INOMETA

INTELLIGENT, ECONOMICAL, PRACTICAL

GREATER EFFICIENCY IN PAPER MANUFACTURING

INTELLIGENT, FUNCTIONAL DESIGN FOR MORE PRODUCTIVITY IN PAPER MANUFACTURING

For many years, our products have been a pioneer in using carbon fiber composites and is now a technology leader in the paper industry. Through continuous innovation, INOMETA strives to utilize intelligent lightweight design on a wide scale to glean the resulting economic advantages. Moreover, INOMETA develops and manufactures tailor-made coatings for various applications in the paper industry. Durable non-stick properties, anti-static and traction properties as well as corrosion and wear resistance are features that ensure and continuously improve your processes, thus reducing your production costs significantly.

In this way, INOMETA provides practical support for the paper industry‘s need to further increase productivity by providing straightforward solutions which eliminate the production bottlenecks. Using rolls and components made of fiber composite materials offers significant advantages for paper manufacturing and finishing processes.

All INOMETA products are individually designed for the respective application. The schematic paper machine layout shows typical and favorable installation positions for our products. Do not hesitate to contact us for expert advice on how to achieve more efficiency in paper and tissue manufacturing and finishing processes

TYPICAL INSTALLATION POSITIONS FOR XPERION PRODUCTS

(2)
A Centre Supported Roll in double shell design can be used in wire corner positions. Its design creates an advantageous roll bending line for better wire running.

(4)
On all steel wire lead rolls, we recommend upgrading all steel wire lead rolls with our extremely wear-resistant hard metal coating. This hard coating ensures an even roll wearing profile and it provides good corrosion protection.

(6)
We recommend upgrading all steel felt and dryer lead rolls with our extremely wear-resistant hard metal coating. This hard coating ensures an even roll wearing profile and it provides good corrosion protection.

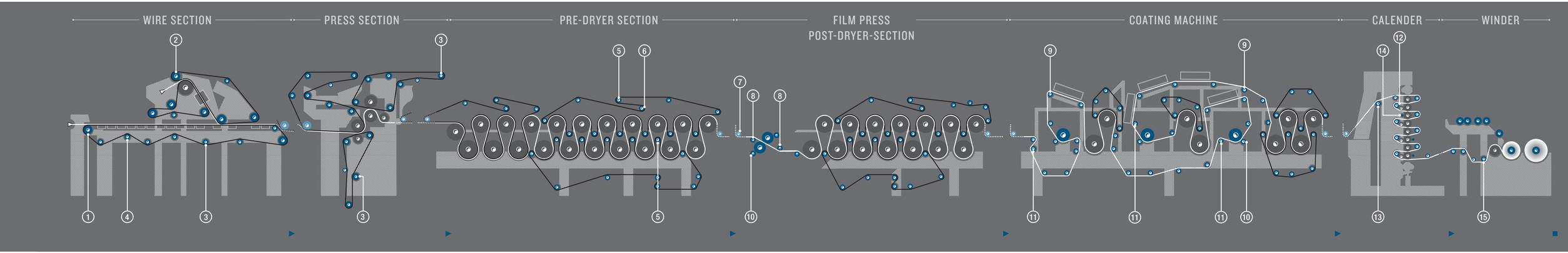
(7)
During machine shutdowns heat sources and temperature differences tend to deform steel rolls.

Heat-resistant **X-GUIDE** carbon fiber rolls are an easy way to eliminate thermal deformation problems.

(9)
Multiple heavy steel rolls in an elevated coater frame in combination with the sensitive coating process can cause problems. Lightweight carbon **X-GUIDE** paper lead rolls reduce vibration levels, bearing forces and are ideal to improve the coating process quality.

(12)
X-TREME rolls are designed to operate in high-temperature and humid environments. This kind of phenomenon typically occurs in calender fly roll positions close to steam boxes.

(14)
The **X-DOC** doctor body can be designed with a very small cross-section due to its high stiffness and light weight. It can be fitted in limited space which is often the case in multi-nip calender applications. Excellent thermal dimensional stability and natural frequency guarantee good doctoring results.



