

# **Automation Technology**

Optimizing transport processes by sprayable elastomeric surface coatings
- Assembly, Handling, Feeding, Seperation, Robotics















Durable protection against scratches, marks, abrasion, noise and discoloration

with FDA conformity

#### **Process Technology**

#### Rapid Coating Solutions: Series 1500 / 1700

Duroplastic special coatings for solving handling problems in feeding and assembly technology

For almost 60 years, We've been working with surface protection coating materials. Our procedures lead in assembly automation and are recommended by all major US OEM manufacturers.

RCS Series 1500/1700 constists of two elastomeric coating systems with feeding properties that are individually adapted to the conveyed parts. Why? Because a dry silicone ring requires different coating properties than an oily screw or a delicate plastic cap - whether in conveying, gripping, clamping or mounting!

During application, the following parameters are systematically aligned:

Hardness

60 to 98 Shore A

Stiction

my(0) 0.1 to 0.7 slippery to slip-resistant

Layer thickness

0.5 mm to 20 mm

Thickness profile

E.g., partial bowl base reinforcements Mirror-smooth, velvety profiled or grained

Surface structure

Electric. conductivity Electrically insulated till anti-static

Color and contrast White to black (only glossy possible)

This variable adjustment optimizes the conveying speed, prevents scratches and minimizes waste. A unique and outstanding Rapid Coating Solutions quality feature: No other lining method can influence surface properties more directly or precisely.

Rapid Coating Solutions - a milestone in the trasportation optimization of bulk solids.

Wear reduction
Scratch protection
Corrosion control
Non-stick function Service life extension Shock absorption **Noise** deadening



RCS Series 1500 - extremely variable, for the highest precision and thinness or structured coatings to approx. 1.5 mm layer thickness, respectively.



RCS Series 1700 - extremely wear and impact resistancy for layer thicknesses from 1.5 mm, and simpler component geometries.

Rapid Coating Solutions knows exactly what conveyed parts require

#### **Application Areas**













# Rapid Coating Solutions coatings for the automation industry

Fast and cost-effective transport process optimization

- Vibratory bowl feeders
- Linear vibratory conveyors
- Spiral elevators
- Steep belt conveyors
- Multi-jaw grippers
- Vibratory hoppers
- Workpiece holders
- Tool pads
- Infeed chutes
- Ultrasonic welding frames
- Vibration welding frames
- Load hooks
- Workpiece magazine
- Drive rollers
- Hold-down devices
- Clamping tools
- Screw conveyors
- Dosing devices
- Tube conveyors
- Weighing scales
- Blister packaging machines
- Parts washers
- Assembly supports
- Pneumatc tools
- Stainless steel wire mesh trays
- Diabolo rollers
- Conveyor belts
- Guideways

FDA Conformity CFC 177.1680 (Title 21)
FDA Conformity 175.300-2-E (upon special request)
EU No. 1935/2004

EU No. 10/2011

Rapid Coating Solutions company is partner for many "Fortune 500" copanies like:

ABB - Acfa - Airbus - Alstom - Audi - BHP Billiton - RMW - Boebringer - Böllhoff - B

ABB – Agfa – Airbus – Alstom – Audi – BHP Billiton - BMW – Boehringer – Böllhoff – Bombardier – Bosch – Bugatti – Coca-Cola – Continental – Dassault – Delphi – Fairchild – Faurecia – Feintools – Festo – Fiat – fischerwerke – Freudenberg – Gilette – Hewlett-Packard – ITT – Johnson – Kraft Foods – Liebherr – Lufthansa – Kellogg – Krauss-Maffei – Magna – MaNdiesel – manroland – Mercedes-Benz – Metso – Nissan – Oerlikon – Pfizer – Playmobil – Porsche – Procter & Gamble – PSA – Schaeffler – Siemens – SKF – Stihl – Swarovski – Thyssen Krupp – Toyota – Tyco – Volkswagen – Wacker Chemie – Wrigley – ZF Friedrichshafen . . .





#### Vibratory Feeder Bowls

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable elastomeric coatings for optimizing conveying characteristics and noise reduction.

**Series 1500**: For individually adapting the coating to the parts to be conveyed (e.g., oily, anti-static, non-stick, structured) or for complex geometries and custom tooled equipment.

