



How to Deliver Automation and Productivity in Film Extrusion

Operator Safety • Process Efficiency • Energy Consumption • Quality Consistency

Automated Chill & Cast Roll Cleaning and Surface Treatment

Webinar

BALDWIN[®]

Unlocking Your Potential

Webinar Agenda

How to Deliver Automation and Productivity in Film Extrusion

- The four critical market pillars
 - Operator safety, Process efficiency, Energy consumption, Quality consistency
- Applications and innovative technology integration
 - Cast Film Extrusion
 - Plastic Sheet Extrusion
 - Blown Film Extrusion
- Surface cleaning
 - Challenges and needs in the market
 - Technology breakthrough – automation
 - Results from automation
- Surface treatment
 - Market opportunities
 - Corona and anti-fog coatings
 - Best practices & results

Questions and answers with presenter



Matthias Knoch
Presenter



Alexander Rau
Presenter



Christina Björkander
Moderator

Our Speaker – *Matthias Knoch*

- Sales Director Industrial Applications, Baldwin Technology (+6 years)
- Key Account Management Leader, Baldwin Technology (+6 years)
- Senior Project Manager, QuadTech (6 Years)
- General Manager Germany, Austria, Switzerland, PressTech Controls (2 years)
- Application Engineer & Regional Sales Manager, Schenck Process (3 years)
- Project Engineer and Key Account Manager, MEG (3 years)
- Master of Science, Mechanical Engineering, FH Munich



Our Speaker – *Alexander Rau*

- Product Manager, Ahlbrandt (18 years)
- Director of R&D, Remaplan GmbH (3 years)
- Project Director, TU Darmstadt (6 years)
- Sales Manager, Nichols Institute (2 years)
- Postdoc, University College Dublin
- Dr. Dipl. Chem., University Marburg



The Baldwin Business

Providing process automation technology solutions

\$165
Million
Global Company

Global
Revenue Mix

Americas – 34 %
EMEAR – 37 %
Asia – 29%

Team members
around the Globe

750

History since

1918

21
Locations
World Wide

Business units

Precision Application
Curing & Drying
Vision Systems

Industries

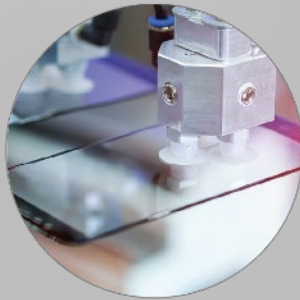
Printing
Packaging & Converting
Textile Production
Film Extrusion
Others

Owned by



A part of
Barry-Wehmler's
Network of 110
companies
in 28 Countries





Baldwin – *A partner with a strong legacy*

- The industry's broadest range of process technologies
- 50+ years of providing innovative technologies for plastic film production
- All of our solutions work perfectly in tandem with installed systems
- Thorough international service-and-support presence
- Secure longevity – 100-year strong company vision and continued strategic acquisition

Unlocking Your Potential – *in Plastic Film Extrusion*



*Increased
Safety*

A Safer Production



*More
Efficiency*

Faster Turnaround Times



*Reduced
Energy*

Eco-Friendly Production



*Perfect
Quality*

Higher-Quality Results

Surface Cleaning is Not an Option; It's a Requirement



- Manual cleaning issues
 - Limited chill roll access
 - Uneven & inconsistent results
 - Production stops
 - Injury danger
 - Hazardous liquids needed
- Outcome
 - Quality drops
 - Productivity decreases
 - Material waste increases
 - Time buildups
 - Energy consumption grows
- Solution – “Hands off”
 - Clean a chill roll while in production
 - Automation – a ground-breaking technology
 - Installation flexibility
 - Configuration possibilities
 - Ideal for technical films and food grade films

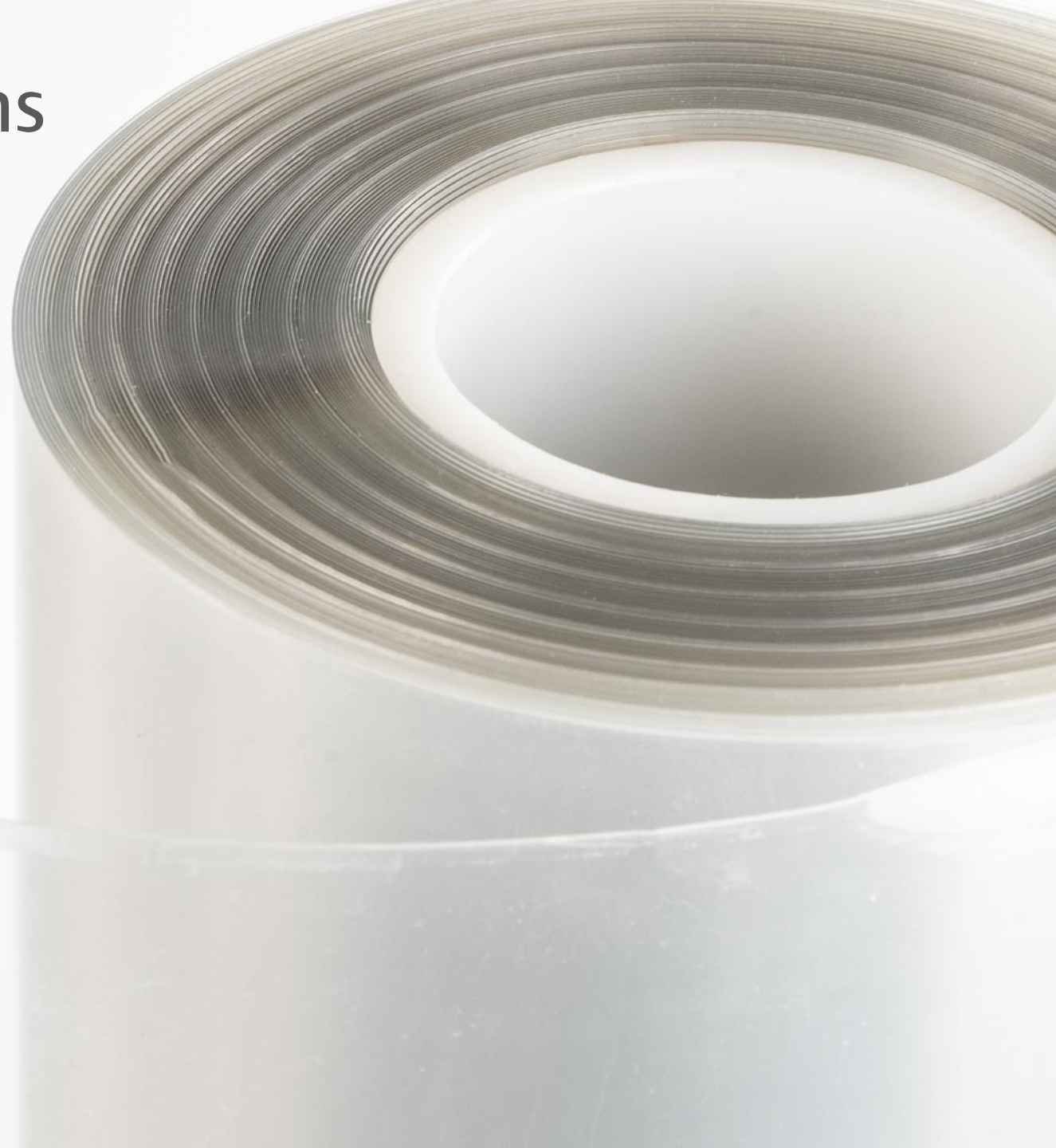
Surface Treatment is Not an Option; It's a Requirement

- Corona required for
 - Adhesion of ink and coatings
 - Downstream converting
 - Preparation of refreshment
- Optimized logistic planning
 - No time pressure in transportation
 - Freedom in storage planning
- Allows inline coating of anti-fog properties
 - Effect direct after coating
 - Highly transparent
 - Low chemical consumption
 - Excellent recycling properties