(1)
The **X-SHAKE** breast roll made of fiber composite provides remarkable advantages over steel made-rolls–it weights approx. 75% less. In shaken wire sections it saves energy and construction costs but also multiplies shaking effectiveness providing improved paper formation.

X-SHAKE is covered with a hard rubber. Non-shaken steel breast rolls can be coated with a wear-resistant hard metal coating or composite coating.

(3)
Rolls in stretcher and guiding positions are prone to vibrations due to the nature of „soft" roll supports in these applications. A Soft support will bring down roll nominal frequency.
A high nominal stiffness **X-GUIDE** roll in the original roll size is a good solution for this problem.
X-GUIDE can be coated with a wear-resistant composite coating or rubber.

(5)
X-TREME rolls are designed to operate in high-temperature and humid environments. Increasing the machine speed or just replacing a vibrating steel roll typically requires larger roll diameters. Limited space inside a dryer framework causes additional challenges for such rebuilds. By utilising with the **X-TREME** carbon roll, a roll diameter change is not necessary and expensive frame modifications can be avoided.
X-TREME is coated with a composite coating especially developed for the conditions in a dryer section.

(8)
X-GUIDE PLUS rolls are designed to operate below half critical speed. This will guarantee very soft running and extremely precise web tension measurement results across the entire speed range.
From a roll-dynamic point of view, sizing is one of the most demanding processes. Poor dynamic roll behaviour can cause paper fluttering or vibrations which have a direct effect on process quality. With **X-GUIDE**, vibration values and forces can be minimized. xperion carbon products are thermally stable so that heat sources at the sizer do not affect roll operation.

(10)
X-BEAM carbon fiber beams provide all important properties required from a good quality sizer and coater application beams like preferred stiffness, high-vibration damping and values and excellent thermal dimensional stability.

(11)
X-GUIDE PLUS first-class precision properties are an advantage in demanding coater web tension measurement applications. These properties can also be applied close to a coating station without risk of disturbing vibrations.

(13)
High dynamic requirements in calender tension measuring and lead roll positions make a good fit for **X-GUIDE** and **X-GUIDE PLUS** rolls. These roll types can be also be used in multinip calender fly roll positions. The carbon fiber composite material provides smooth running and the required high stiffness, even with small roll diameters.

(15)
High production speeds require excellent dynamic roll behavior, especially at winders. **X-GUIDE** and **X-GUIDE PLUS** can be used in lead and tension measuring roll positions.

Special rolls can also be designed and delivered according to customer specifications.

X-GUIDE

All xperion carbon fiber rolls are based on X-GUIDE roll design. It can be used in paper, fabric and felt lead roll positions. They offer many important advantages over steel-made rolls:

- It can be run at double speed compared to a steel roll of same size.
- It is also possible to gain benefits by replacing a steel roll with a smaller diameter X-GUIDE roll while maintaining roll running properties. This would allow extra space for other components.
- X-GUIDE provides smooth operation with significantly lower vibration. This increases bearing life time and and reduces maintenance costs.
- Good thermal dimensional stability is a trademark of X-GUIDE rolls. This means the roll maintain its form despite temperature variations (like next to a dryer cylinder) and speeds up production start-ups after a line maintenance stop. X-GUIDE roll does not require lengthy slow rotations for balancing out thermal deformations.
- Very low mass moment of inertia enables short acceleration and braking times.

Or allows X-GUIDE to rotate with paper or fabric without a drive, even with small wrap angles. Energy can be saved.

- Light weight with low deflection due to own mass. Its light weight makes it easy to handle.
- Roll has good corrosion and chemical resistance.
- Each roll is designed according to customer needs and application requirements. At the same time the most cost effective solution is provided.
- Typically X-GUIDE is coated with a composite coating.

X-GUIDE PLUS

X-GUIDE PLUS is a premium class lead roll with all X-GUIDE properties as well as additional features:

- It is designed to operate below semi-critical rotation speed. High modulus of elasticity roll tube structure ensures absolute smooth and quiet operation over the whole speed area.
- Roll weight can be optimized with roll design up to 80% lighter than that of steel rolls.
- By combining these two properties it is possible to achieve several times over measuring accuracy in tension measuring positions.
- X-GUIDE PLUS also fits well in other roll positions requiring high quality roll dynamic properties like at calender fly-roll positions.