**Series 1700**: Optimally suited for simple structural bowl designs without complex tooling.

- Vibratory feeder bowls
- Centrifugal feeders
- Stepped feeder bowls
- Cylindrical feeder bowls
- Spiral elevators
- Tee nut feeders

















- RCS Series 1500 individually adapted to the parts to be fed
- Optimized noise protection concept thanks to all-around coating
- RCS is a coating standard for automated screw feeding devices
- Regularity and seamlessness are strengths of RCS
- No more scratching and marking of sensitive conveyed parts
- Without seams, coatings can no longer partially disbond
- Technical detail solutions no other feeder bowl lining can offer



# Vibratory Chutes

Reference: Rapid Coating Solutions Series 1500/1700

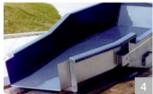


Elastomeric surface treatment for lining longitudinal feeders. Parts protection, noise reduction, feeding optimization and general equipment lifetime extension. FDA approval for use in the pharmaceutical & food sector.

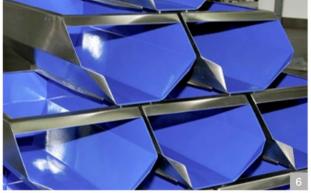
- Pipe conveyors
- Chutes / Slides / Trays
- Vibratory trough dosing devices
- Vibrating tables
- Linear feeding lines











- 1 During the elastomeric spray process of RCS Series 1700
- 2 FDA approval allows use in pharmaceutical installations
- 3 RCS structured surfaces prevent the sticking of oily parts
- 4 Used for the protection of high impact parts
- 5 Seamless lining- even on complex shapes
- 6 Color-coding is a common choice for department indication
- 7 Resistant up to a maximum of 248° F



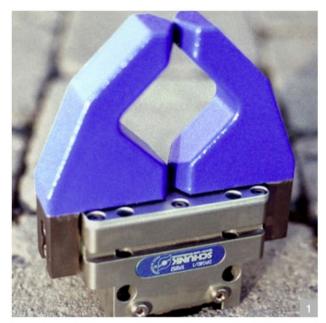


# Clamping / Gripping Tools

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable, elastomeric coatings to protect sensitive parts during the handling process: Scratch protection, slip protection, improving handling safety. Surface friction index up my(0) = 0.7.

- Multi-jaw grippers
- Hold-down / clamping tools
- Clamping pliers
- Clamping pads / stops
- Girders
- Steady rests
- Load beams















- Two-jaw gripper with a 2 mm thick protective "skin" avoiding marks
- 2 Part of a coated clamping collet for small delicate plastic parts
- 3 Slip-resistant nut insert to transfer torque without damages
- 4 Elastomeric gripper to hold sensitive tiny metal items
- 5 Coated pressure pads for chassis welding in vehicle construction
- 6 Miniature gripper with a 1 mm thick "rubber lining"
  - 7 Hook and gripper in one



#### Lifting Devices



Reference: Rapid Coating Solutions Series 1500/1700



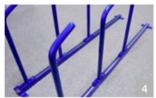
Soft touch coatings to improve grip and protect the load. Prevents scratches, markings, imprints or discolorations.

Conform to pharmaceutical and partially food grade specifications in accordance with FDA & EU regulations.

- Load hooks
- Eve hooks
- Forklift attachments
- Lashing straps
- Air cushions











- 1 Slip-resistant and able to withstand high loads (1785)
- 2 Coated forklift forks reliably fix and protect load
- 3 Hygenic, pharmaceutical and anti-vibrating
- 4 RCS Coatings prevent scratches, slipping, and chafing
- 5 Protects against moisture penetration and injuries to belt
- 6 Available in many tints / signals / warning colors
- 7 Avoids scratching & marking, plus secures load process



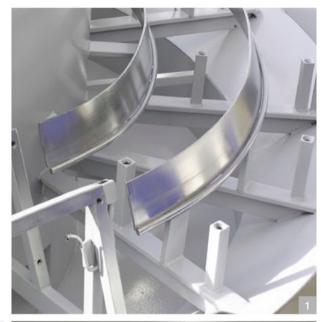


#### Pharmaceutical / Medical Engineering

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable elastomeric coatings with FDA 177.1680 (Title 21) conformity. Impact-resisting, seamless, gentle to the parts to be conveyed and sterilizable. Preventing black discoloration to pills. Reduce operational noise.