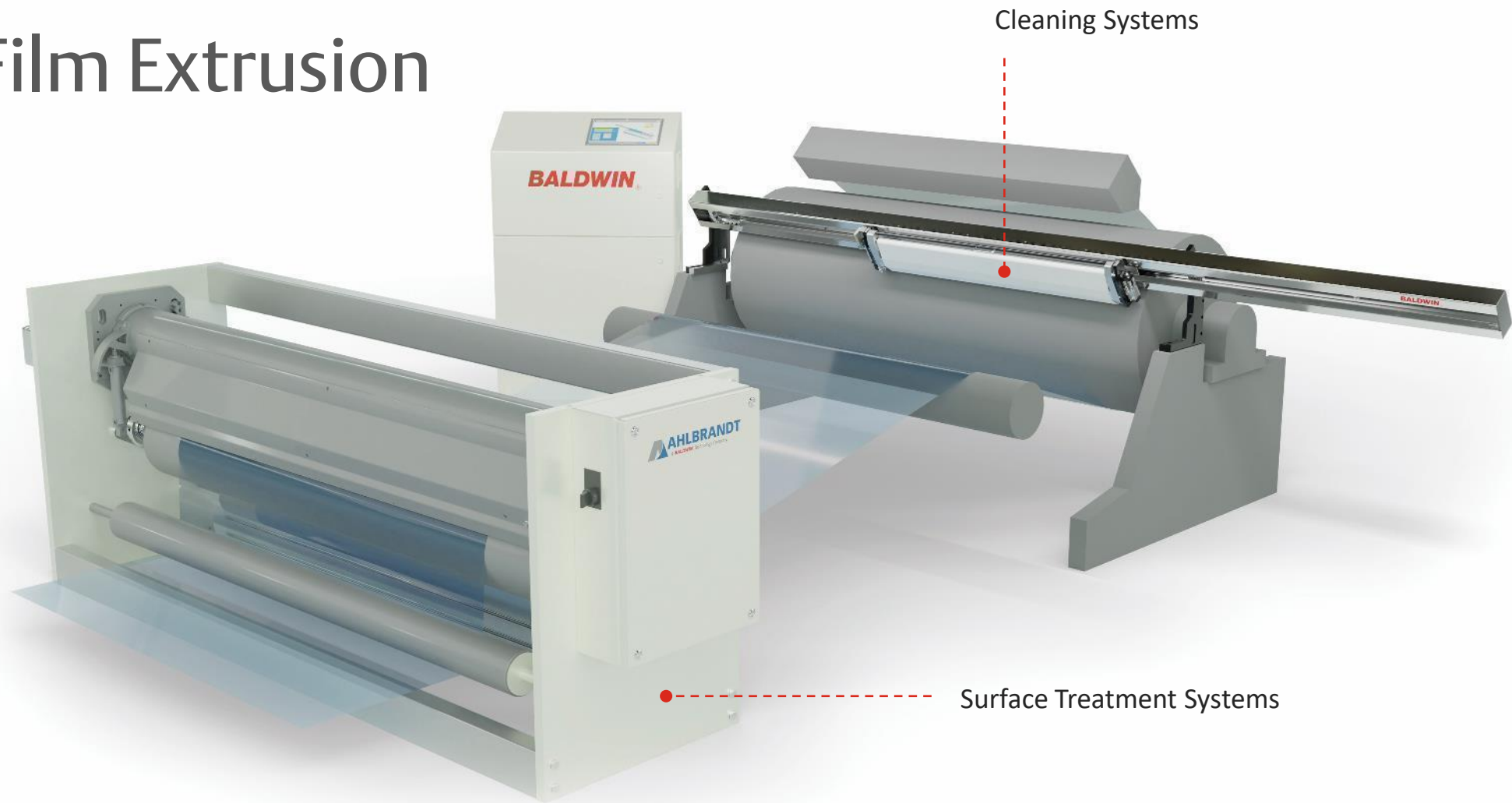


The Three Main Applications *in Plastic Film Extrusion*

- Cast Film Extrusion
- Plastic Sheet Extrusion
- Blown Film Extrusion



Cast Film Extrusion



Plastic Sheet Extrusion

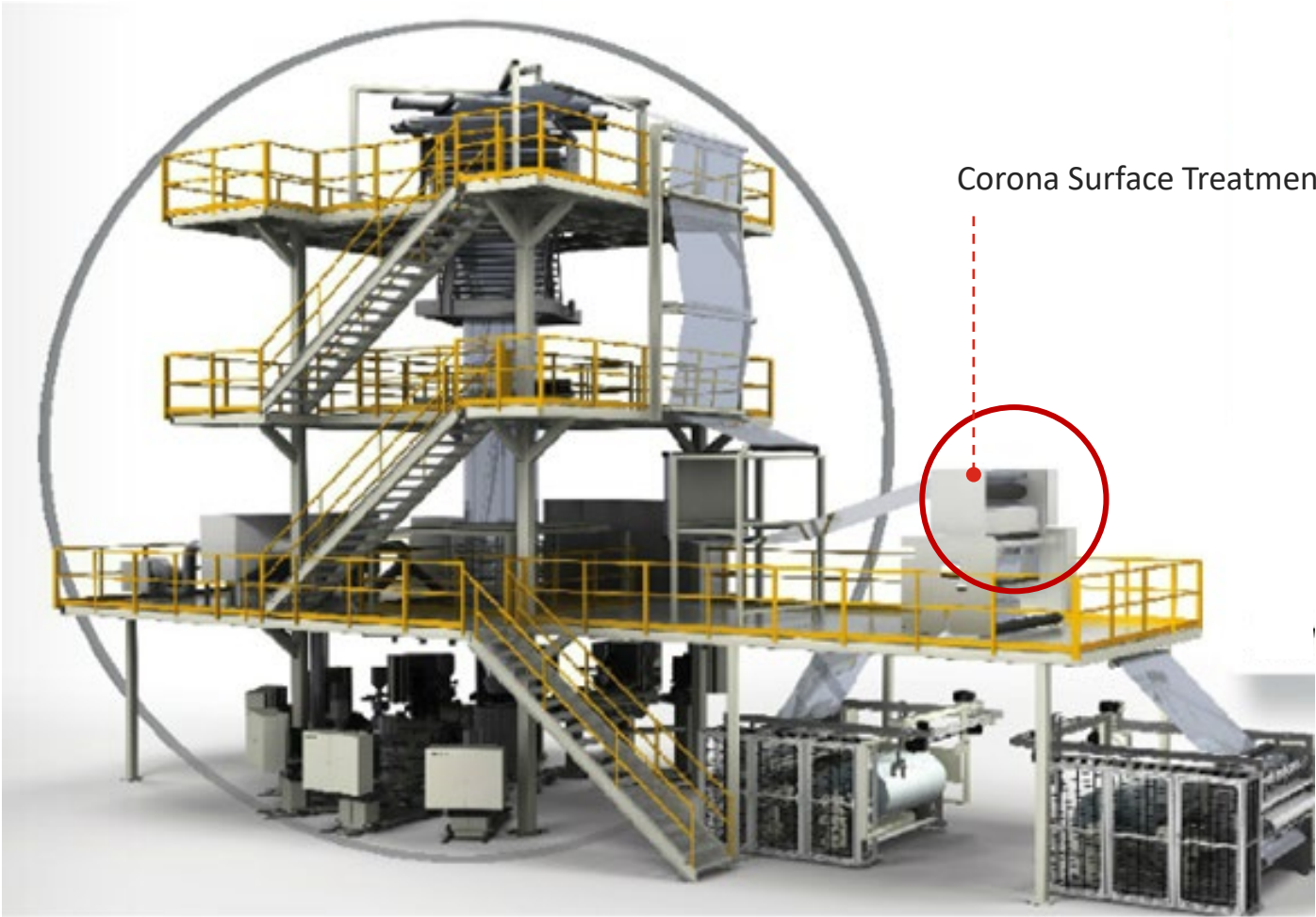


Drying Systems

Rotor Spray

Surface Treatment Systems

Blown Film Extrusion





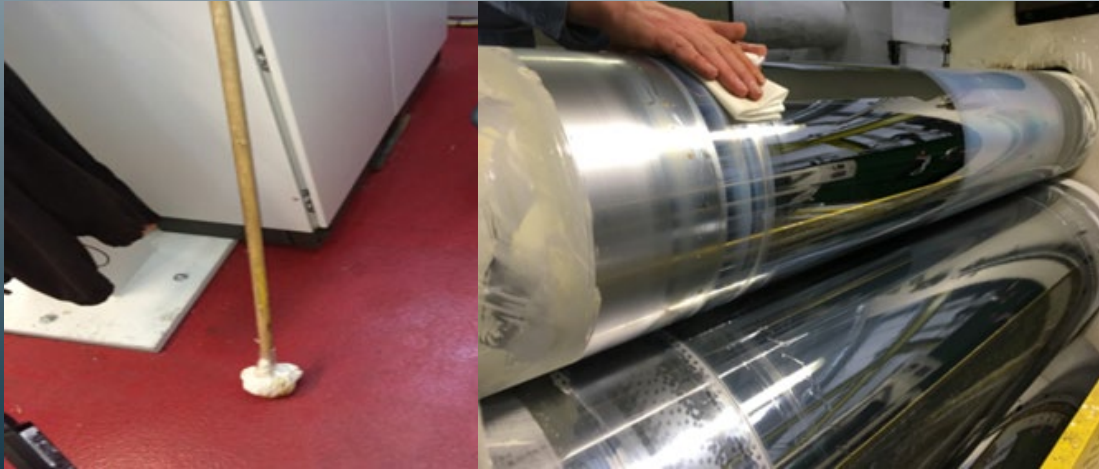
Surface Cleaning

FilmCylinderCleaner

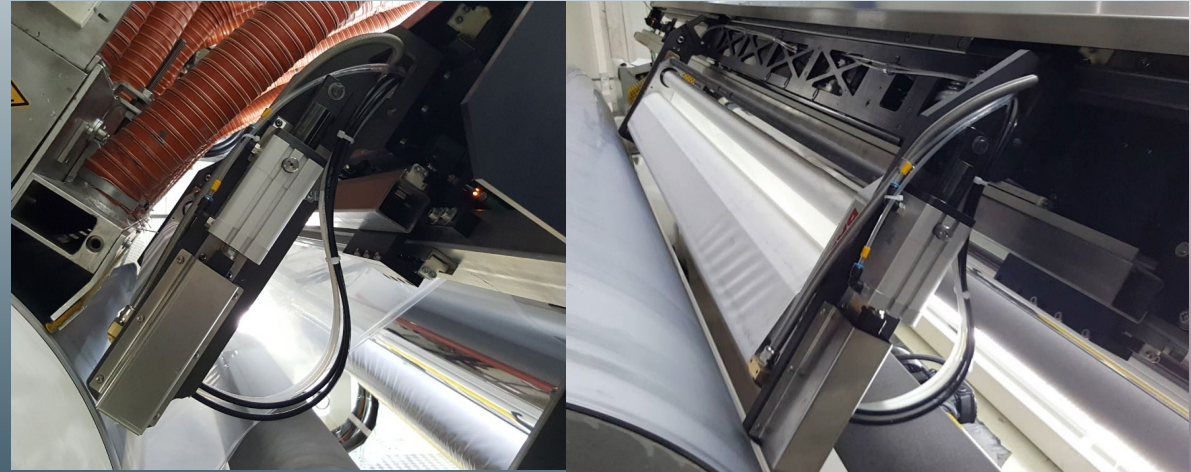
FilmPac

Automatic Cast and Chill Cylinder Cleaning

Manual



Automation



FilmCylinderCleaner – *Overview*

Smart Automated cleaning of chill and cast rolls

- Cleaning on the “go”
- No manual cleaning, eliminates health and safety risks
- Prevents quality issues before they occur (cleaning before deposits are visible)
- No production interruption
- Reduced waste due to no downtime of the extrusion process
- Smooth microfiber cloth for efficient cleaning and protection of roll surfaces



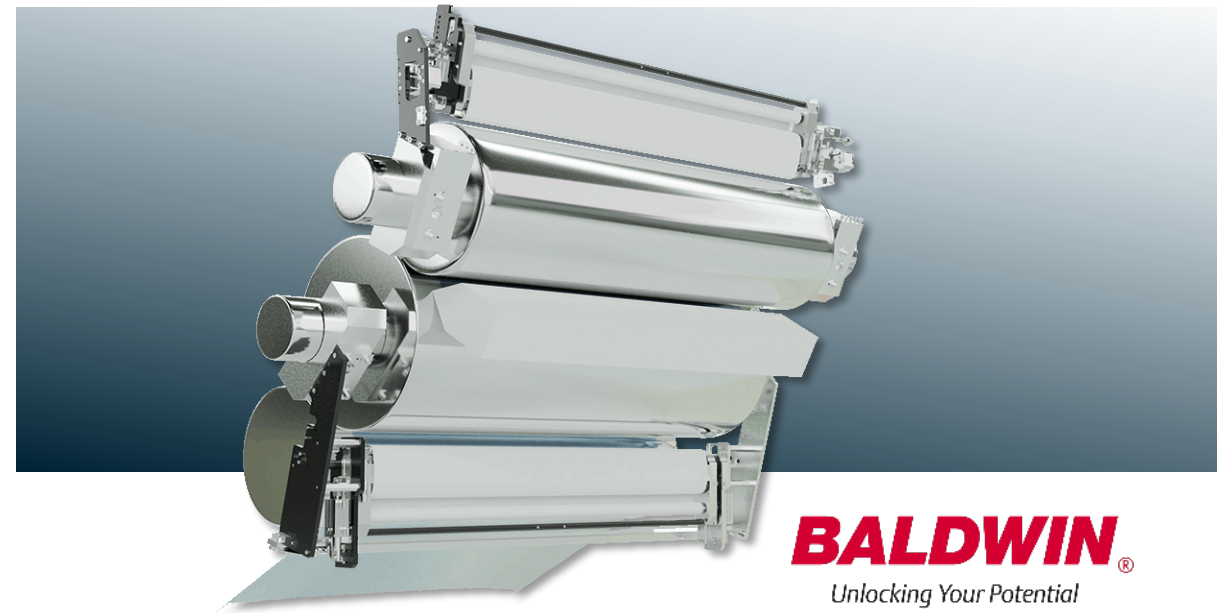
FilmCylinderCleaner – *Benefits*



- Enhanced film quality
- Increased productivity
- Completely safe
- Efficient cleaning
- Adapted & tailormade application