X-TREME

X-TREME roll is similar to X-GUIDE in design but it is meant to be used at dryer sections or in any other hot and humid environment like close to steam boxes:

- Roll body is made of resin system resistant to vapor diffusion.
- X-TREME roll with PROTEK® V170 composite coating can be used in hot and humid atmosphere up to 120°C.
- Roll stainless steel head plates and journals special protection fulfils roll corrosion resistance.
- X-TREME is suitable for fabric lead rolls at dryer sections. Replacing steel rolls at dryer sections with X-TREME rolls of identical dimension is the most cost-effective way to speed up a dryer section.

X-SHAKE

X-SHAKE breast roll brings efficiency to shaken forming sections. Compared to a same size steel roll it offers the following advantages for paper making:

- It is about 75% less in weight and has around 80% lower rotating inertia.
- Shaking effectiveness is normally tripled under comparable conditions which makes it possible to achieve clear improvements in paper formation.
- Replacing a steel roll with a composite roll is already justified in machine widths of four meters and above.
- Low weight minimizes energy costs, extends bearing life time and makes roll handling easy.
- Journals are designed to accept customer bearings and adapt to a shaker unit.
- Typically X-SHAKE roll are hard rubber covered.

X-DOC

Due to carbon fiber material properties X-DOC doctor beam body can be made much more slimmer than comparable steel-made beam. Because of that X-DOC fits especially well into space-limited installations:

X-SHAFT

Distances between driven rolls and drive motors are often lengthy in paper machines. That makes steel shafts large in diameter, yet a two-segmented construction with supporting intermediate bearing arrangement is often required.
X-SHAFT with a carbon reinforced spacer simplifies the design down to a one-piece construction, thus being more cost-efficient.

- Natural frequencies can be adjusted over a wide range. Thus vibration excitations are reliably prevented.
- Slim design with small cross-sections minimizes space requirements.
- High damping values. Vibration declines ten times faster than in steel.
- Excellent thermal dimensional stability.
- Low deflection due to own weight.
- Heated surface to prevent condensation is optionally available.
- X-DOC has a glossy resin surface easy to keep clean.

X-SHAFT technical advantages compared to steel:

- Light weight and smooth running.
- High axial stiffness.
- High torsion stiffness.
- High dampening properties.

User advantages in paper machine:

- Elimination of disturbing vibrations at running speed.
- No need for intermediate bearings nor extra supporting construction for those.

HIGH PERFORMANCE ROLLS MADE OF ADVANCED LIGHT WEIGHT MATERIAL

INOMETA rolls designed for demanding applications in the paper industry.

INOMETA ROLL TECHNOLOGY FOR INCREASED PROCESS RELIABILITY

INOMETA web guide rolls made of aluminum are a perfect blend of proven technology and applied innovations. The modularized product families are perfect when it comes to combining process reliability requirements with individual demands concerning design and dynamics.

Web guide rolls from the INOMETA modular construction system always belong to three product families:

- Type BA: web guide roll with inner bearing and thru-axle
- Type BB: web guide roll with inside bearings and kingpin
- Type BC: web guide roll with fixed journal for outside bearings

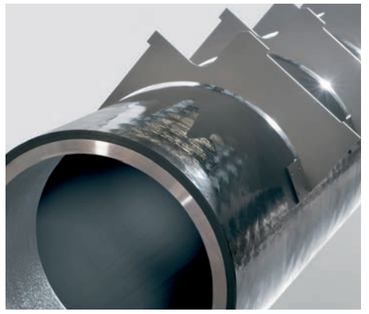
ALUMINUM ROLLS

Wide Product Range and Expert Advice for Standard Requirements and Special Solutions

INOMETA product families are modularized, yet leave plenty of possibilities to meet individual requirements. With the right kind of know-how these possibilities can be used to create a perfect combination of process reliability, design and dynamics.

