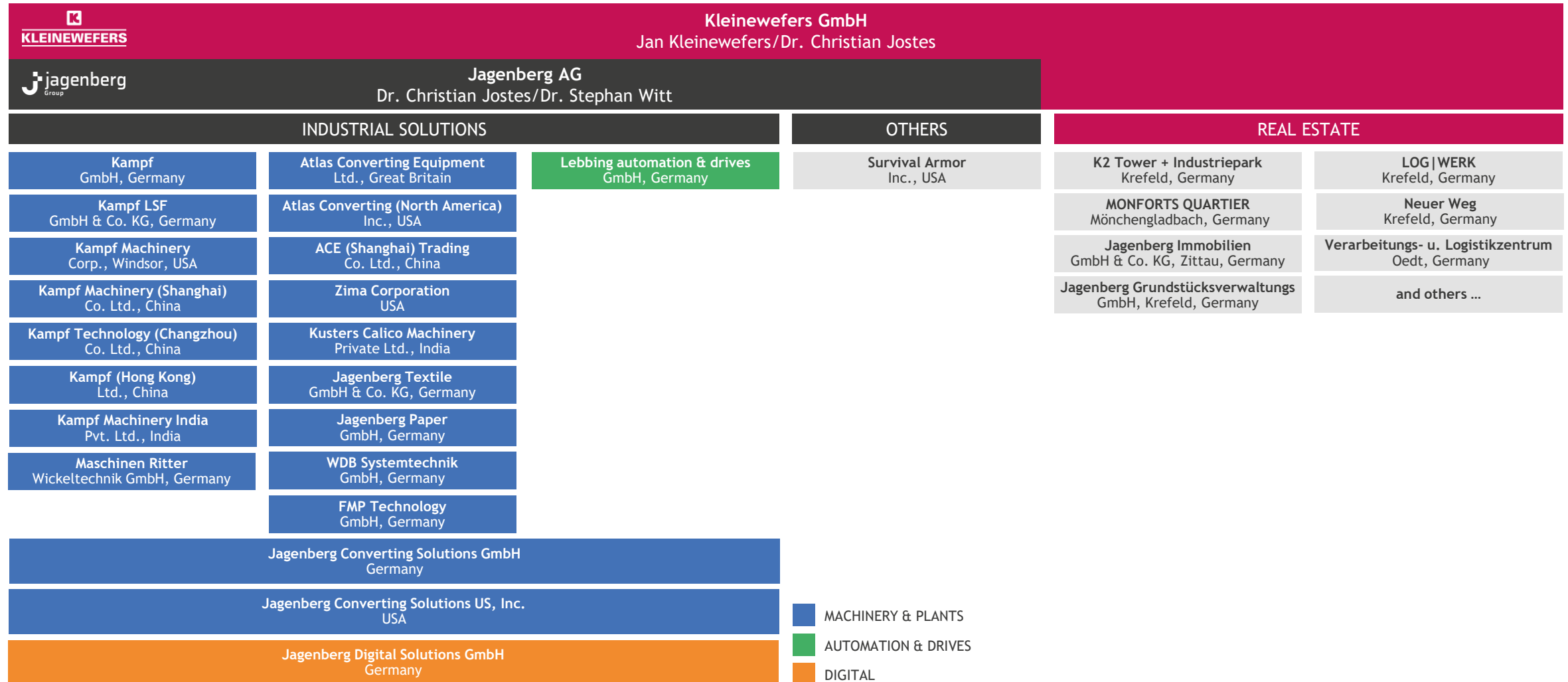


Fiscal year 2022

Kleinewefers Group



Kleinewefers/Jagenberg Group



Our mission statement. Create.Future.Together.



Create.

Innovative technologies for processing web-shaped materials are the historically grown core of the Jagenberg Group and have been our focus for over 140 years. We design creative and future-oriented solutions for our customers. Our thinking is entrepreneurial and our culture mid-sized. Short decision-making processes, a high level of action competence and an agile organization enable us to take successful steps into the future quickly and decisively.

Future.

We are ready to face the dynamic changes that the future holds for all of us - be it technological progress, digitization or climate change. Based on our values, we as a Group are actively working on innovative solutions to harness these megatrends in an economically and ecologically sustainable way for our customers and ourselves.

Together.

Together we are strong! This motto characterizes the cohesion in our group. We face the future as a strong team of doers and creative minds. Together with our customers, suppliers and partners, we create the future. Through a fair and trusting exchange, we learn from each other and build long-term and reliable partnerships together.

Our values. What we care about.

Trust.

Integrity.

Reliability.

Fairness.

Respect.

Openness.

Honesty.

Our fields of application.



Coating/
Laminating



Lacquering/
Embossing



Drying



Printing



Calendering



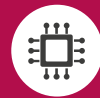
Slitting/Winding/
Spooling



Handling



Dyeing/Bleaching/
Mercerising



Automation
& Drives



Machine safety/
CE-conformity



Digitization

CARING FOR
THE FUTURE.



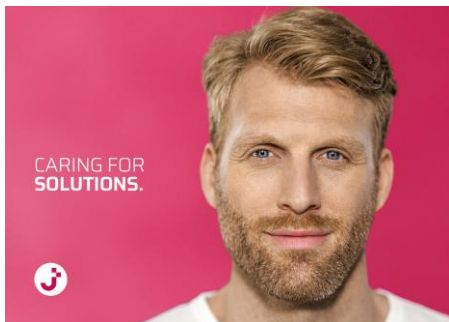
Sustainability Strategy. Caring for the Future.

Our sustainability strategy systematically signifies our commitment to take responsibility and minimize negative environmental impacts.

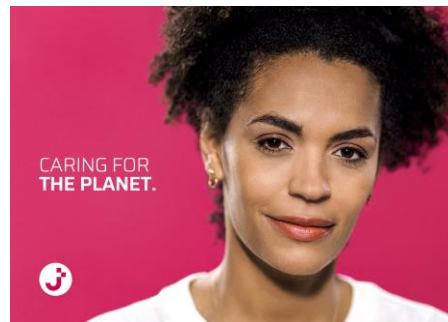
We respond to challenges by making the most of our strengths and skills and sharing our knowledge within the Group and with our suppliers and customers. Our comprehensive approach enables us to adopt new perspectives and develop sustainable solutions.



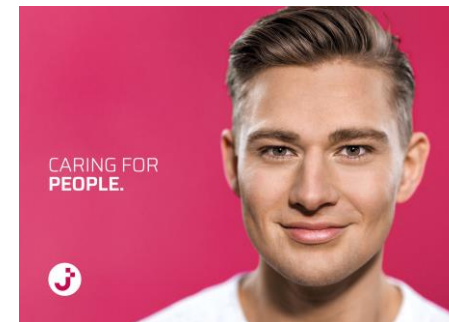
Sustainability Strategy. Our Sustainability Report.