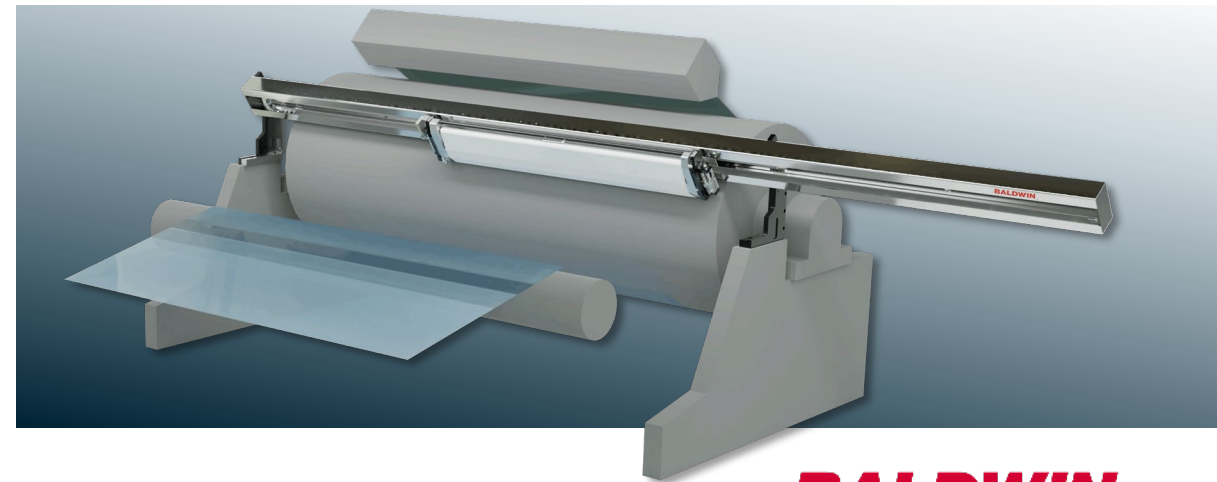
FilmCylinderCleaner – *Sheetline*

- No or minimal interruption of production for cleaning
- Optimizes quality, output and productivity
- "One touch"- no traversing cleaning head during contact with roll to avoid lollipop-effects
- Cleaning cycles will be adapted to your production process



FilmCylinderCleaner – *Cast Extrusion*

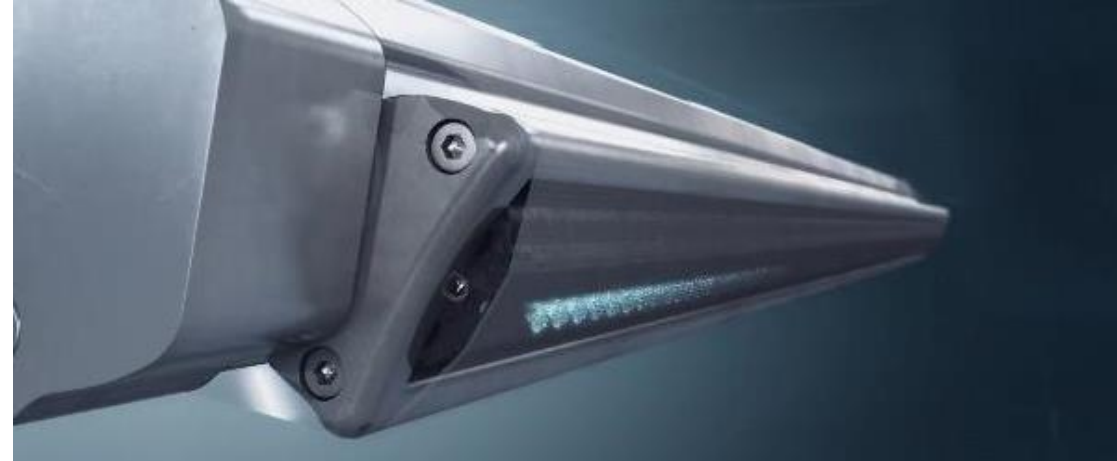
- Ensures no scratching of cylinder surfaces
- No manual cleaning, eliminates health and safety risks
- Prevents quality issues before they occur (cleaning before deposits are visible)
- No production interruption
- Reduced waste due to no downtime of the extrusion process



Baldwin FilmPac – *Microfiber Cleaning Cloth*

Benefits

- Absorbs dirt and fluids from the roll surface without the risk of scratching it
- Low cloth consumption



FilmCylinderCleaner – Operation

- Cleaning solvent is automatically dosed and evenly distributed with high precision onto the cleaning cloth.
- Cleaning performed with linear cleaning head contact to cylinder by “kiss-touch”.
- No traversing during cleaning – No lollipop effect.
- Traces and deposits are removed from the cylinder surface.



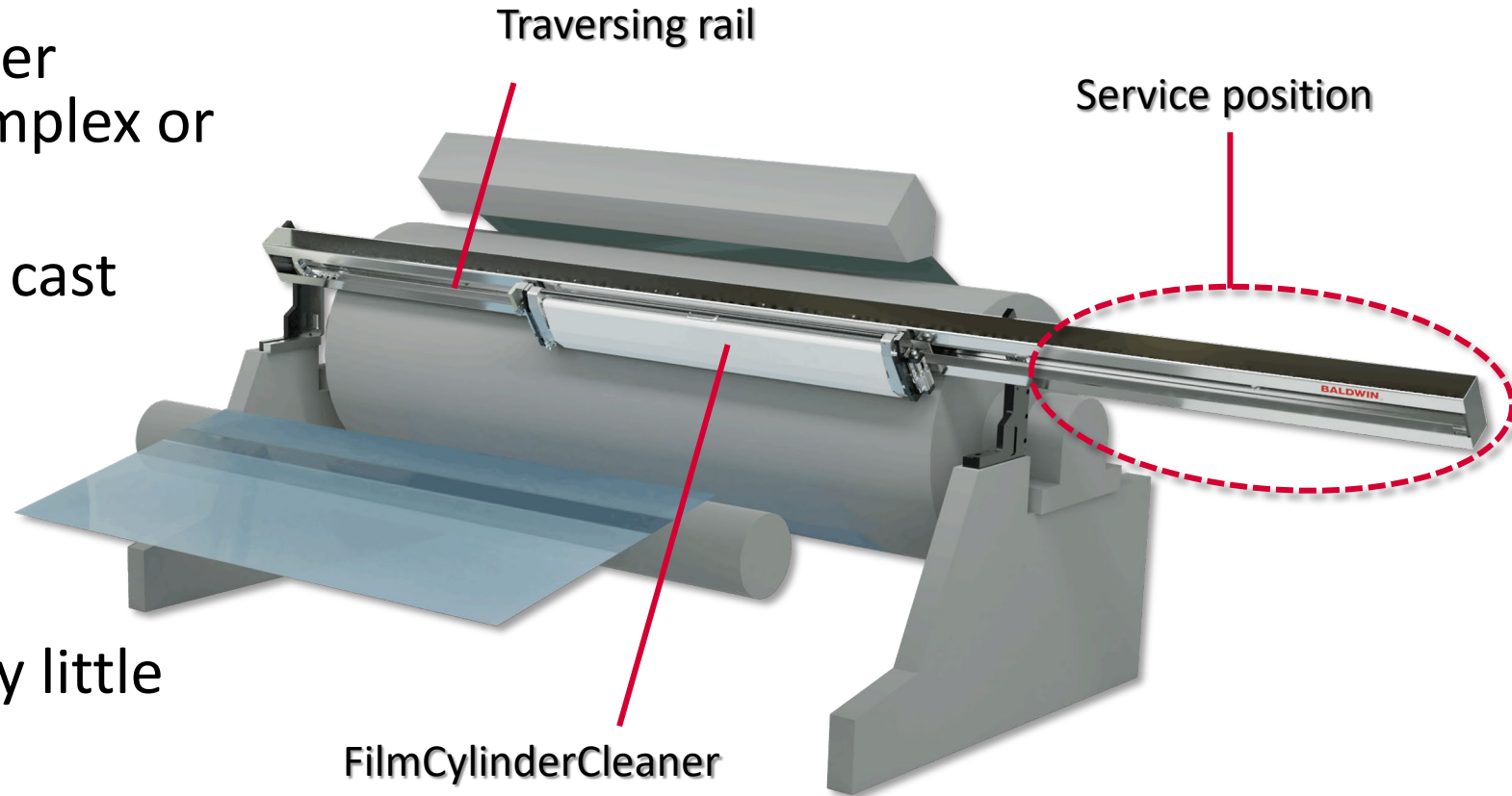
Smart User Interface

- Easy operation with touch screen panel
- Programmable wash cycle frequency & duration and dosing of cleaner
- Fully automatic operation or manual start upon request



FilmCylinderCleaner – *Fast & Easy Service*

- Modular design allows for user friendly solutions also on complex or wide format machines
- Traversing rail helps cleaning cast rolls up to 3.5m width
- Easy access for service and maintenance
- No manual cleaning!
- Cleaning system requires only little maintenance



Plastic Film Cleaning

Up to
250 h*

Extra production time
per year

* manual cleaning 1h/per day
250 production days

Manual Cleaning



30-90
minutes
per day



Unknown
hazardous solvents
per day

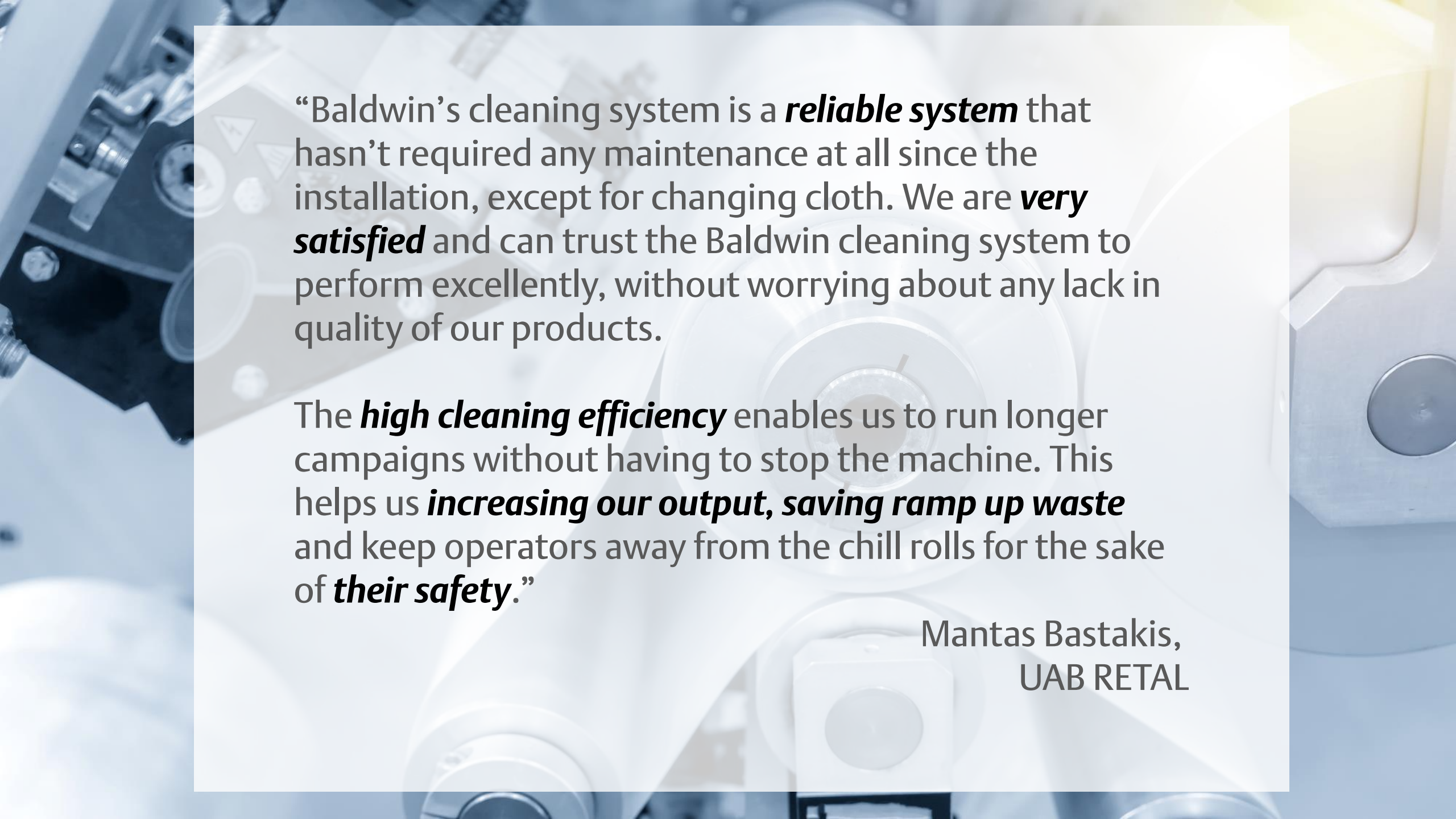
Automated Cleaning



1½ -2
minutes
per cleaning cycle



100-150ml
solvent consumption
per cleaning cycle



“Baldwin’s cleaning system is a **reliable system** that hasn’t required any maintenance at all since the installation, except for changing cloth. We are **very satisfied** and can trust the Baldwin cleaning system to perform excellently, without worrying about any lack in quality of our products.