INOMETA's project management provides customers with a highly competent support for every product from offer to delivery. In this way, the required functionality, the accustomed high quality standard and the compliance with delivery dates is ensured.

In addition to standard products, INOMETA offers application-oriented solutions. Among other properties, this includes rolls with diameters between 30 mm and 360 mm. Our product portfolio also includes many different surface systems for specific applications with special requirements.



Thermostable beam for film sizer application

SPECIAL COMPONENTS

Individual Design, High Performance

With our expertise in the fields of machining, coating, composite engineering, vibration analysis and FEM calculation, we can come up with new and interesting solutions to solve our customers' problems.

Our wide carbon composite cutter bars for cross cutters are a good example of our technical savvy – they combine a micrometric deflection range with low weight and mass inertia values making them deployable for quickest-possible motion cycles. Composite beams are another good example as their thermo-elastic distortion, rigidity and damping properties make them ideal for high-end sizer and coater applications.

Do not hesitate to contact us for more information on special components and applications.

PROTEK® COATINGS

INTELLIGENT SURFACES FOR PROTECTION, FUNCTION AND PRODUCTIVITY

As a company with decades of experience, INOMETA offers high-quality and high-performance tailor-made coatings for high-performance paper machines.

Inometa composite coating on a paper lead roll

INOMETA SURFACE TECHNOLOGY

High Performance Coatings for High Performance Rolls

Specific coating for every application

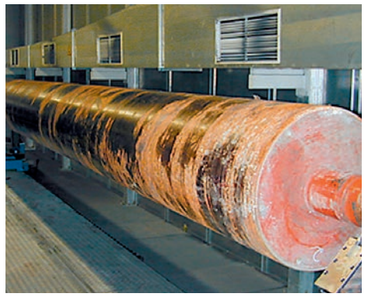
Today's more demanding paper manufacturing and converting processes call for more performing roll coatings and functional surfaces. Not only to protect a roll itself but to provide process advantages. Inometa develops and manufactures coatings for the paper industry.

Technology for surface properties

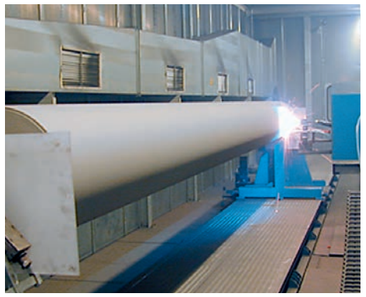
INOMETA develops coating solutions for individual customer needs. Besides basic requests such as wear and corrosion resistance, special surface properties like non-stick, traction or hydrohilic features might come into play. Our solutions can reduce your production costs significantly

Manufacturing and resources

Our thermal sprayed as well as composite coatings are applied by using automated and environment-friendly manufacturing processes. We maintain and improve our skills by providing our staff with quality instructions and regular trainings to ensure customer satisfaction.



Roll condition before overhaul



Roll recoating process

OPTIMIZATION OF PRODUCT QUALITY AND ECONOMIC EFFICIENCY

THERMAL SPRAY COATING PROCESSES

Technology and Processes

INOMETA uses thermal spray coatings with specific material selections. Computer-assisted roll coating systems are used to produce high-quality coatings using HVOF (high velocity oxygen fuel), powder flame, plasma and arc spraying methods.

Thermal Spraying With Wire Or Powder

Thermal coating uses a flame of fuel gas and oxygen to fuse and/or melt the spray material before spraying it onto the surface.

High Velocity Oxygen Fuel (HVOF) Spraying

HVOF spraying mixes fuel gas and oxygen in a combustion chamber where a constant high pressure ensures that the resulting combustion is stable and uniform. A powder feed stock is injected into the gas stream, which accelerates the powder up to 800m/s.

Hot gas and powder spray is directed towards the surface to be coated. The process results are dense coating with low porosity and high bonding strength.