Climate action



Resource awareness

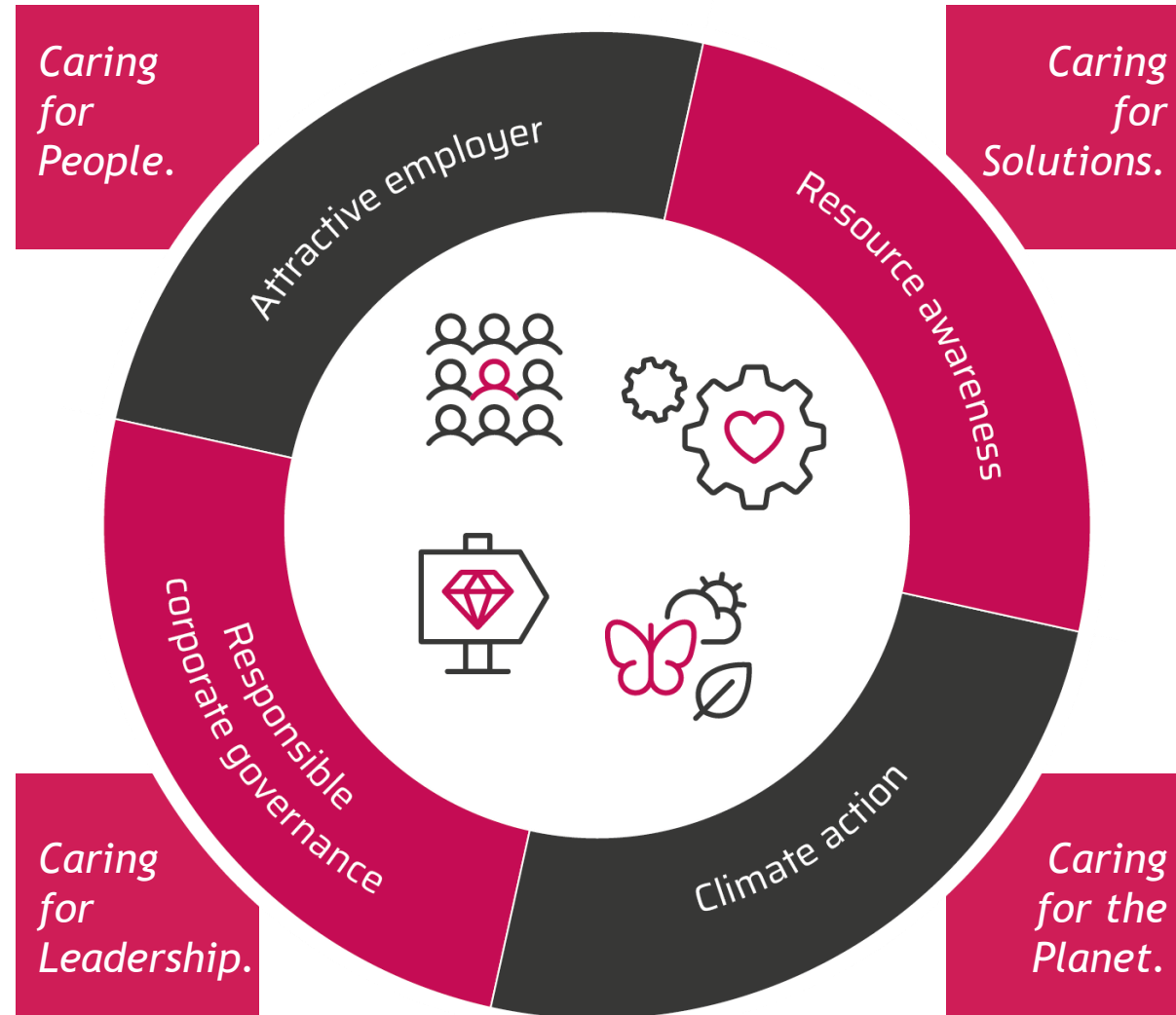


Attractive employer



Corporate governance

Sustainability Strategie. Guiding themes.



Sustainability Strategy.

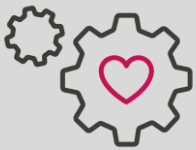
Our fields of action.

We concentrate on the following action areas:



Climate action

We support the Paris Agreement and are actively helping to reduce carbon emissions.



Resource awareness

We establish a responsible approach to the use of resources along the entire value chain.



Attractive employer

As an employer, we attach great importance to treating our employees responsibly and respectfully. We create attractive conditions to promote personal and professional development.



Responsible corporate governance

In line with our value system, we act on the basis of irreproachable conduct from an ethical and legal perspective.

02
Introduction of
Jagenberg
Converting
Solutions





Integrate.Converting.Competences.

Your turnkey solution for the production of innovative foils for Surface and Energy applications.



Jagenberg Converting Solutions GmbH

Integrate. Converting. Competences.

JCS integrates the competences of Jagenberg Group companies into a single solution from one source.

Purpose

Bocholt
Hamburg
Krefeld
Ostwestfalen-Lippe
Spartanburg, US

Locations

>30
and **>500**
located within other
group companies

Employees



Management Team

Thomas Lebbing (Managing Director)
Guido Lebbing (Managing Director)
Steffen Heckmann (Managing Director)

Jagenberg Converting Solutions GmbH

Integrate. Converting. Competences.

Germany
Bocholt

Headquater



Germany
Business Unit Hamburg

Advanced Energy Technologies



Germany
Business Unit Ostwestfalen Lippe

Advanced Surface Technologies



Germany
Business Unit Krefeld



USA
Business Unit Spartanburg



Engineering competence centres.

<p>Coating & Drying</p>		<p>BU Hamburg</p>	<p>9 Engineers</p>	<p>Area of expertise. Coating-line engineering Process engineering Coating units Dryers</p>	
<p>Coating & Winding</p>		<p>BU Laußig</p>	<p>10 Engineers</p>	<p>Area of expertise. Coating units Winders Slitting units</p>	
<p>Printing & Lacquering</p>		<p>BU Ostwestfalen</p>	<p>7 Engineers</p>	<p>Area of expertise. Machine engineering Process engineering Lacquering units Printing units</p>	
<p>Autom. & Drives</p>		<p>BU Bocholt</p>	<p>45 Engineers</p>	<p>Area of expertise. Automation & Drives Data systems</p>	
<p>Safety</p>		<p>BU Coesfeld</p>	<p>10 Engineers</p>	<p>Area of expertise. CE Marking & Risk assessment Functional safety engineering</p>	

Strategy of JCS.

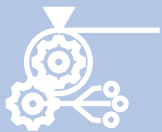


Integrate. Converting. Competences.

Jagenberg Converting Solutions is focused on providing **innovative and sustainable solutions** for the web-converting industry.

Our added value.

Advanced Solutions.



Increasing productivity.



Total cost of ownership.



Reduction of waste.



Carbon footprint.



Advanced technologies as enabler.

Process engineering

Technology

Automation & Drives

Digitization

Handling systems

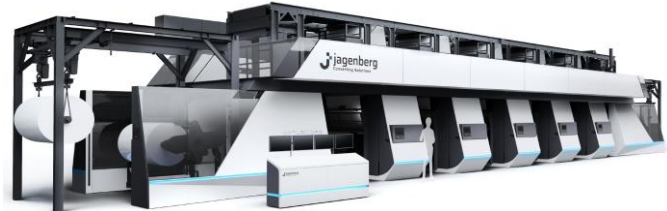
Functional safety

Connectivity



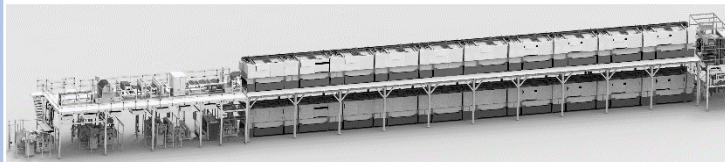
Integrate. Converting. Competences.