The **high cleaning efficiency** enables us to run longer campaigns without having to stop the machine. This helps us **increasing our output, saving ramp up waste** and keep operators away from the chill rolls for the sake of **their safety.**”

Mantas Bastakis,
UAB RETAL

Surface Treatment

Ahlbrandt Drying Systems

Ahlbrandt Rotor Spray

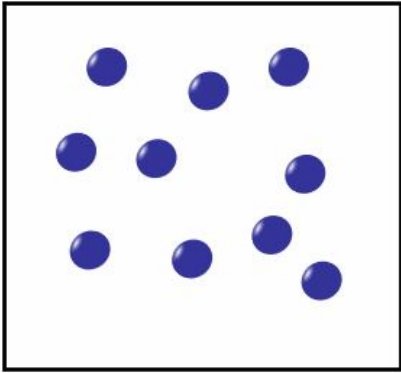
Ahlbrandt Corona Extrude

Corona Surface Treatment – *Benefits*

- Enhanced adhesion
- Optimized print quality
- Increased productivity
- Low energy consumption
- Eco-friendly & safe

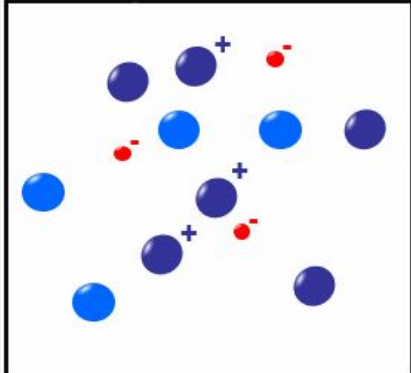
Corona is air plasma at ambient pressure

- Plasma is a gaseous mixture of ions, electrons, and atoms or molecules



Gas

● Atoms



Plasma

● Atoms electronically activated
● Atoms
●⁺ Ions
●⁻ electrons

Corona / DBD - The Working Principle

Corona : DBD (Dielectric Barrier Discharge)

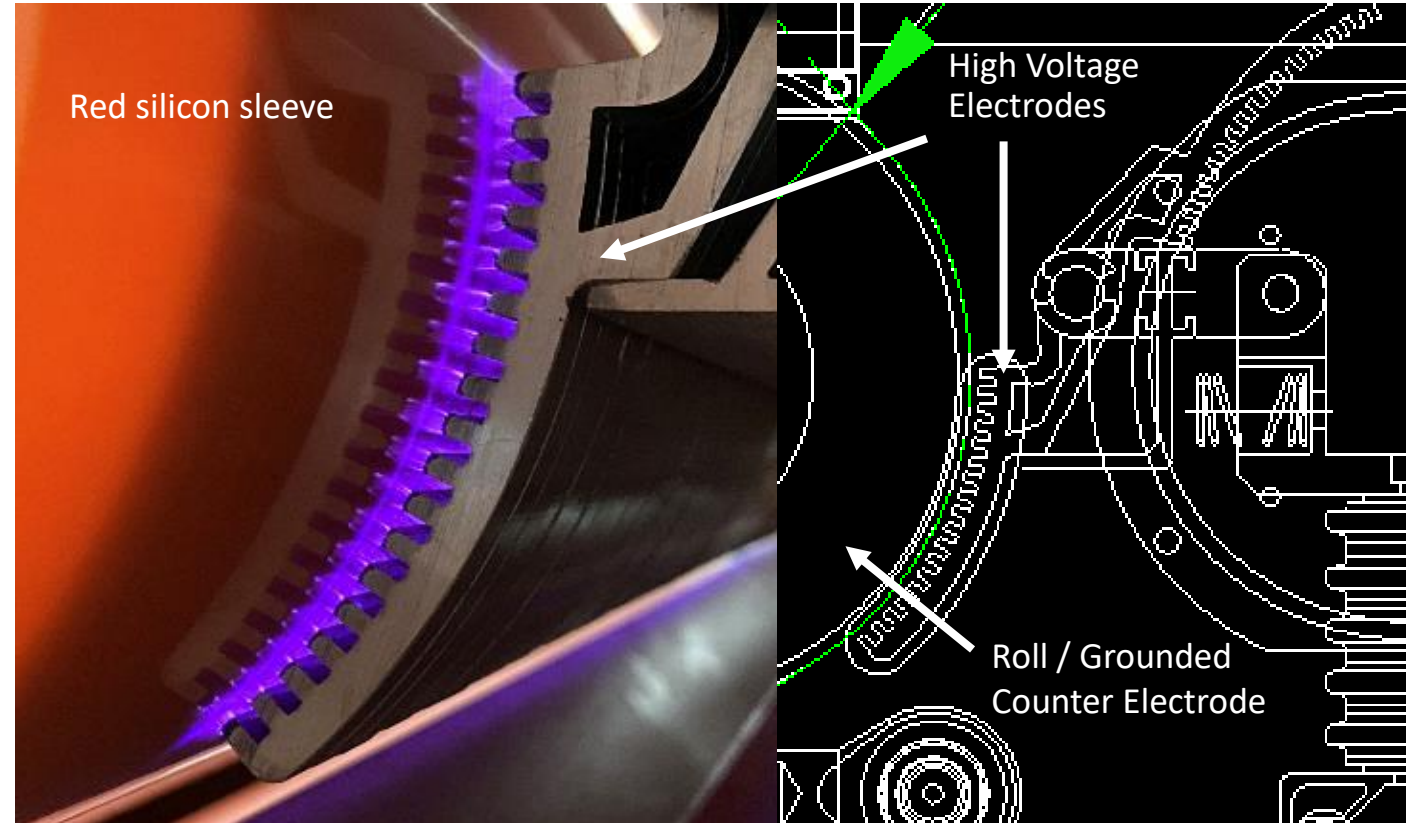
- Gas-Pressure: Ambient (ca. 1 bar)
- Gas Type: Air
- Voltage: 10 -20 KV

HV-Electrode Types

- Metal-Segment (Blown-Film)
- Metal-Bar (Cast-Film)
- Ceramic (Sheet-Extrusion, Converting)

Barrier - Types

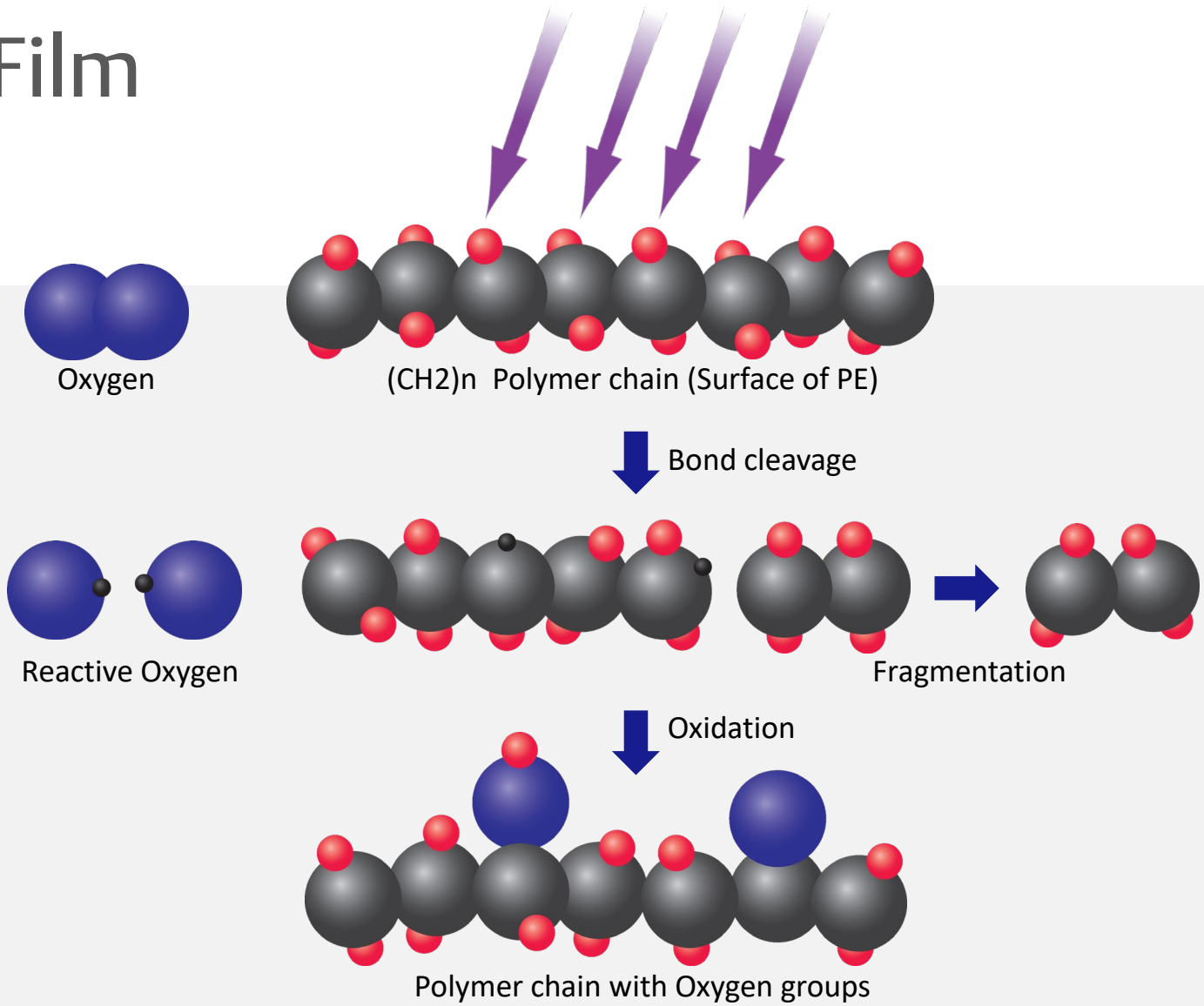
- Silicon-Sleeve (Blown-Film)
- Silicon Coating (Cast-Film)
- Ceramic (Sheet-Extrusion, Converting)



Corona Treatment of PE-Film

Oxidation & Fragmentation

The reaction creates Oxygen groups on the surface that can interact with printing inks, glue or other coating media



Why Use Corona Surface Treatment?