- Transport containers
- Dosing devices
- Packaging machines
- Feeding trays
- Sampling equipment
- Weighing devices
- Mixers















- 1 Seamless coatings facilitate cleaning
- 2 Coated NFe filling module prevents black staining
- 3 Separation section being "rubberized" with FDA approval
- 4 Elastomerically coated agitator with non-stick characteristics
- 5 Coated feeding hopper of a food packaging machine
- 6 "Elastomeric" screwfeeder protects sensitive items
- 7 FDA conformity even for 3D-printed plastic parts



#### **Automation Components**



Reference: Rapid Coating Solutions Series 1500/1700



Sprayable elastomeric coatings for the protection of sensitive surfaces, for scratch protection, feeding optimization, and noise reduction.

- Linear feeders
- Elevators feeders
- Vibration trays
- Vibration hoppers
- End pulley conveyors
- Centrifugal feeders
- Step feeders











- 1 Vibratory hopper with structure to prevent oily stickage
- 2 Stepped feeder with combined protective/ noise reducing lining
- 3 Spiral elevator with RCS 1590 elastomeric protective coating
- 4 Seamless internal and external coated vibratory conveyor
- 5 Elastomerically lined feeder for pharmaceutical components
- 6 Non-stick coated food conveyor with FDA conformity
- 7 Details of a perfect coating no irregularities or sharp edges





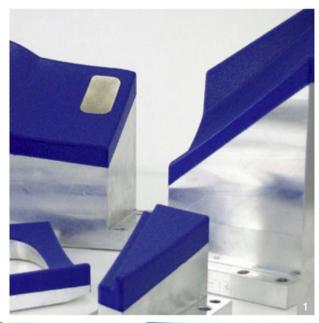
#### Workpiece Carriers

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable elastomeric coatings for safeguarding sensitive surfaces and for scratch and marking protection.

Fulfills highest protection demands during the assembly of painted or chromed automotive parts.

- Assembly supports
- Assembly nests
- Transfer systemes
- Forging dies
- Sockets / prisms
- Mounts

















- 1 Velvet-like structured, rubbery protective coating perfect cushioning
- 2 Scratch-proof coated bumper nest made of POM
- 3 Coated assembly nests for chrome-plated vehicle add-on parts
- 4 Suitable for supports made of PE, PA, wood, aluminum, rubber...
- 2 mm thick elastomerified support for aircraft fuselage
- 6 Coated assembly device for electrical power tools
- Non-scratch standard with all leading American car manufacturers



#### **Plastic Welding**



Reference: Rapid Coating Solutions Series 1500/1700

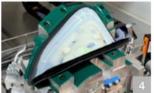


Sprayable elastomeric coatings for the surface protection during plastic welding processes. Precise, true-to-contour, soft and haptic - but nevertheless wear-resistant.

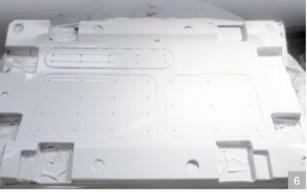
- Ultrasonic plastic welding tools
- Vibration plastic welding tools
- Friction plastic welding tools











- 1 Precisely leveled coating with high static friction of  $\mu$  0.5
- 2 Limousine dashboard tool coated with 1 mm RCS1580
- 3 A typical RCS application, with attention to every technical detail
- 4 Automotive tool coated with RCS1590, green, 1 mm
- 5 Coated welding tool for passenger car rear lights
- 6 Variable in hardness, static friction and surfact structure
- 7 Much more durable than glued-on plastic or rubber sheets





## Workpiece Magazines

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable elastomeric coatings for the protection of sensitive surfaces and providing scratch, mark and slip protection.

- Cleaning baskets
- Tool bins
- Assembly supports
- Display containers















- Workpiece carrier coated seamlessly with a soft-elastic surface
- 2 Brake hose transport rack coated in scratch-proof elastomer
- 3 Damage-free Trolley for transport of car parts to assembly line
- 4 Tool set coated resistantly all over
- 5 Bead blasting magazine coated for continuous reuse
- 6 Washing basket padded out on all sides elastomerically
- RCS coatings no disturbing edges and corners



#### **Electrical Insulation**

Reference: Rapid Coating Solutions Series 1500/1700



Elastomeric coatings to be applied by means of spraying and brushing for electrical and thermal insulation. Dielectric strength approximately 5 KV per 1 mm of coating thickness.