Your general contractor.
Integrates all competences for state-of-the-art roll to roll production.



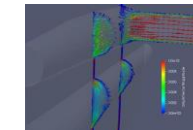
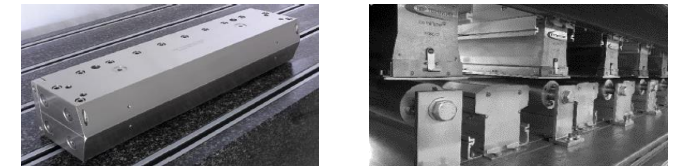
Drawing: Jagenberg Converting Solutions GmbH

Turnkey equipment for the surface industry.



Rendering: Jagenberg Converting Solutions GmbH

Turnkey equipment for the energy industry.



Advanced process technology.



wdb
Jagenberg Group
Unique.Surface.Ideas.



kampf lsf
Jagenberg Group
Converting.Processing.Unlimited.



kampf
Jagenberg Group
Slitter.Winder.Kampf.



lebbing
Jagenberg Group
Automation.Drives.Future.



lebbing
Jagenberg Group
Automation.Drives.Future.
Lauer CE-Safety



jagenberg
Digital Solutions
Connect.Develop.Advance.

03
Turnkey
solutions for
energy
applications



Turnkey solutions from a single source.

Process
Technology

Project Mgmt.

Rewinder (2x)

Slitter

Pulling Station

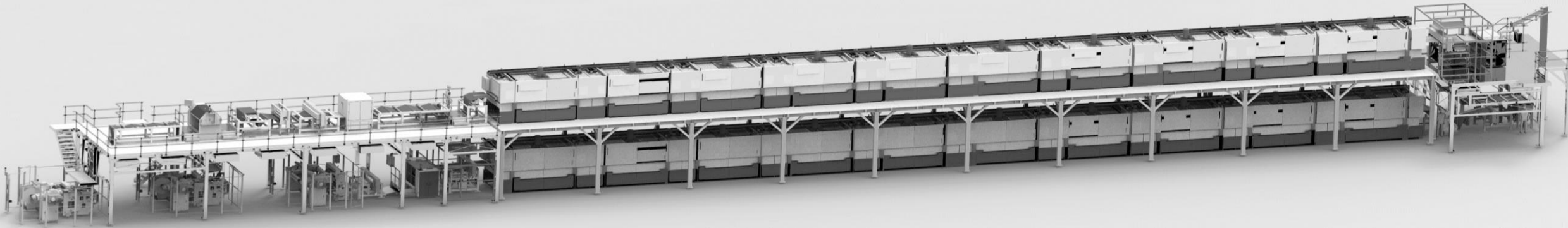
Measuring
Systems

Web Guiding

Dryer

Coating Unit

Measuring
Systems



Unwinder

Coating Unit

Measuring
Systems

Web Guiding

Dryer

Web Guiding

Pulling Station

Automation

Safety

Digitization

Frames

Ducting

Piping

Cabling

Fencing

Housings

Recovery System

Installation

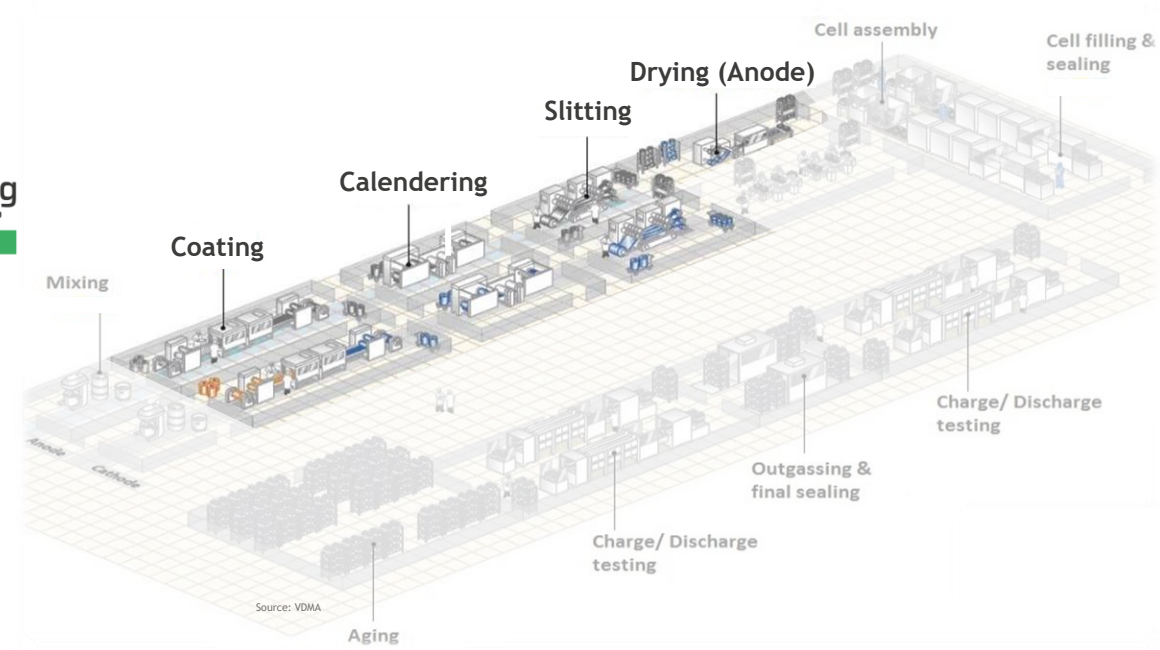
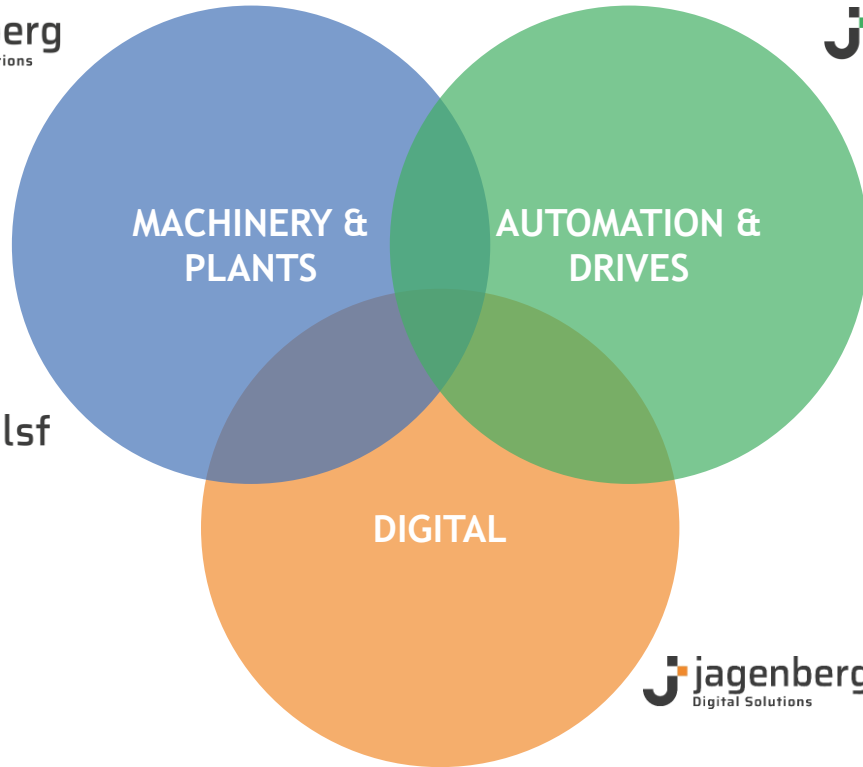
Commissioning