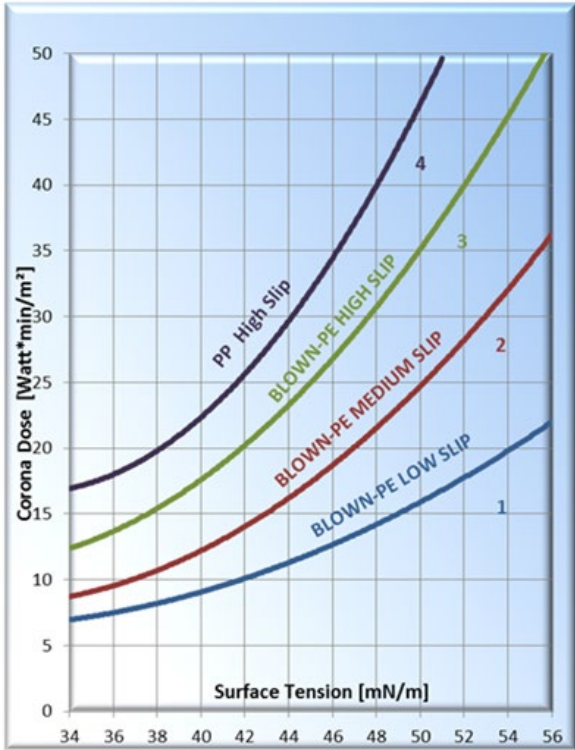
With Treatment



Without Treatment



Corona Dose for Different Film Types



1 PE Blown Film, Low slip
PE Refreshment

2 Blown Film, Medium slip
PE Cast Film, Low slip
PP, Low slip
PP Refreshment

3 PE Blown Film, High slip
PE Cast Film, High slip
PP, Medium slip
OPP, Oriented PP

4 PP, High slip
BOPP, Biaxial oriented PP
PE Cast Film, Very high slip

Low slip:
0 – 400 ppm

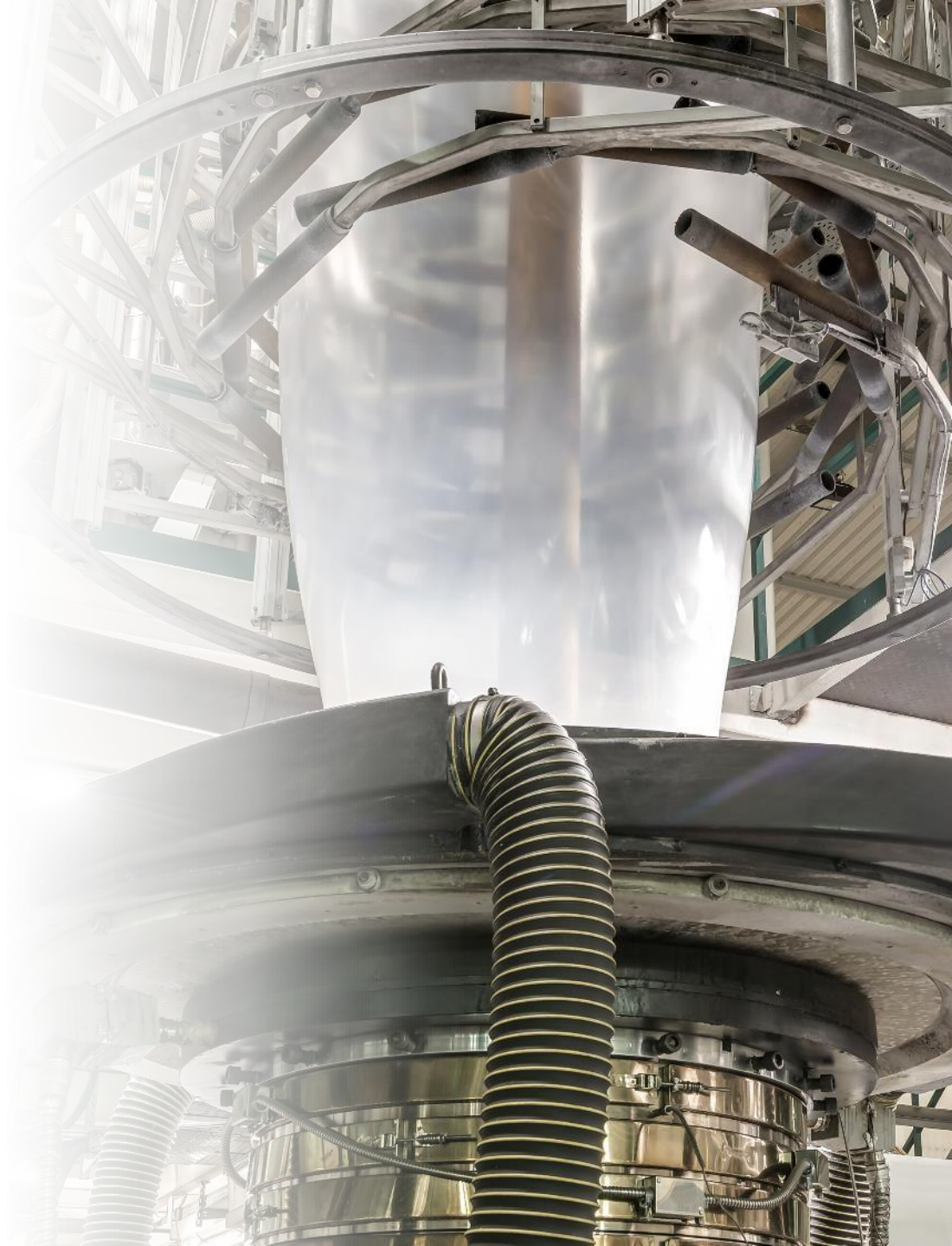
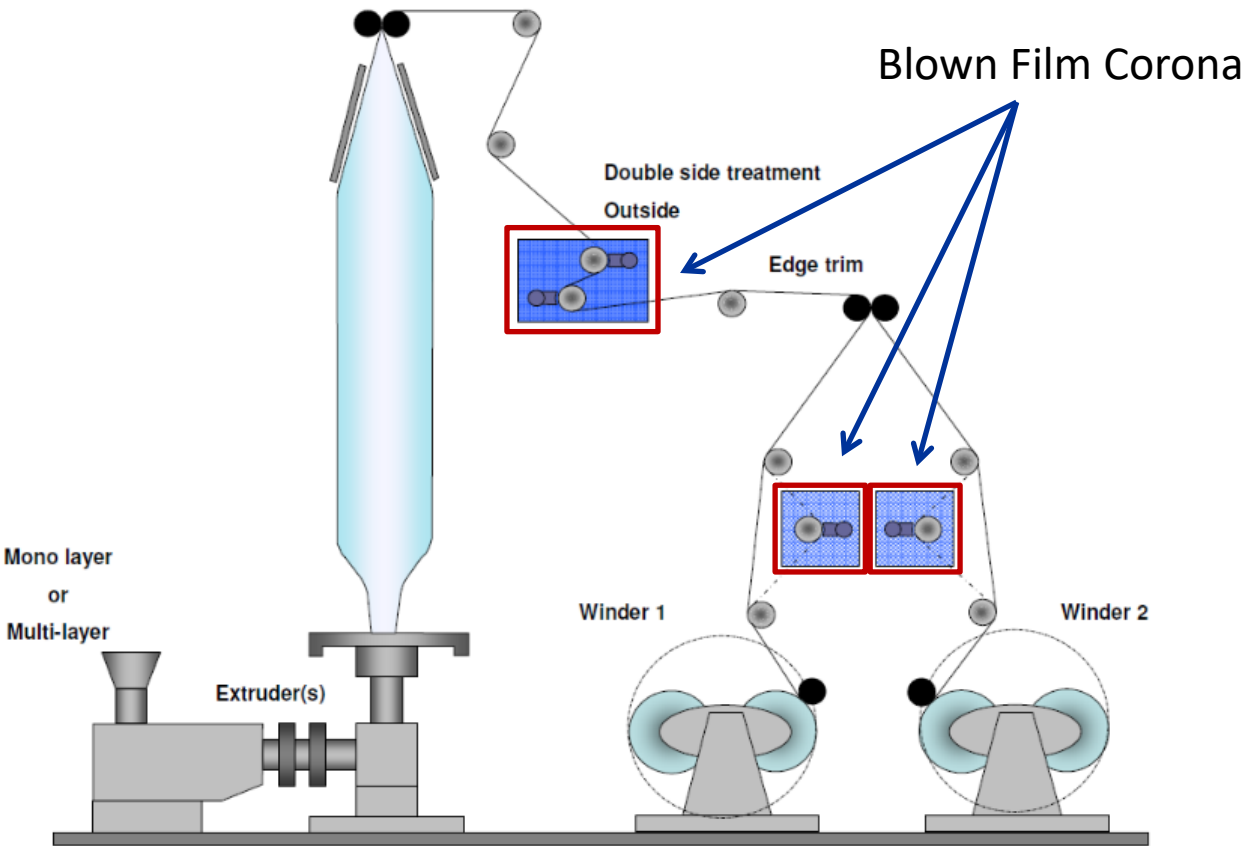
Medium slip:
400 – 700 ppm