Anti-Static versions available upon request.

- Large welding electrodes
- Sensors
- Current collectors
- Control tools
- Submersible motors
- Dip galvanizing frames











- Decorative, seamless, elastomerically ( & permanently! ) insulated
- 2 Coated test plug protects tester and specimen alike
- 3 The lining thickness influences the final extent of the insulating effect
- 4 RCS is suitable for insulating the most complex geometries
- 5 Waterproof, easy-to-clean electrical insulating coating
- 6 Agreeable and safe grip offers flashover protection
- 7 RCS coating is optimized for inspection services,





#### Protective Covers for Assembly

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable elastomeric coatings to manufacture detachable protective covers for assembly purposes. Very low weight (density 1.05 g/cm³). Mechanically resistant & easy to clean.

NO mold is necessary to produce the protective cover; execution can simply be realized by use of an original vehicle body part.

Individual color codes for easy identification per car model or local assembly positioning can be easily implemented.

- Scratch protection covers
- Impact protection covers
- Door frame inserts















- Protective cover against scratching during final assembly & inspection
- 2 Self-adhesive or magnet-supported version for rim-guard
- 3 Sill protection cover between A & B colum (front door)
- 4 Assembly protection for the installation of the door locking devices
- 5 Protective cover for the front fender (passenger side)
- 6 Impact protection to ease the assembly of the front door
- 7 Protectors for the center console



## **Special Tools**

Reference: Rapid Coating Solutions Series 1500/1700



Sprayable elastomeric coatings for the protection of sensitive surfaces against scratches. Superior (nonallergic) haptical properties for wet or oily hands.

Different color codes to avoid danger of tool mix-ups can be integrated.

- Tool handles
- Nuts / bits
- Hood / trunk lid arrester
- Tool extensions
- Indent tools
- Gauges











- Nuts sheathed on all sides elastomerically
- Small tools coated for vehicle passenger compartment assembly
- Thermally insulated, slip-resistant tool holder
- 4 Partially rubber-coated manufacturing tool for noise reduction
- Breaker used by the fire department, coated for firm grip
- Scratch-proof test plug for vehicle engine compartments
- RCS -- to secure that each touch remains invisible





#### Drive Pulleys / Rollers

Reference: Rapid Coating Solutions Series 1500/1700



Sprayable elastomeric compounds for the repair of existing linings or complete new roller coatings.

Available hardnesses from 60 to 95 Shore A in a seamless quality. End-faces can be covered as well.

- Drive rollers
- Vacuum rollers
- Textile rollers
- Transport rollers
- Pulleys
- Friction wheels
- Diabolo rollers
- Cable drums











- In-situ elastomerification without machine processing
- RCS coatings bond to metal, aluminum, FRFP, rubber, ...
- 3 Spraying is the perfect technique for globular or diabolo geometries
- Textile drive rollers with a static friction of  $\mu$  0 to  $\mu$  0.7
- Coated drive roller with superimposed driving toothed wheel
- 6 Wear-resistant non-stick coating on conveyor belt rollers
- RCS coating on paper rollers can be machined to a precision of 1/100 mm





## Weighing Technique

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable elastomeric coatings for the soft, protective lining of weighing elements. FDA conformity and easy to clean/sterilize. Recommended as fracture protection for deep-frozen food. Extremely noise-reducing.

- Multihead scales
- Scale pans
- Crane scales
- Flow scales















- Weighing device of a multihead weigher coated with RCS1580
- Non-stick, non-break RCS cushions sensitive goods
- Funnel of a weighing station
- Weighing container coated for slip-enhancement
- 5 Sampling device with RCS1598 non-stick coating
  - Seamless FDA-coated anti-slip sockets of a weighing unit

    Coated pads of a forklift truck weighing attachment



#### Receptacles / Containers

Reference: Rapid Coating Solutions Series 1500/1700



Sprayable elastomeric coatings for thin or thick linings of sensitive storage and transport containers. Impact-resistant, reduces noise development, protects against sticking and solves corrosion problems.