Start-up / Process Optimisation

24/7 Service

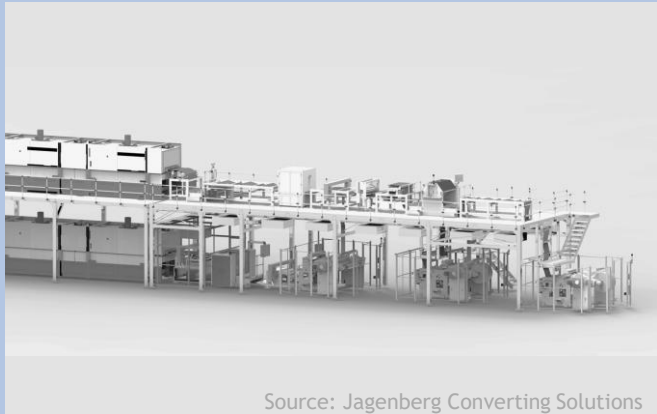
Turnkey solutions - for coating, drying, slitting & winding.

A strong network of technology leaders in the battery industry



Our offering for the battery industry.

Coating Lines



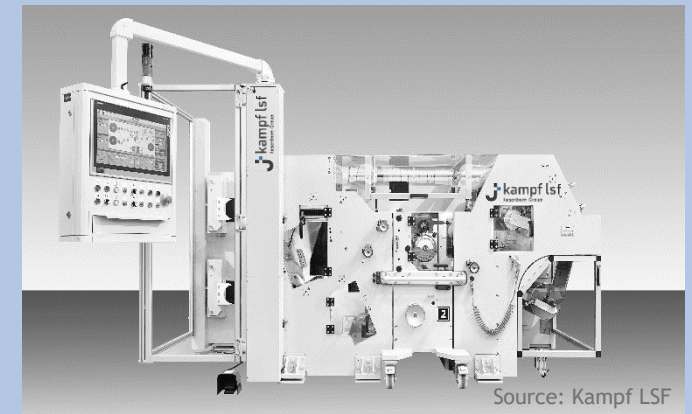
- Anode
- Cathode
- AGT Dryer (BATTRION)

Unwinder / Rewinder



- Turret unwinder
- Turret rewinder
- Splicing systems, Slitting units

Slitter



- Pilot line slitter rewinder
- Production machines

Planning

- Planning
- Process engineering
- Project management

Added value
from a single source.



Digitalization

- Production overview
- Digital roll protocols
- Connectivity (ERP / MES)
- Data mining

Our offering for the battery industry - Coating.



Slot die, slurry supply

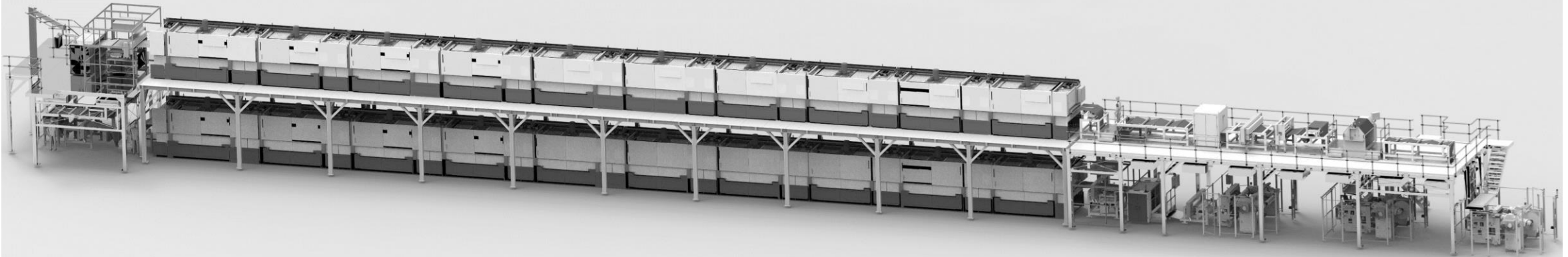
Project Mgmt.

Process
Technology

Turnkey

Dryer

Coating Unit



Unwinder

Rewinder

Slitter



Slitter



Automation



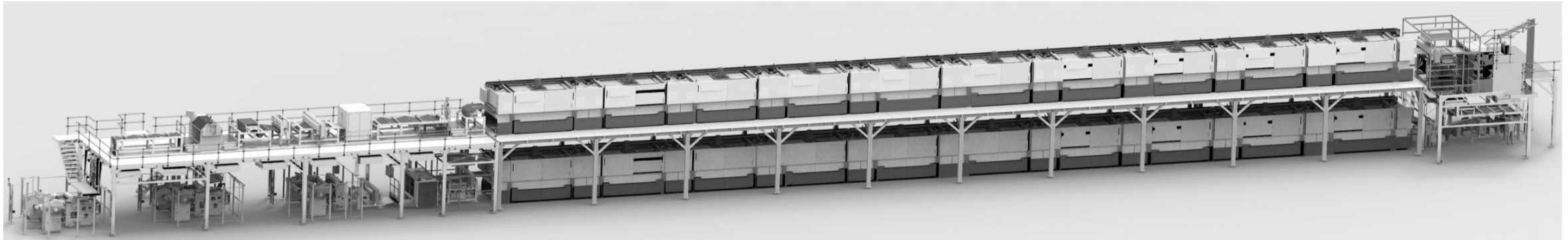
Lauer CE-Safety

Safety



Digitization

Our offering.



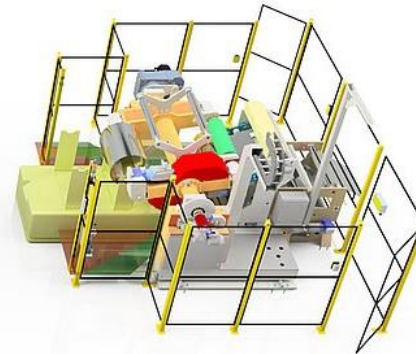
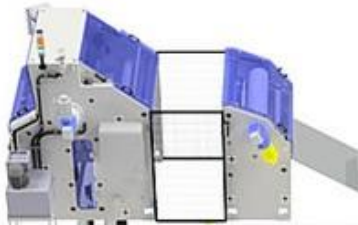
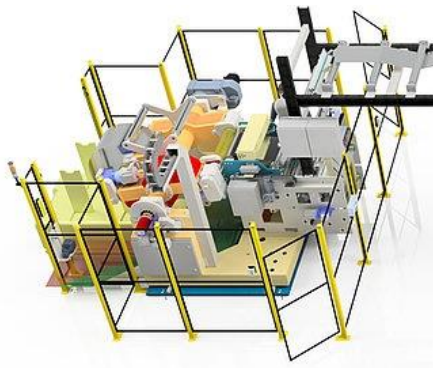
Converting.Processing.Unlimited.