High slip:
700 – 1200 ppm

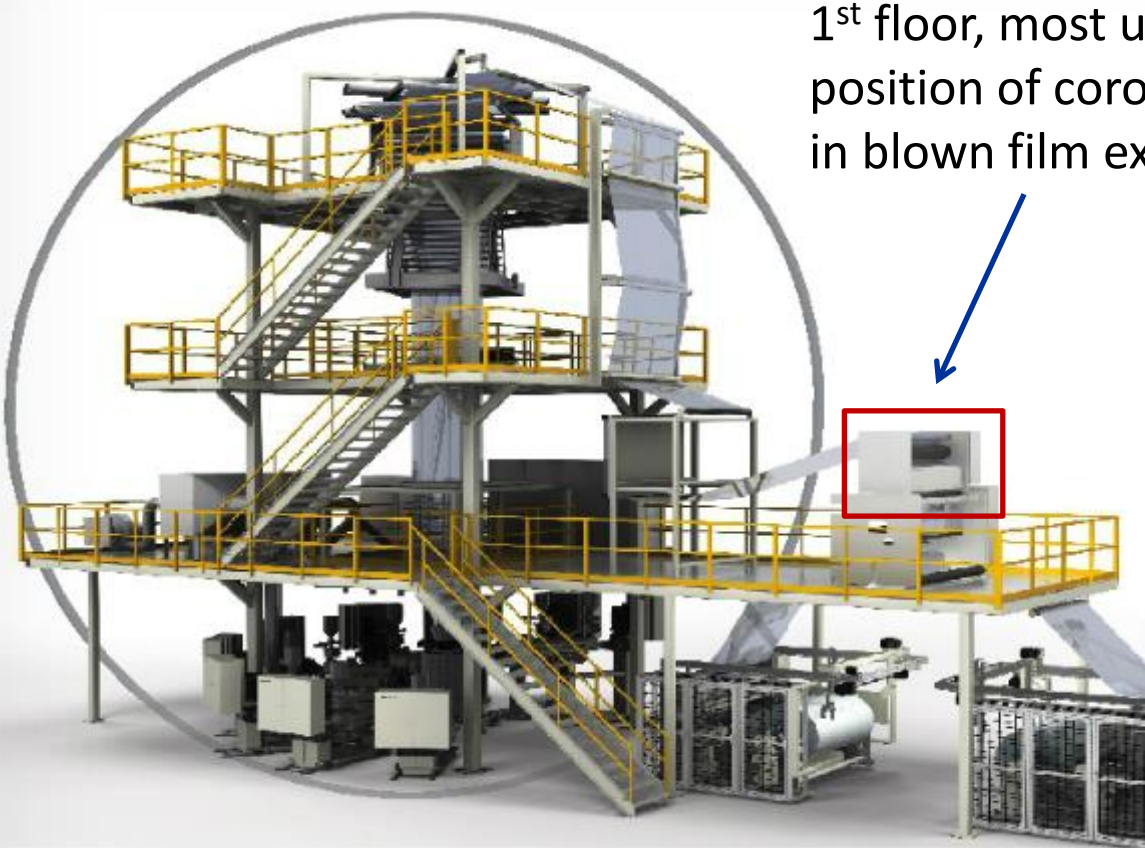
Very high slip:
1200 – 2000 ppm

average values; deviations due to additives and variation of polymers

Corona in Blown Film Extrusion



Blown Film Extrusion Line



1st floor, most used position of corona station in blown film extrusion



Corona Extrude – *Easy Flip of Segments*



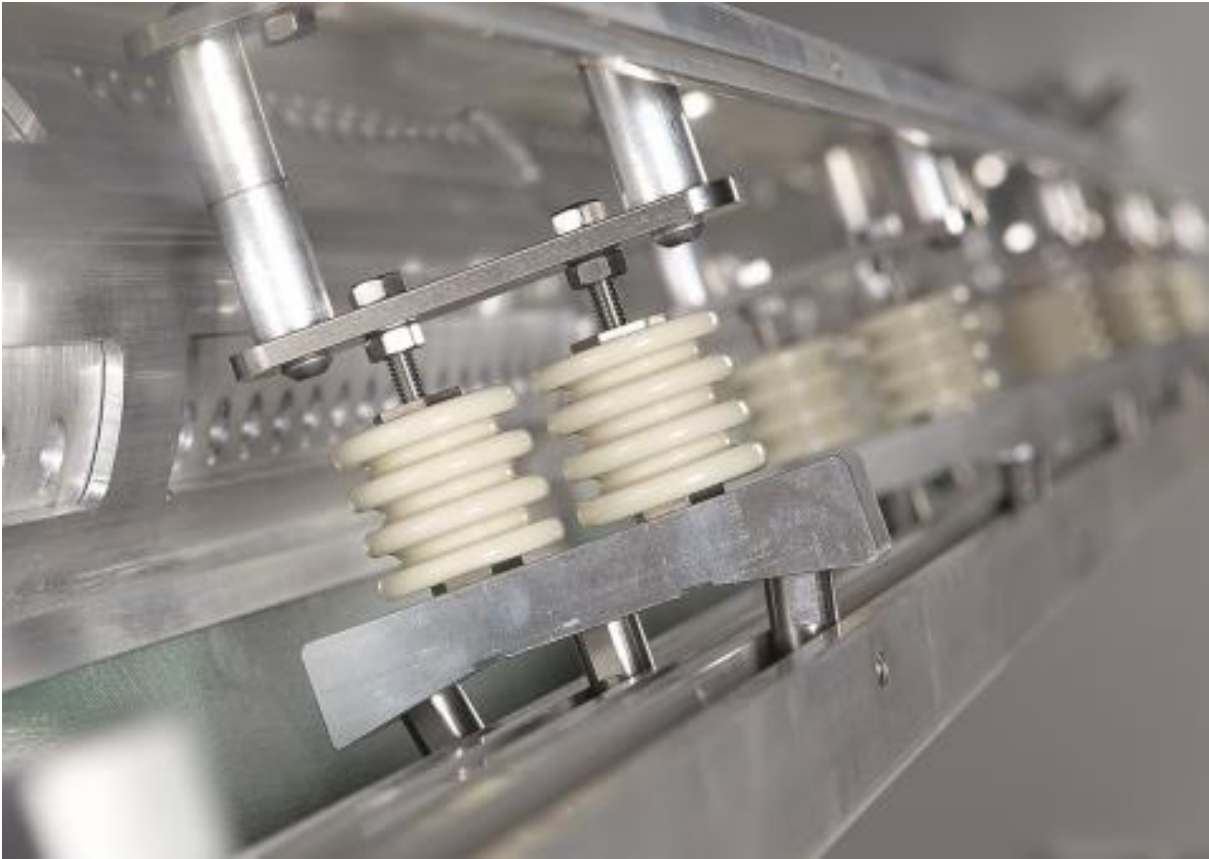
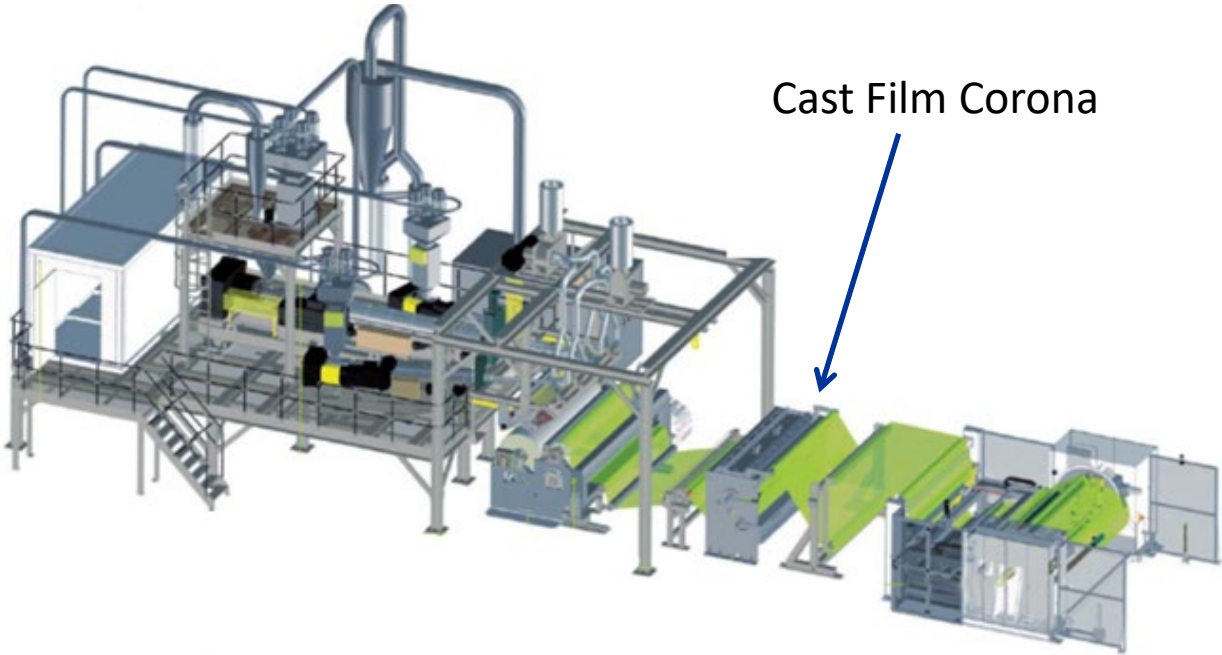
Corona Extrude – *Surface Treatment for Blown Film Extrusion*

Benefits

- Powerful metal electrode segments for a long lifetime operation
- Simple top to bottom threading of film
- Easy flip of segments
- Simple removal of rolls for quick exchange of silicon sleeves
- 3 mm Corona resistant sleeves
- Robust design only ceramic and metal
- Maximize uptime, increase productivity and deliver extensive pretreatment quality