- Boxes / bins
- IBC containers
- Compost containers
- Shipping trays
- Chemical containers











- The elastomeric skin is crack and deformation-resistant
- 2 Seamless, low-friction surfaces optimize cleaning
- Reduces impact forces and their noise development
- Protects surfaces when storing aggresive bio-waste
- Maximum corrosion protection even during direct exposure to salt
- 6 RCS coatings adhere to many materials including FRP
- Electrochemical insulation, e.g., to transport titanium rivits in steel bins





#### **Plastics 3D Printing**



Reference: Rapid Coating Solutions Series 1500/1700

Printed plastic components show a superficial roughness which excludes their use in areas subject to food and pharmaceutical regulations. Unsuitable coefficients of surface friction and inadequate wear and impact resistance furthermore limit their usability.

**RCS Series1500** coatings optimize parts regarding their surface quality (porosity / resistance to wear). Compliant according to FDA 177.1680, FDA 175.300-2-E (upon special request), (EU) 1935/2004 and (EU) 10/2011.

Suitable for filaments, among others like:

- PLA (Polyactide)
- ABS (Acrylonitrile butadiene styrene)
- PVA (Polyvinyl alcohol)
- PA66 (Polyamide)
- PS (Polystyrene)



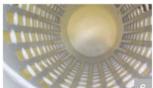










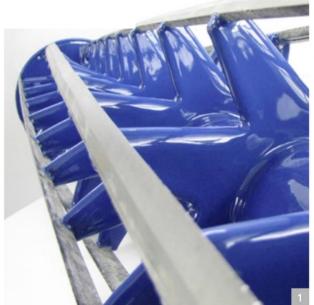


- 3D print with a friction reduced coating (coefficient of only 0.1)
- 2 After coating free of pores, smooth and mechanically more resistant
- 3 Expect the most from RCS coatings, and you still will be surprised
- 4 Pharma-grade and compliant with foodstuff regulations
- 5 For complex geometries and various component sizes
- 6 Coatable in almost any color shade according to customer request
- RCS coatings offer reliability in itself even for heavier parts



# Food / Beverages

Reference: Rapid Coating Solutions Series 1500/1700



Sprayable elastomeric coatings to protect (frozen) food against breakage, sticking or discoloration. Easy to clean and improved non-stick properties.

Will not "chip" like paint or plastics due to its rubber-like material behavior.

- Flour mills
- Bottle grippers / tulip sleeves
- Rerouting stations
- Screw conveyors
- Food transport vehicles











- Lined cutter for pet food manufacturing in typical RCS precision
- Elastomerically coated washing screen drum for potatoes
- 3 Screw conveyor seamlessly rubberized in liquid spray form
- Hopper for grain wear-protected with 4 mm RCS1785
- Coated sponge scrapers for cleaning milk tubing / dairy installations
- Food delivery van sprayed with RCS1785 to meet hygiene standards
- Wear-resistant RCS1598 non-stick food-lining for cereals.





## **Aeronautical Engineering**

Reference: Rapid Coating Solutions Series 1500/1700

Sprayable elastomeric coatings offering soft-touch surface characteristics. Extremely resilient, wearresistant and durable.

Passable, impact-absorbing and variable in color. Applicable in any desired film thickness.

- Mounting brackets
- Maintenance equipment
- Engine testing devices
- Check-weights for wing testing
- Pneumatic tools
- Protective assembly covers (protectors)













- To avoid chafing on cable glands -- Rapid Coating Solutions is #1
- For all devices contacting the aircraft cushioning is automatic
- Assembly protection on this hull support for the legendary A350XWB
- Protection always comes first with RCS1785
- Coated rollers for scratch-free lengthy goods handling
- Lifting device impact-resistant elastomerified with RCS1785
  - Even control and measuring devices can no longer harm surfaces



#### Sound Deadening

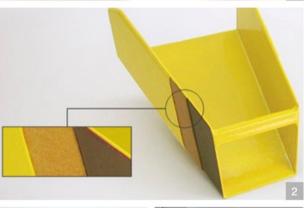
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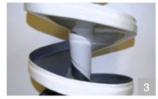


Sprayable dispersion coating for the external structureborne sound deadening of thin-walled metal structures. Rest-elastic and decorate.