Atmospheric Plasma Spraying

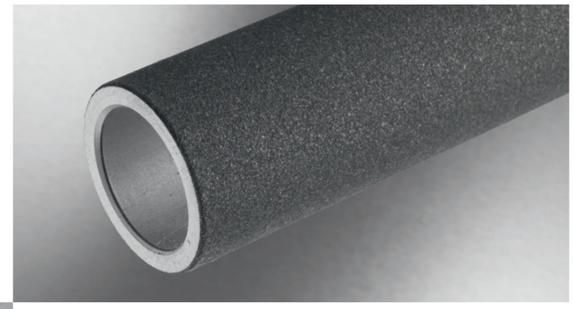
In atmospheric plasma spraying, a high-powered arc and a gas are used to create a plasma beam that melts a spray material.

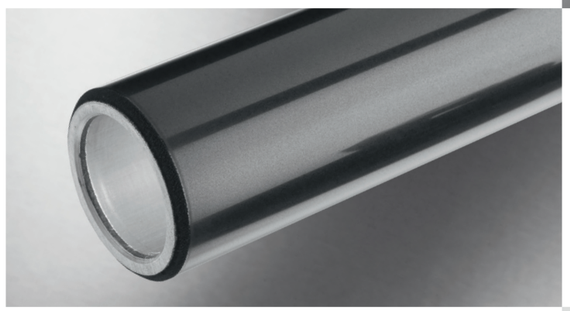
Arc Spraying

In arc spraying, two metal wires are molten in a high-powered electric arc. The molten droplet is atomized e.g. with compressed air and projected onto the surface. The use of nitrogen or argon as atomizing gas can significantly reduce the coating oxidation.

PROTEK® NON-STICK COATINGS

Special polymer seals combined with hard metal spray coatings are extremely wear-resistant functional coatings. These coatings have durable non-stick and release properties which make them unique. PROTEK® non-stick coatings are used e.g. for dryer felt or paper lead rolls.



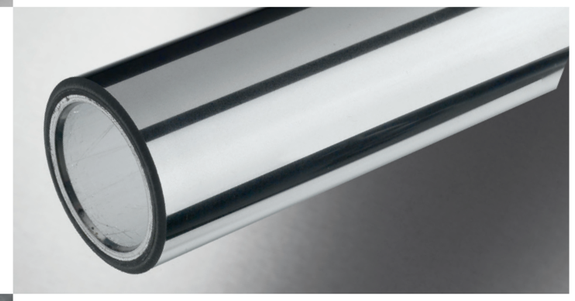


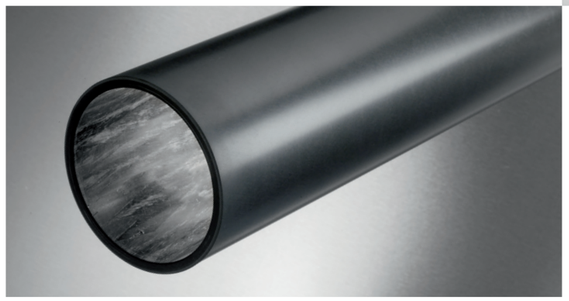
PROTEK® CERAMIC COATINGS

PROTEK® ceramic coatings are resistant against abrasion wear. They are used e.g. in paper converting machine lines.
For more special applications hydrophilic or hydrophobic properties can be developed for these coatings.

PROTEK® HARD METAL COATINGS

These PROTEK® coatings are extremely hard, dense and adhesive. They offer a high degree of wear and corrosion protection. These coatings are used in paper finishing and reeling sections.





PROTEK® COMPOSITE COATINGS

INOMETA offers a high variety of epoxy-based composite coatings for different roll applications. The selection ranges from standard, cost-efficient coatings to the high-end quality PROTEK V170 coating for operating temperatures up to 140°C (in humid environment 120°C).
Coatings are anti-static, wear- and chemical-resistant accepting blade doctoring. Non-stick options are also available.

QUALITY AND RELIABILITY THROUGHOUT A ROLL'S LIFE CYCLE

Our products and services encompass the entire life cycle of a roll. In general, quality, flexibility, reliability and an orientation towards practical applications are important to us.

INOMETA is dedicated to continuous product and process innovation.