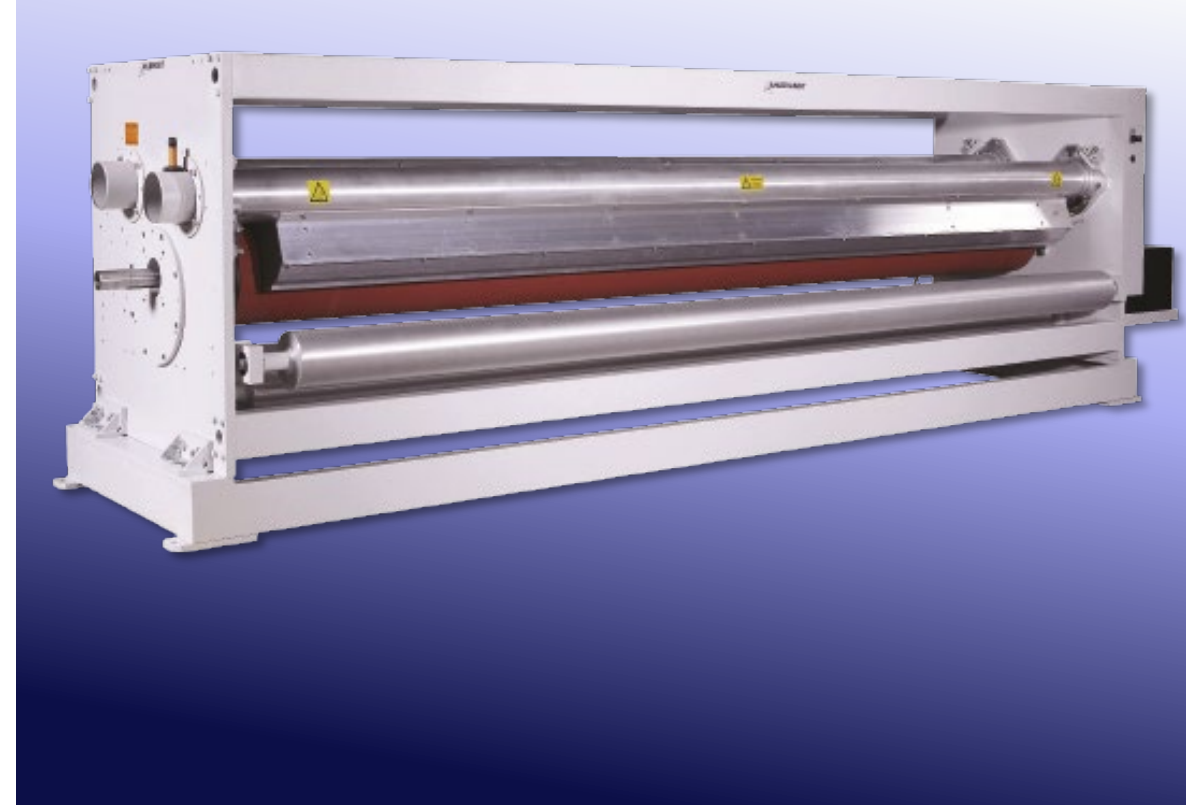
Corona in Cast Film Extrusion



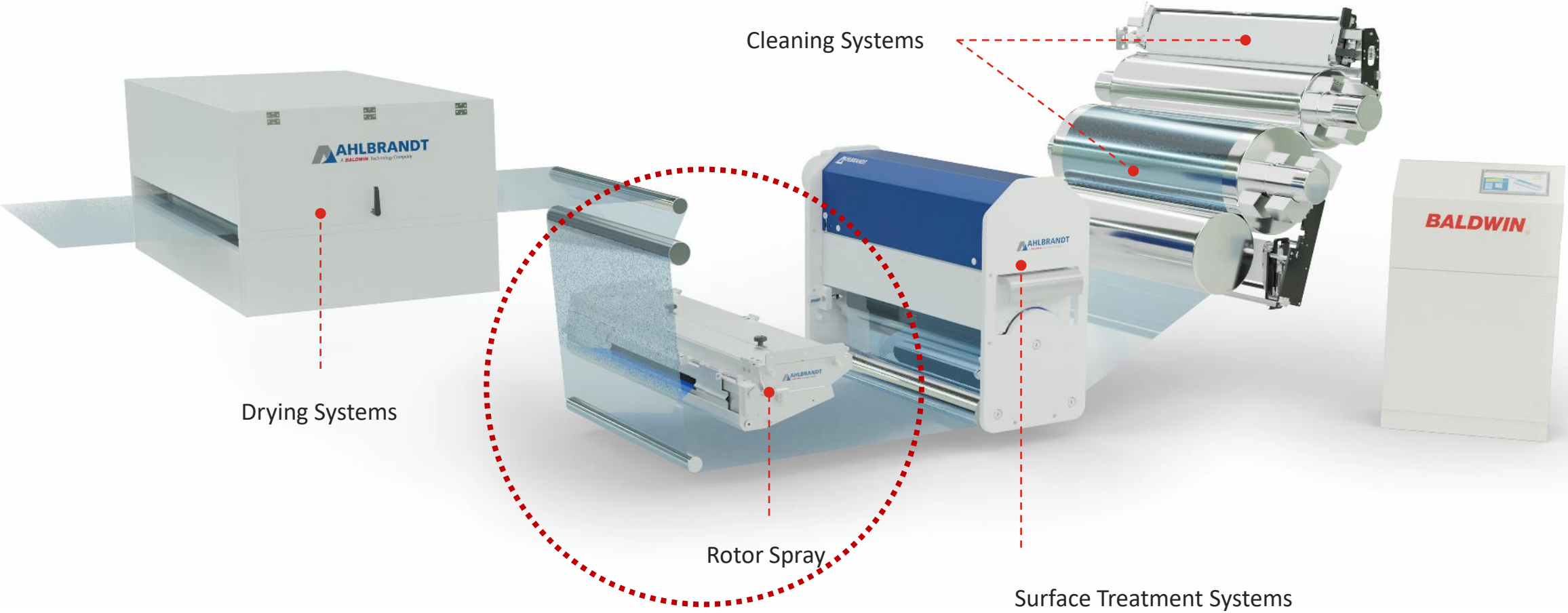
Corona Pure XL – *Wide and Robust Cast Extrusion System*

Benefits

- Working width to 5.000 mm
- Swiveling housing system for easy web threading
- Removable electrode cover for convenient cleaning and fast service
- Electrode holders are adjustable separately
- Only metal and ceramic parts
- Highly efficient generators and HV-transformers
(generators working in resonance area, transformer efficiency > 98%)



Inline Anti-Fog Coating in Extrusion



Anti-Fog Coating on *Food Trays*



Fruit tray covered with BOPET film



Salad box from sheet extrusion

Anti-Fog – *Rotor Spray Coating and Masterbatch*

Rotor Spray Coating

- Effect direct after coating
- Required Anti-Fog quantity low
- Recycling trouble-free
- Always transparent

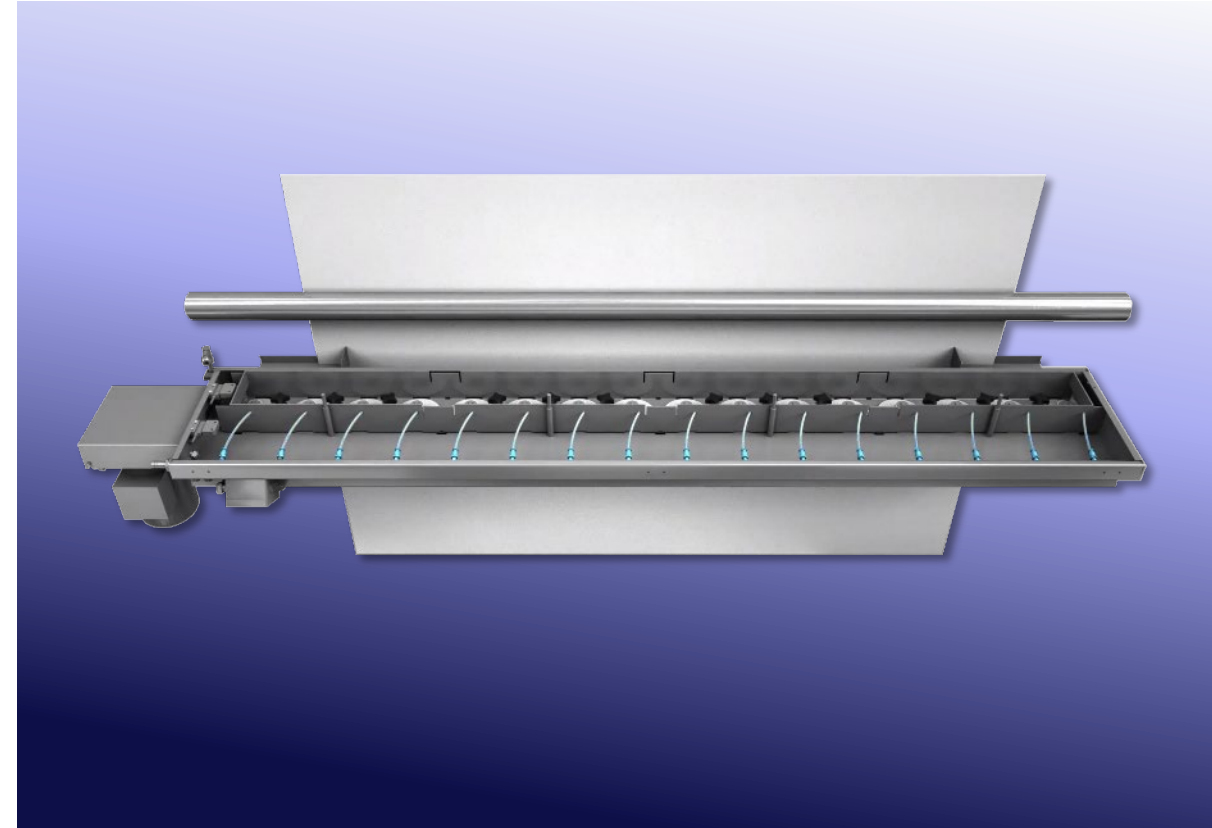
Masterbatch

- Ca. 14 days after extrusion
- Required Anti-Fog quantity high
- Recycling limited
- Turbid at high dosage

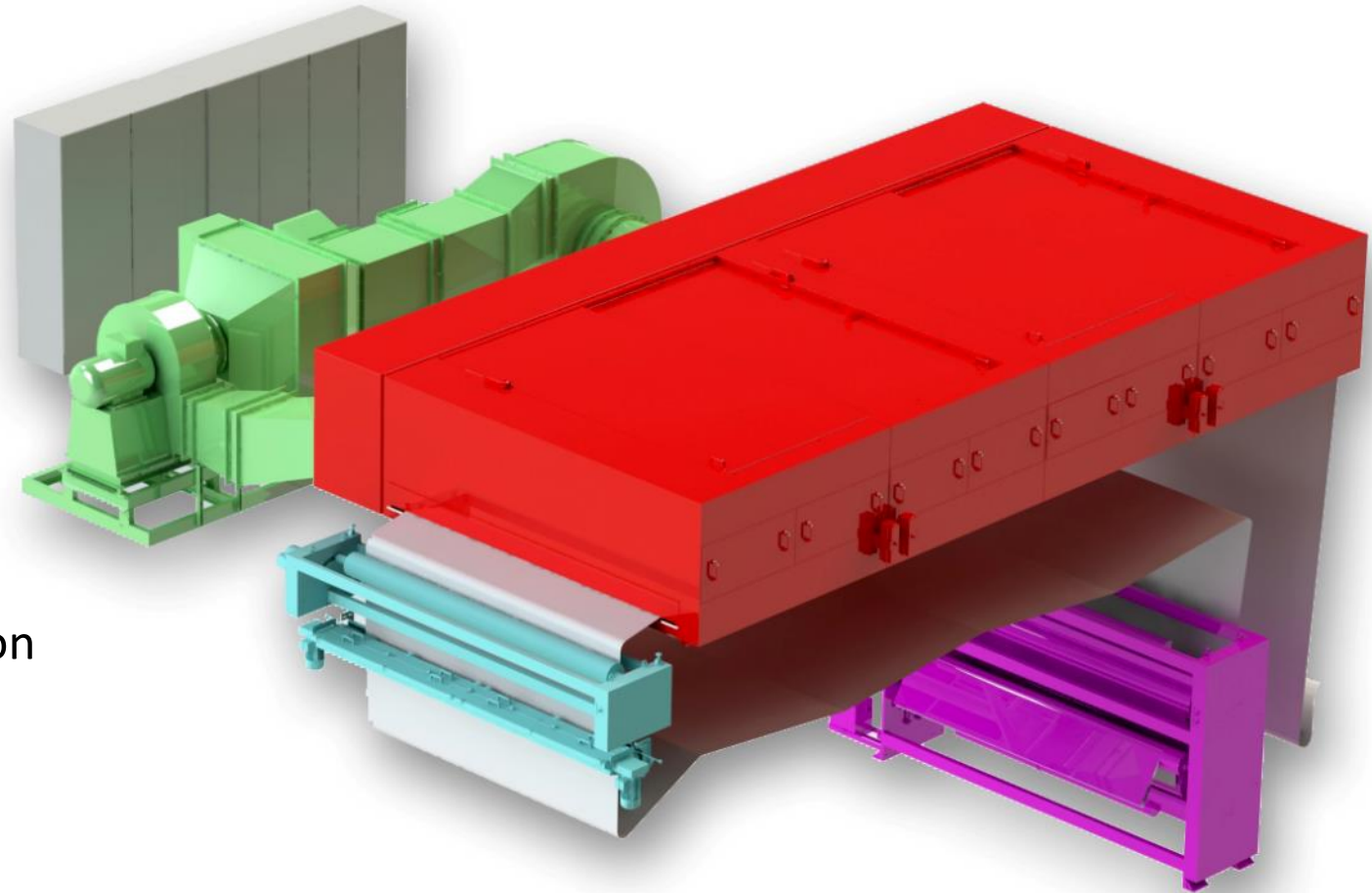
Ahlbrandt Rotor Spray – *Precise Anti-fog Dosing on Film*

Benefits

- Contact free spray application
- Easy to operate
- Simple and precise dosing volume
- Ideal for low dosing quantity
Anti- Fog 20 – 50 mg/m²
- Ideal for low viscosity liquid
Anti-Fog 1 - 5 % water based
- Simple smoothing with roll