Special machine engineering company which develop special solutions for processing and finishing of web-shaped materials

Turret rewriter

Slitting unit

Turret unwinder with auto-splice



Rewriter, slitter, unwinder.

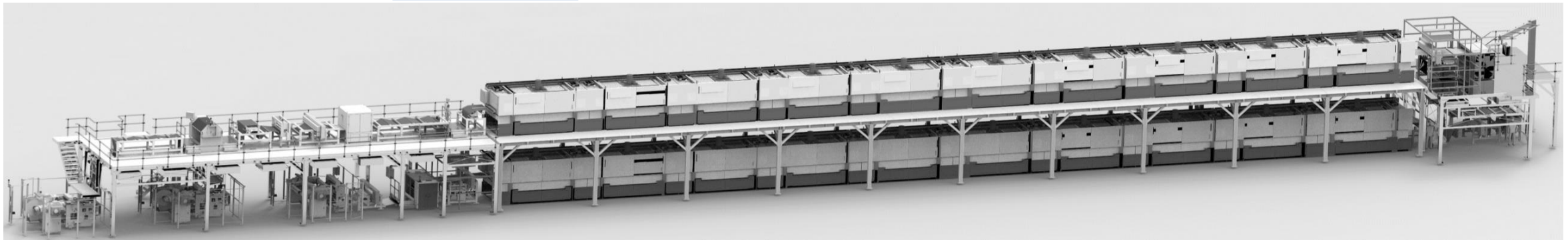
In the manufacturing processes of cathodes and anodes for Lithium Ion Batteries, turret unwinder and turret rewriter type EvoWinder are used before and after coating lines and calender systems. The specially designed turret systems enable continuous operation without any restrictions in speed and productivity.



Slitter.Winder.Kampf.

The world's largest manufacturer of winders and slitters for demanding web materials and technological leader for 100 years

Our offering.



Integrate. Converting. Competences.

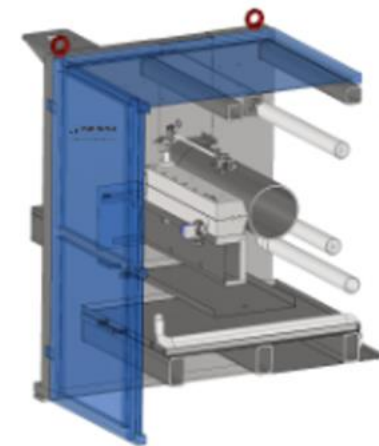
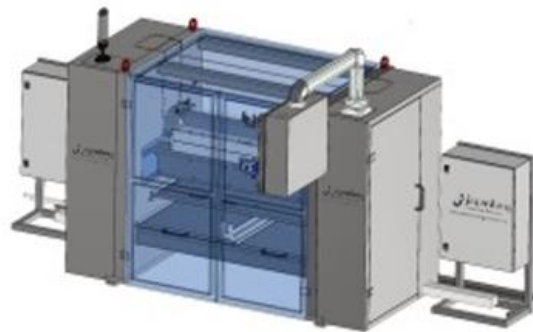
Specialist for coating technologies



Source: FMP Technology GmbH

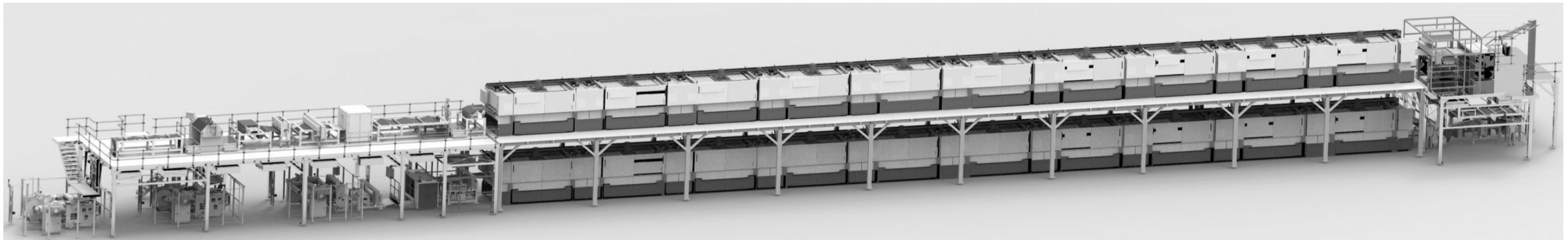
Coating Unit

Die coater.
High speed coating from pilot- to large-scale production



Rendering: Jagenberg Converting Solutions GmbH

Our offering.



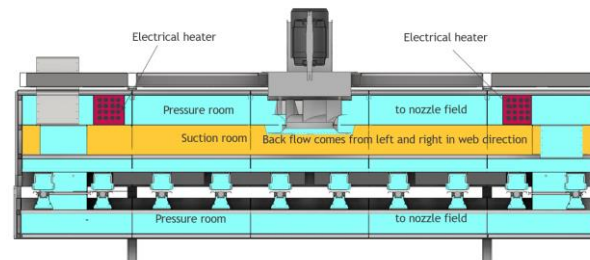
Integrate. Converting. Competences.

Partner for state of the art drying technology engineered and built in Germany

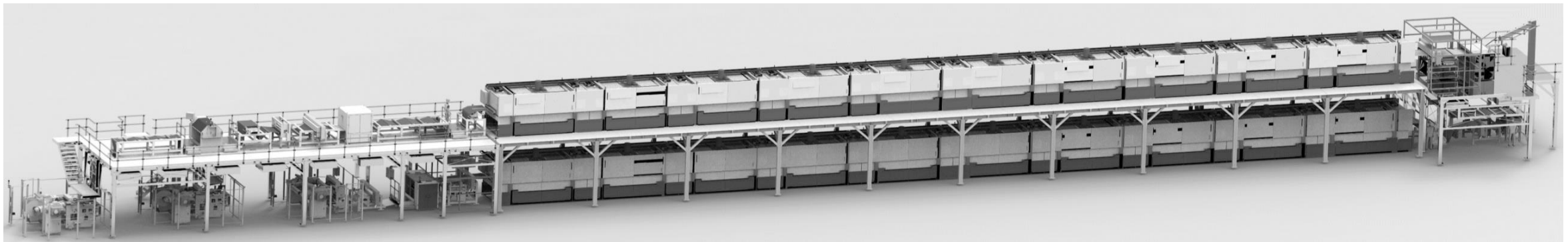
Dryer / AGT technology



Dryer.
The drying process affects the final battery performance to a large extent. We fit the best dryer for your requirements.



Our offering.



Jagenberg Group

Automation.Drives.Future.

Partner for all questions concerning drive and automation technology. Conceptual design, construction and production of electrical and switchgear systems

Drive technology

Mechatronic drive concepts.
From operating units to cabinet rows or complex switchgear containers for large systems.

Control technology

PLC & HMI operating and monitoring systems.
Pioneering technologies for operation and monitoring and for process visualization.

Data systems

Software development/ visualization systems.
Development of comprehensive visualizations with maximum transparency across all layers.