FDA compliant overlay with RCS Series 1500/1700

- Transfer funnels
- Hoppers
- Feeder bowls
- Enclosures
- Sheet metal coverings









- 1 External sound deadening without influencing the internal flow rate
- 2 Sealed, leakproof, dust-free, clean
- 3 When a part shape becomes a problem, RCS coatings aid
- 4 Sounds like plastic, no reverb and no high notes
- 5 Firmy connected to the underground and almost invisible
- 6 Seamlessly FDA-coated and quiet and pharma-compatable
- 7 Difficult geometries are the strength of RCS coatings





#### **Engineering Details**

Reference: Rapid Coating Solutions Series 1500/1700

#### The Coating Materials

The defining functional element of Rapid Coating Solutions coating surfaces is their seamlessness. The layer thickness is from 500  $\mu m$  and increased depending on the load. Most applications are between 1-2mm, in order to build up a sufficient and permanently elastic compression memory.

- Scratch / Mark protection prevents scratches, marks or discoloration. Explicitly recommended for transparent plastics and glass parts
- **Noise inhibition** prevents noise even in the beginning instead of a complex enclosure. Structure-borne sound- absorbing properties allow a reduction of up to 20 dB (A)
- Increased performance speeds up the transport of oily, dirty or dusty parts. Damps down forces and causes smooth sliding
- Wear protection withstands extreme bumping, dragging and scratching stresses. When comparing identical layer thicknesses, the coatings are at least as wear-resistant as glued polyurethane sheets!

RCS coating adheres to all metals, GRP, polymide, epoxy, rubber, and other materials. Unlike glued-on elastomer plates that often require renewal due to loss of adhesive power, RCS coatings polymerizes in the form of the component. There is no tension-related detachment tendency from the base.

RCS coating is a particle-free system that does not contribute to the contamination of the transported material e.g., in contrast to conveying brushes. Cleanable with aqueous cleaning agents; steralizable in the vaporizing process by means of alcohol (IPA). The application can be done in various shades to ensure contrast formation of camera systems.

RCS coatings are considered to be **pharmaceutically safe** by the US authorities under FDA 177.1680 (Title 21) and for dry substances classifies as food-safe.

A special form is the **structured coating versions**. These ensure smoother transport, scratch-free delivery, minimize static charge build-up due to the **reduced surface charge** and are even manditory for manipulating **oily** or wet parts.

<b>Hardness</b> (A.S.T.M. D2240-68)	60-98 Shore A
Density (DIN 53 479)	approx. 1.05 g/cm <sup>3</sup>
Tensile strength (A.S.T.M. D412-68)	20-24 N/mm <sup>2</sup>
Tear resistance (DIN 53 515)	55–68 N/mm
Elongation at break (A.S.T.M. D412–68)	275–650 %
Bashore resilience (DIN 53 512)	27–63 %
Thermal conductivity (DIN 52 612)	0.2 W/K m
Dielectric surface resistivity (DIN 53 482)	7 x 10 <sup>10</sup> ohms
Dielectric breakdown voltage (DIN 53 841)	> 5 kV / mm
Temperature resistance (dry)	-50 °C to +120 °C
Abrasion according to Taber (A.S.T.M., D1-044-73 - H-22)	approx. 8.2 mg
Abrasion (DIN 53 516)	55–85 mm³
Coefficient of static friction (DIN EN ISO 8295)	$\mu$ (0) = 0.15-0.7
Approvals International	FDA 177.1680 (21)













**Corrosion**-resistant

Permanently elastic
Abrasion & Erosion-resistant

Sprayable and moldable
Shock-absorbing
Glide-enhancing or
Slip-resistant







- Aeronautical Engineering
- Automation Technology
- Automotive Manufacturing
- Ceramics Industry
- Chemical Industry
- Concrete Production
- Conveyor Technology
- Electrical Engineering
- Fertilizer Production
- Foodstuff Processing
- Glass Processing
- Metal Foundries Mining Technology
- Municipal Technology

- Nautical
- Occupational Safety
- Offshore & Marine
- Packaging Technology
- Petrochemical
- Pharmaceuticals
- Plastics Processing
- Power Plant Technology
- Pulp & Paper
- Recycling Technology
- Surface Technology
- Textile Machinery Design

... and many more