Inline Anti-fog Layer in BOPET Extrusion Line



Upgrade of BOPET extrusion line with Anti-fog coating

Inline Anti-fog Layer in Sheet Extrusion line

Anti-fog coating on PET-Film for Thermoforming



Corona Treatment



Anti-fog Coating

Anti-fog Savings

Per year

€165,000

based on 10,000 tons
per year
APET/ABA layers

Masterbatch



Time to effect
< 14 days
turbid at high
concentration



4.5 kg/t of sheet
chemical consumption



€4.50
per ton of sheet

Liquid Coating



Time to effect
< 1 minute
always transparent



0.3 kg/t of sheet
chemical consumption



€1.50
per ton of sheet

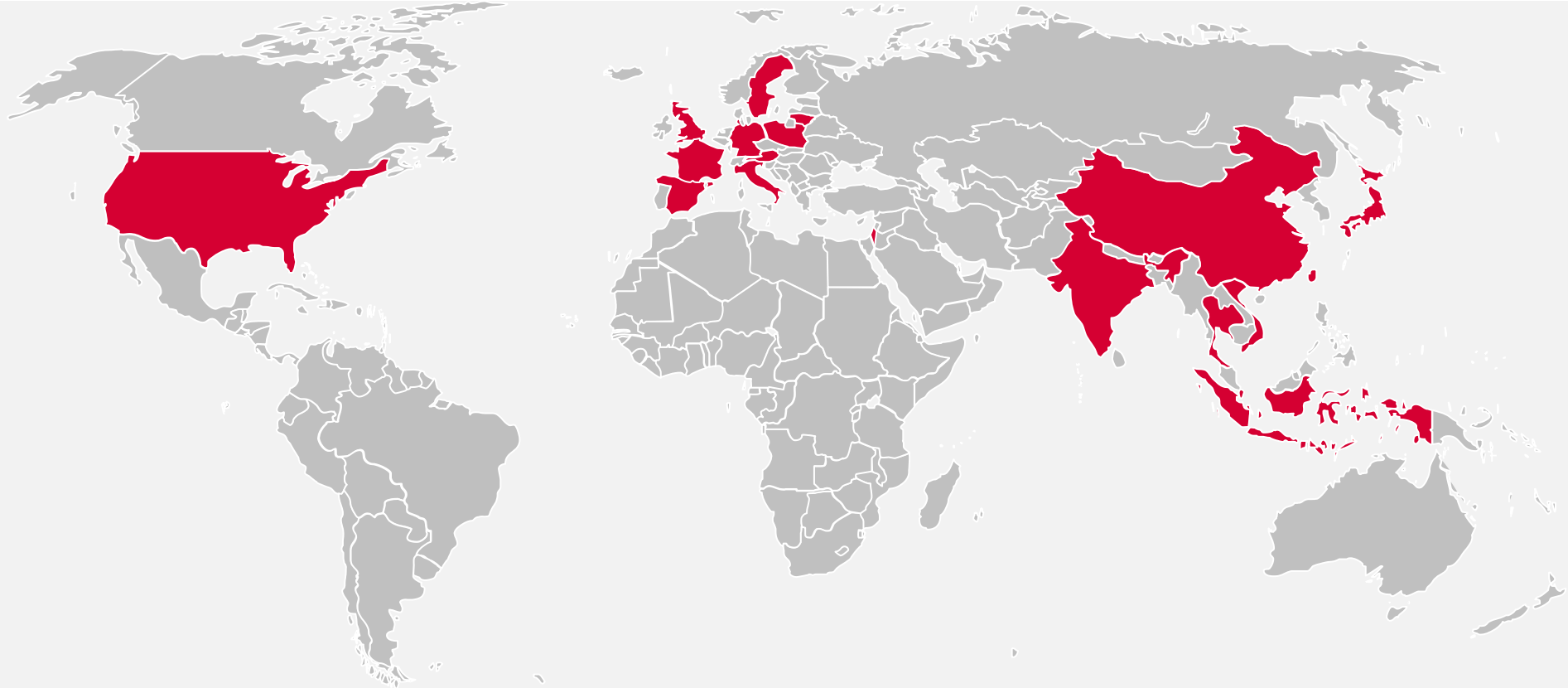
Baldwin – *A Reliable Partner with Vast Expertise*

- Expertise based on 50+ years of providing innovative technologies for plastic film production
- Tailormade solutions for optimal performance in your operation
- Global Service and Support
- World-leading supplier of Cleaning & Surface treatment systems



Customer Plastic Film Extrusion Installations

In total 40+ cleaning, 90+ surface treatment systems installed globally



Summary –

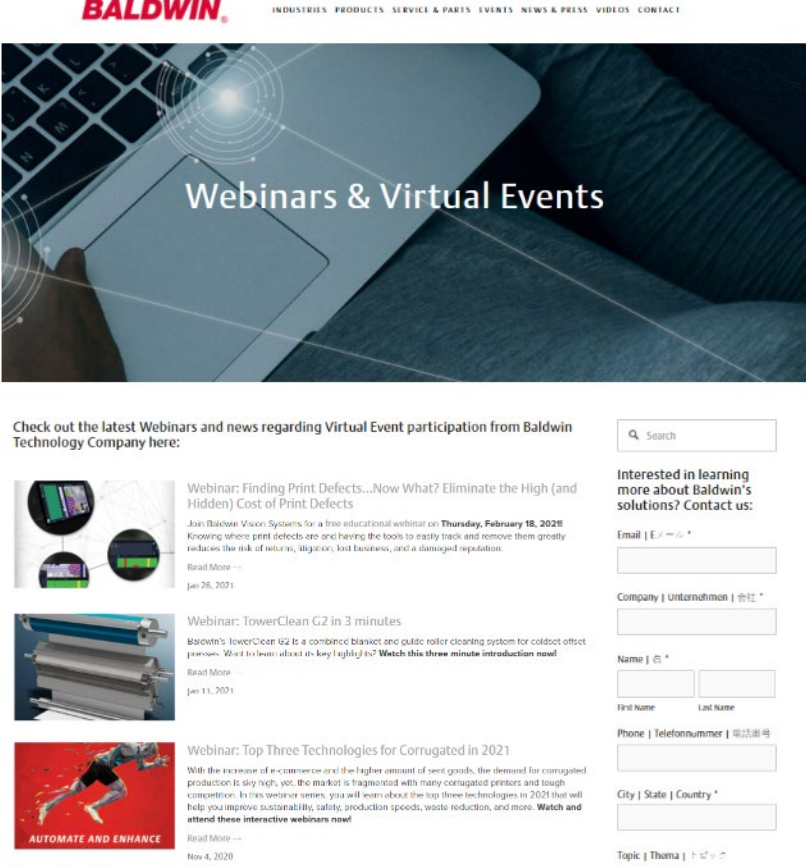
How to Deliver Automation and Productivity in Film Extrusion

- The four critical market pillars
 - 1) *Safety* 2) *Efficiency* 3) *Energy consumption* 4) *Quality*
- Applications and disruptive technology integration
 - Cast Film Extrusion
 - Plastic Sheet Extrusion
 - Blown Film Extrusion
- Surface cleaning
 - Challenges and needs in the market
 - Technology breakthrough – automation
 - Results from automation
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 - Market opportunities
 - Corona and anti-fog solutions
 - Best practices & results



More Webinars


- "Finding Print Defects...Now What? Eliminate the High (and Hidden) Cost of Print Defects"
- "TowerClean G2 in 3 minutes"
- "Three Printer's Experiences With LED UV"
- Register at www.baldwintech.com/webinar





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Webinars & Virtual Events

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- 

Webinar: Finding Print Defects...Now What? Eliminate the High (and Hidden) Cost of Print Defects
Join Baldwin Vision Systems for a free educational webinar on **Thursday, February 18, 2021!** Knowing where print defects are and having the tools to easily track and remove them greatly reduces the risk of returns, litigation, lost business, and a damaged reputation.
Read More —
Jan 26, 2021
- 

Webinar: TowerClean G2 in 3 minutes
Baldwin's TowerClean G2 is a combined blanket and guide roller cleaning system for coldset offset presses. Want to learn about its key highlights? **Watch this three minute introduction now!**
Read More —
Jan 11, 2021
- 

Webinar: Top Three Technologies for Corrugated in 2021
With the increase of e-commerce and the higher amount of sent goods, the demand for corrugated production is sky high, yet, the market is fragmented with many corrugated printers and tough competition. In this webinar series, you will learn about the top three technologies in 2021 that will help you improve sustainability, safety, production speeds, waste reduction, and more. **Watch and attend these interactive webinars now!**
Read More —
Nov 4, 2020

Interested in learning more about Baldwin's solutions? Contact us:

Email | 电子邮件 *

Company | Unternehmen | 会社 *

Name | 名 *
First Name | 姓 Last Name | 名

Phone | Telefoonnummer | 電話番号

City | State | Country *

Topic | Thema | 主题

Learn More

- Websites

- FilmCylinderCleaner:
<https://baldwintech.com/filmcylindercleaner>
- Ahlbrandt Corona, Drying & Rotor Spray:
<https://www.ahlbrandt.com/>

- Videos

- Cleaning:
<https://youtube.com/playlist?list=PLo760uZjIUoYSTAST-Aam15a5OoVoJ-ba>
- Surface treatment:
https://www.youtube.com/watch?v=rypm9fqhbaE&list=PLo760uZjIUoYiLjhl_C9TOFF6oMndg_5A
- www.youtube.com/baldwintechnology

- Collateral

- Plastic Film Extrusion & Converting brochure:
<https://www.flipsnack.com/BB6FA8DEFB5/baldwin-plastic-film-extrusion-converting-solutions.html>
- <https://baldwintech.com/blog>

The FilmCylinderCleaner™ system safely removes deposits and other contaminants from the surfaces of cast and chill cylinders used in the film extrusion process. This can greatly increase the clarity and quality of plastics and films.

Our solution is unlike anything on the market today - if you are looking to increase safety and sustainability on your extrusion line, the FilmCylinderCleaner meets this need and offers other key benefits.



How It Works:

Baldwin's FilmCylinderCleaner™ system automatically cleans the cylinders used in the film extrusion process, by using a cloth-roll-based cleaning apparatus that spans the width of the extrusion web. This is paired with a precision spray system that also spans the width of the web, which precisely applies cleaning detergent to the cloth. Baldwin offers an array of

Noteworthy Benefits:

- Systems ensure no scratching of cylinder surfaces, eliminating the risk of cylinder damage caused by manual cleaning
- Switching from a manual cleaning process to an automated one promotes employee health and safety

Interested in learning more about Baldwin's solutions? Contact us:

Email | Eメール *

Company | Unternehmen | 会社 *

Name | 名 *

First Name Last Name

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City | State | Country *

Topic | Thema | トピック

Message | Botschaft | メッセージ

SUBMIT

Questions?

- On-line product information forms on each product page at baldwintech.com & ahlbrandt.com
- Live 24/7 online chat
- Contact us
 - <https://baldwintech.com/contact>
 - <https://www.ahlbrandt.com/contact>



With over 50 years of engineering expertise, Ahlbrandt is the pioneer of Corona pretreatment innovations in the surface treatment industry. Based in the heart of Germany and with a worldwide presence, Ahlbrandt designs and manufactures the world's most efficient Corona treatment technology, Rotor Spray systems, and Hot Air Drying solutions.

In addition to solving surface treatment problems for thousands of global industrial companies, Ahlbrandt is an authorized, strategic supplier to many OEMs. Our unique strengths are supported by constant innovations developed in our competence centers, as well as through implementation of the highest technical requirements – for safe, economical and future-proof surface treatments.



For more information visit baldwintech.com