Panel shop

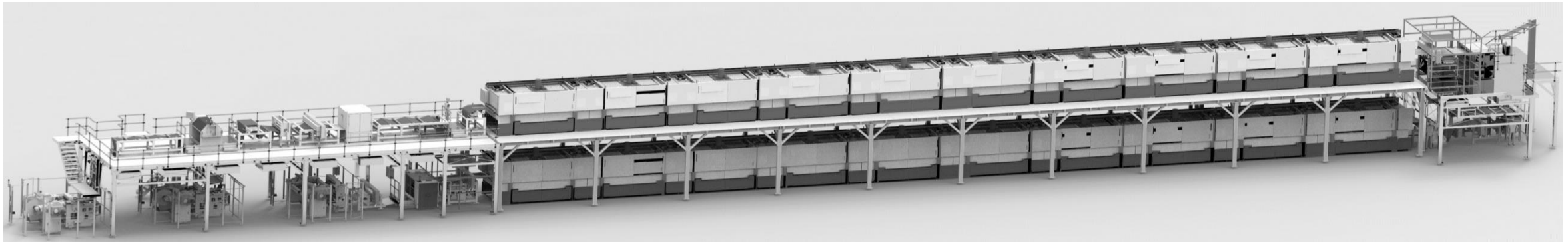
CE and UL certified panel shop.
With our own panel shop, we provide highest reliability for your delivery schedule.

Start up & Service 24/7

Electrical installation / commissioning.
Team of globally experienced professional technicians and engineers for the installation and commissioning of systems “on-site”.



Our offering.



Automation.Drives.Future.

Lauer CE-Safety

For more than 25 years an expert in all issues relating to CE marking, risk assessment, functional safety, assembly instruction and machine safety

CE Marking & Risk assessment

CE compliance.

From precise risk analysis and risk evaluation following the applicable directives to comprehensive research and analysis of standards (i.e. DIN EN ISO 12100) as well as safety-related review of machinery under construction.

User manuals & assembly instructions

Operating instructions and technical documentation.

We provide full service in creating complete preparation of operating and assembling instructions or alternatively evaluates pre-prepared technical documentation and supports the creating process at the customers site by training.

Functional Safety Engineering (FSE)

EN ISO 13849 application.

Our specially trained control engineers support machinery constructors by designing, verifying and validating safety functions.

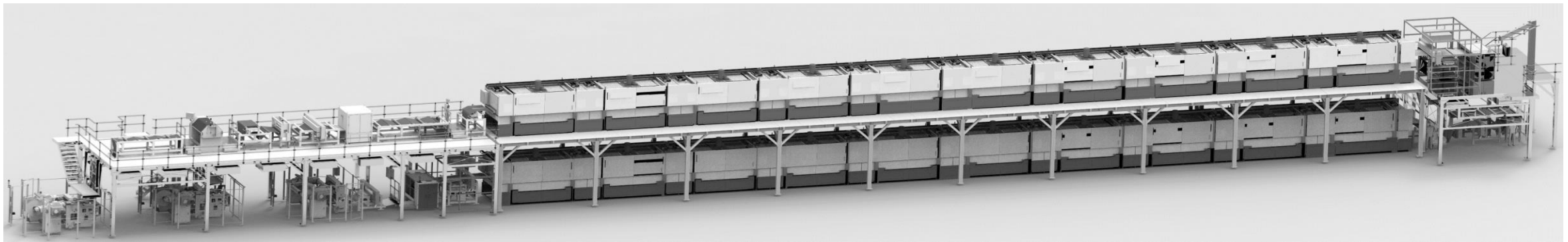
ATEX 114 Directive 2014/34/EU.

Professional CE-software

Directives, risks and draw up manuals.

With the right software, these tasks can be completed faster and more efficiently. We offer proven CE-software products that are continuously updated.

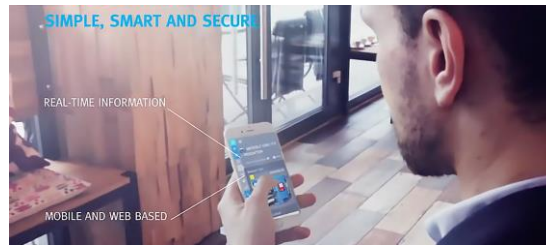
Our offering- ongoing developments.



Connect.Develop.Advance.

We focus on improving processes in production and thus optimizing the efficiency of companies across the entire value chain

IIoT platform



IIoT for your equipment. The platform offers digital intelligence for manufacturing. It connects machines, production and companies. It monitors production and bundles all relevant information for high production quality, resource conservation and low downtimes

Data management



Digitized manufacturing. Manufacturing is brought to a new level. Our solutions enable direct interfaces to ERP-Systems, communication to MES-Systems as well as support traceability through roll protocols

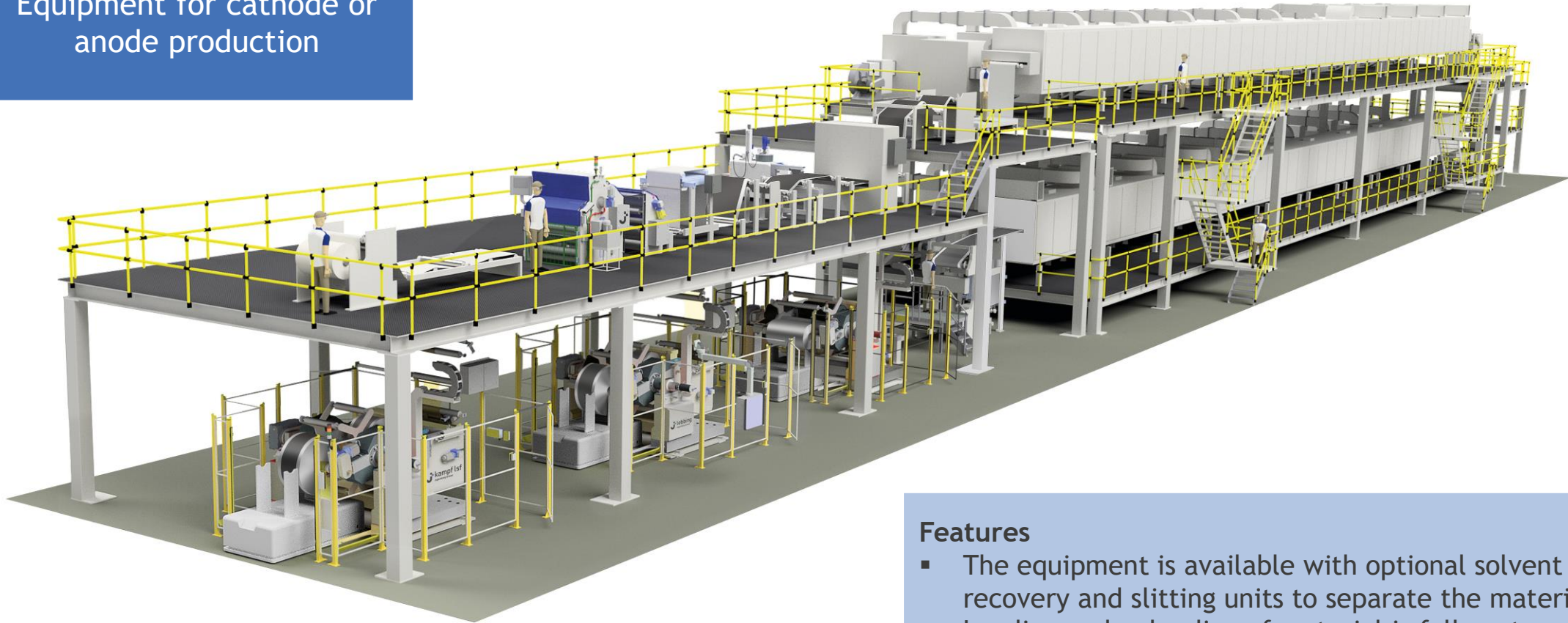
Smart sensors



Smart data harvester. There are many different factors that can influence maintenance cycles and product quality. the@dge unit is simply installed and connected via LAN cable (PoE) and communicates with our IIoT platform.