OUR SERVICES

Our services cover all work from roll inspections to coatings and mechanical repair as well as troubleshooting:

- Decades of experience in calculation, production and coating of steel- and carbon-rolls for demanding applications.
- Dynamic balancing acc. to VDI 2060, ISO 1940.
- Roll recoatings with automatized high-performance coating machines.
- Turning and grinding maximum roll size is D1400 x L15000 mm. Coatings can be applied to components up to D2000 x L17000 mm. Maximum handling weight is 20 tons.

OUR OFFER

We offer our services for all lead, calender, breast and spreader rolls available on the market:

- Wide selection of application-oriented coatings.
- Customer-oriented development of thermal spray and composite coatings.
- Waste cover material is disposed of in an environmentally acceptable manner.
- Journal inspection with ultrasonic and magnetic powder testing methods.
- Bearing seat refurbishment.
- Use of spare parts made by renowned manufacturers.
- Roll modernizations.
- Roll inspection at customer´s site.
- Vibration monitoring and analyzing.
- Development of individual and customer-friendly service plans.

WITH EXPERIENCE AND COMMITMENT

SPREADER-ROLL SERVICE

Our Services

Complete package from roll inspection up to full overhaul for all type of metric spreader rolls. Our long experience and workshop resources enable overhauling even the world´s biggest spreader rolls with D500 x L13000 mm.

- Complete disassembly and cleaning of the roll.
- Changing of all ball bearings, sealings and wear parts.
- We use only parts from well-known suppliers.
- Measuring and repair of bearing seats.
- Balancing of the segments.
- Segments re-chroming or thermal spraying.
- For rubber-covered rolls, we use only sleeves in well-proven quality.

Condition Monitoring

Vibration diagnosis is the most reliable method for identifying machine damage at an early stage.
Our experts use up-to-date vibration measurement equipment for the detection of ball bearing defects.

This kind of service means that our experts go to the paper mills and check the condition of the bearings while the rolls are running.

The Advantages

- Overview of the condition of the rolls.
- Unplanned downtimes are avoided.
- Service and maintenance can be planned.
- Prevention of secondary damage.

We are also able to support our customers by applying condition-based maintenance and analyzing the measurement results.

Spreader roll final test run

Quality is an ongoing process

INOMETA offers reusable winding cores made of aluminum and thus ensures decreasing investment costs in the winding process.

WinCore® winding cores are suitable for use with expansion shafts and expansion chucks.

OPTIMIZATION OF PRODUCT QUALITY AND ECONOMIC EFFICIENCY

WINDING CORES

Technology & Processes

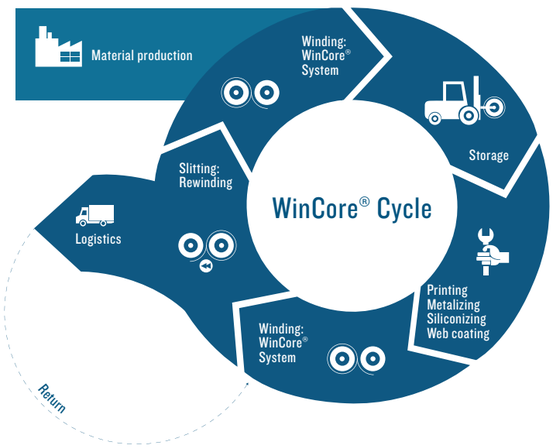
INOMETA is a reliable and flexible partner when it comes to technical winding cores. As needed, INOMETA will manufacture the WinCore® system using aluminum or composites.
INOMETA winding cores are specially designed for various kinds of paper, cardboard and tissue qualities.

The winding cores are perfectly matched for the production of the respective materials as well as for a variety of finishing processes such as siliconizing, coating, metallizing, covering and laminating.
Further applications are printing and cutting of material webs.

Whether at high speeds or when processing demanding materials, WinCore® winding cores always ensure a smooth operation. This translates into significant improvements in productivity. The winding cores are available as WinCore® Ecoline or WinCore® Proline.

WinCore® winding cores in the production cycle

Aluminium winding cores offer the ideal solution for in-house or standardised, as well as recurring production processes. While cardboard cores can only be used a few times, the WinCore® aluminium winding core offers an optimum solution for forming a production cycle, in which tube cores can be used over 1000 times.



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