Turnkey equipment - project example

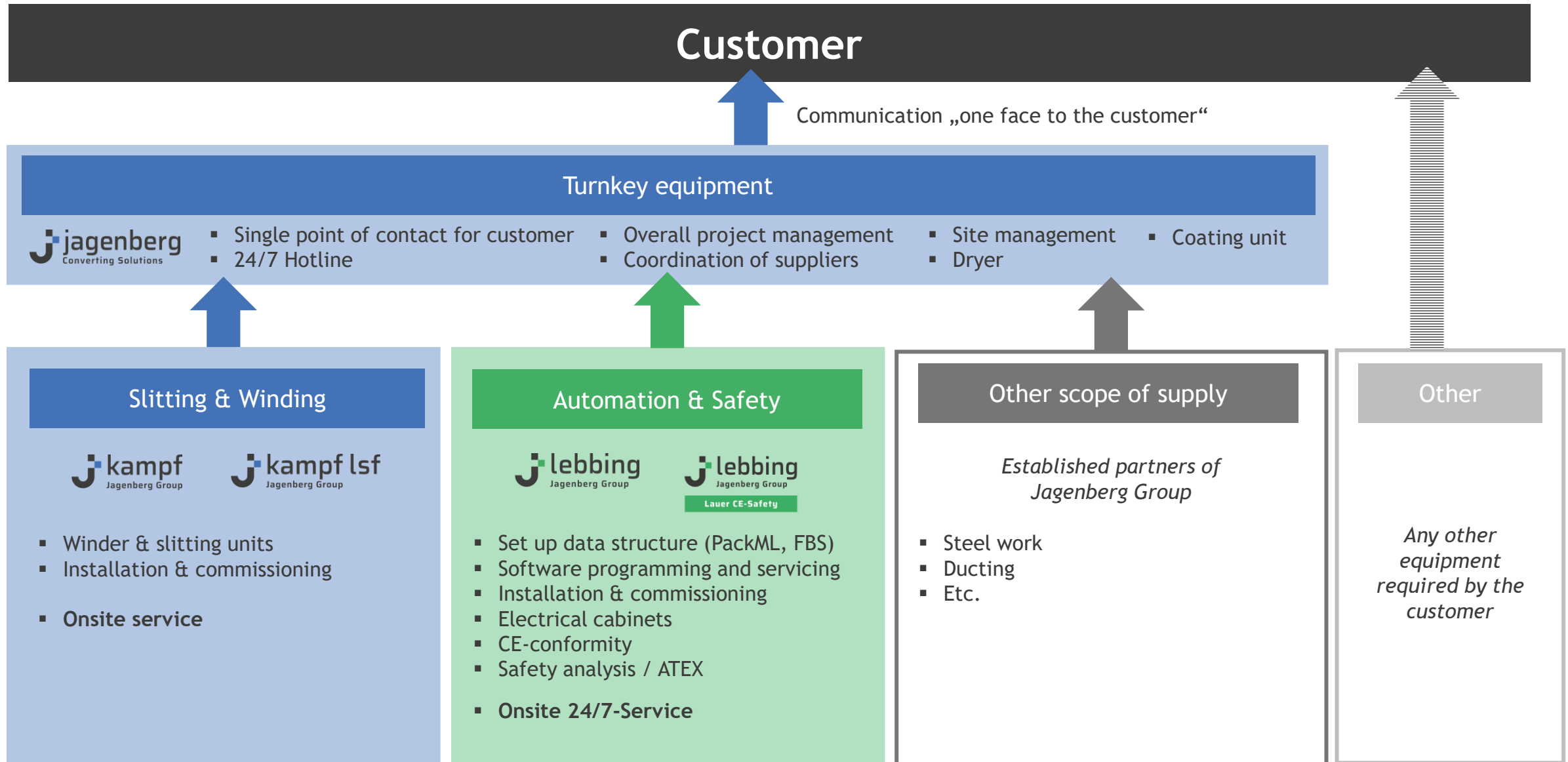
Equipment for cathode or anode production



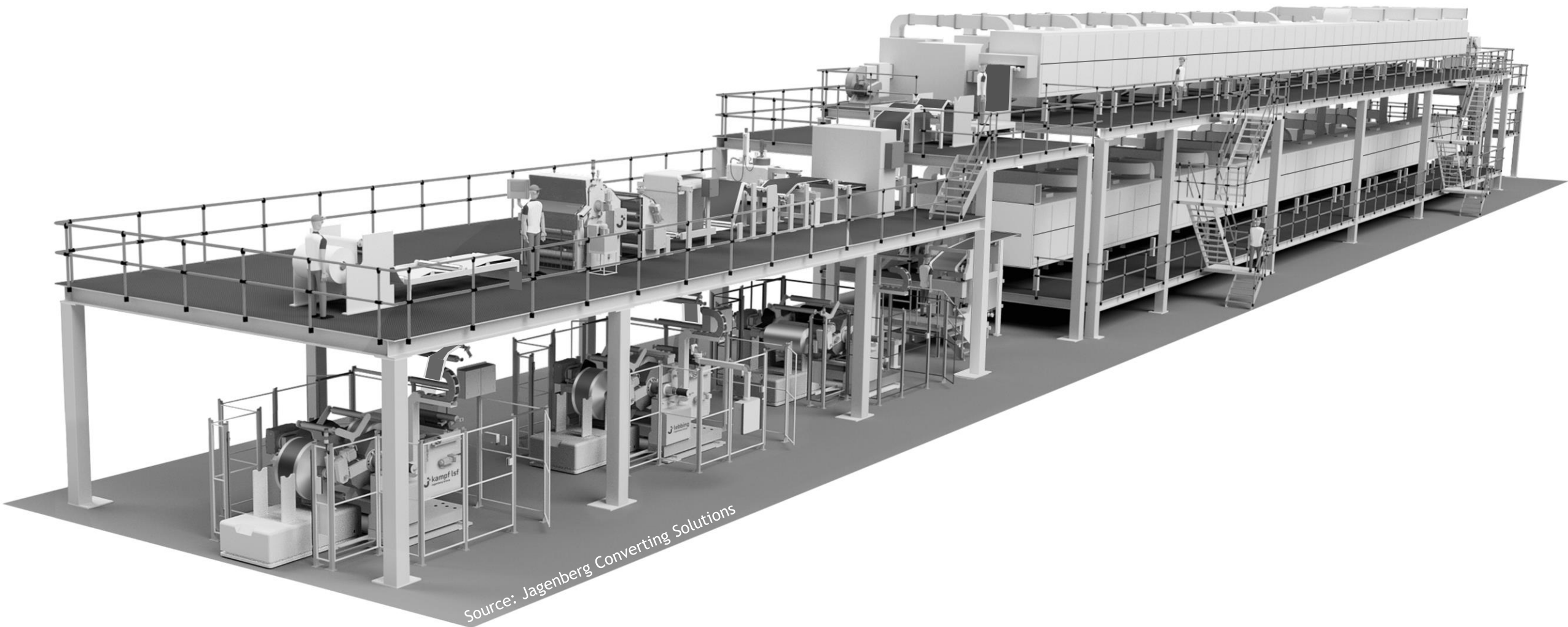
Features

- The equipment is available with optional solvent recovery and slitting units to separate the material.
- Loading and unloading of material is fully automated with Automated Guided Vehicles.
- The equipment is connected to the MES-system.

Turnkey equipment - scope and contractual setup



References - Tandem coating line for battery electrodes.



Source: Jagenberg Converting Solutions

References - Tandem coating lines for battery electrodes.



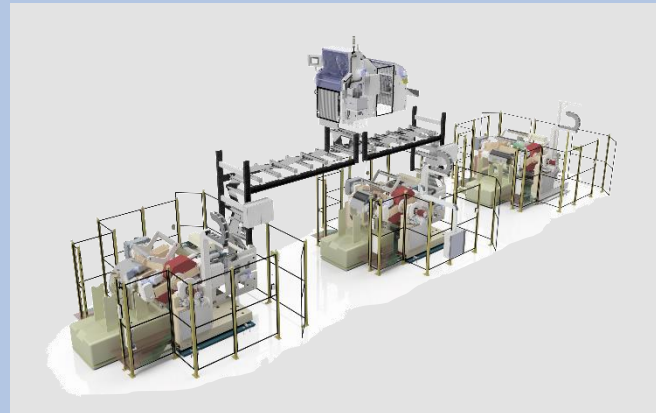
Our offering for the battery industry - Slitting & Winding.

Separator



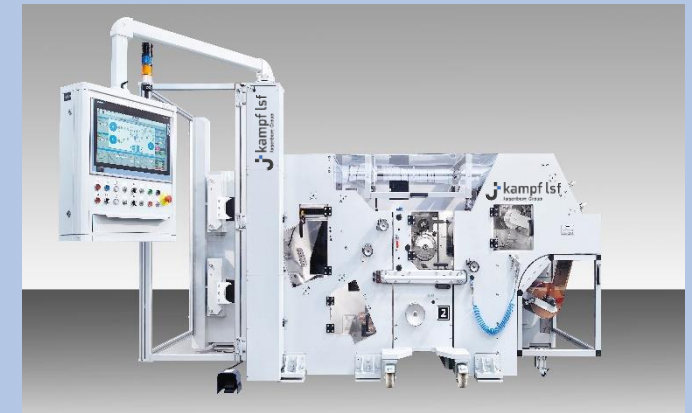
- Full width winder
- Primary slitter
- Secondary slitter

Anode & Cathode



- Turret rewriter
- Turret unwinder
- Splicing systems, Slitting units

Anode & Cathode



- Pilot line slitter rewriter
- Production machines

Automation

Consistent increase in productivity for you:

- Planning
- Simulation (Digital Twin)
- Continuous communication & data flow
- Project management and implementation

Added value
from a single source.

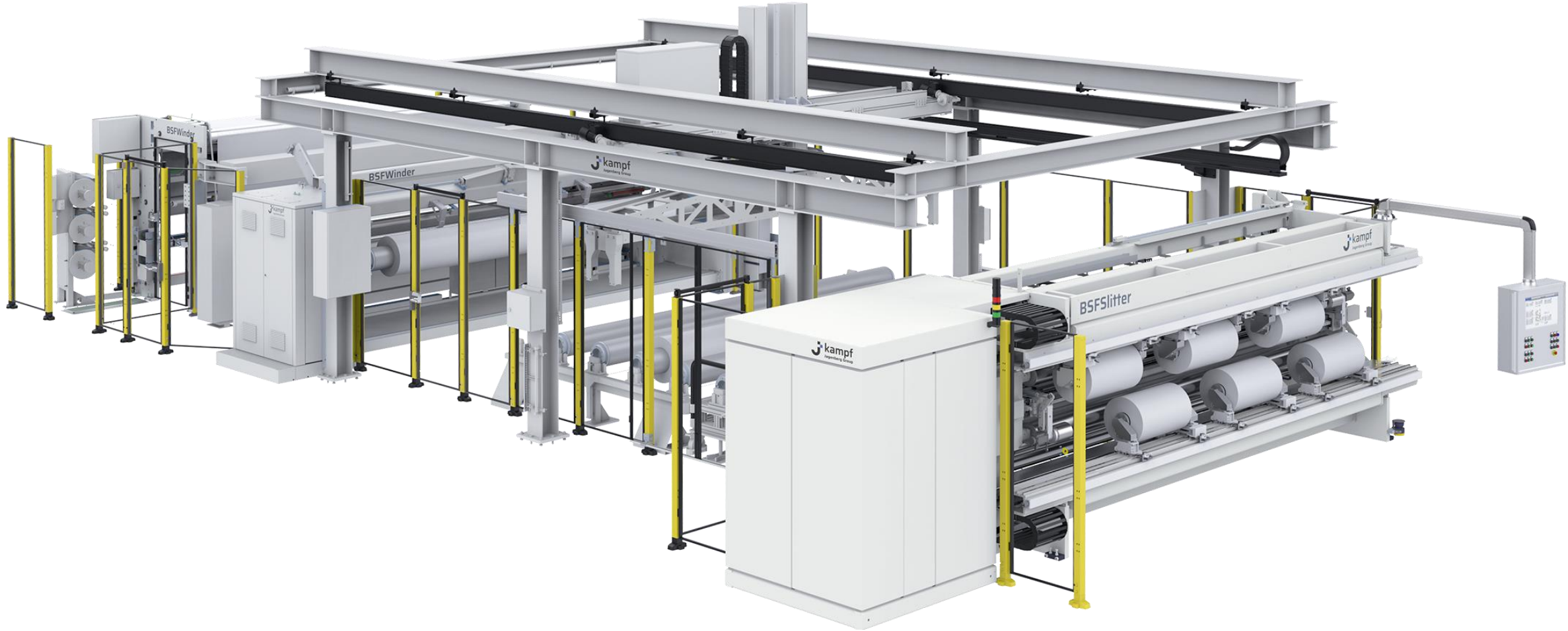


Digitalization

Integrative digital added value for you:

- Production overview
- Digital roll protocols
- Connectivity
- Data mining

References - Fully automated slitting cell for BSF.



Machinery scope

- Non Stop turret winder
- Primary slitter

Automation scope

- Roll storage
- Portal robot

Digitisation Scope

- IIoT Platform
- MES / ERP communication
- Cloud connection

References - Slitting for Anode and Cathode.



Source: BMW Group, Battery Cell Competence Center

Your direct contact.

YOUR PERSONAL CONTACT

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