

**Wringer /
Squeegee Rolls**



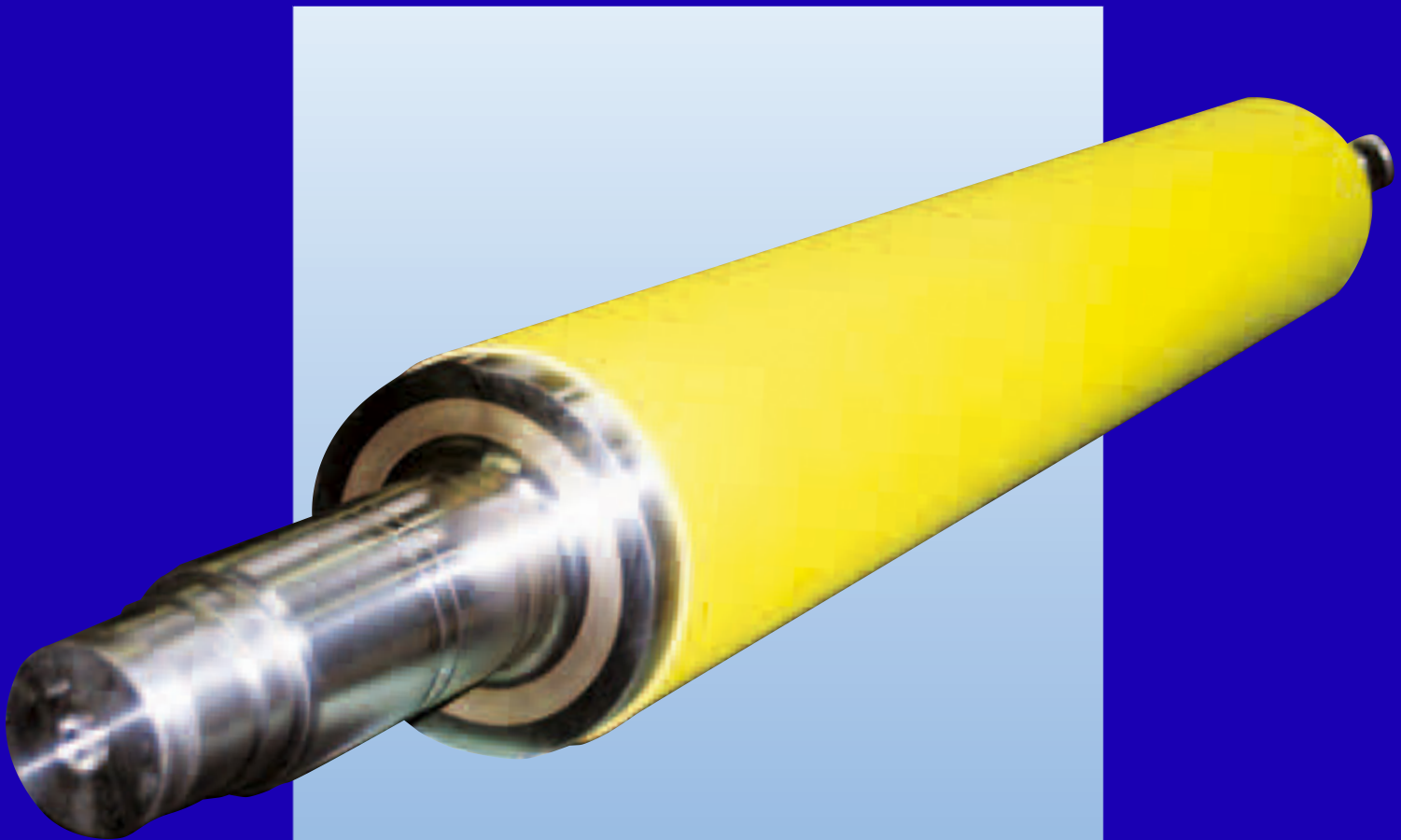
Oiler Rolls



Tension / Bridle Rolls

JVM Rolls®

A New Dimension of Productivity and Cost Reduction



JVM Industries – State-of-the-Art Manufacturing Technology to Meet the Requirements of Today and Tomorrow



JVM Rolls, made of a shaft and the special fibre covering, are manufactured and designed in Germany.

We employ state-of-the-art CNC-controlled machines to achieve the closest manufacturing tolerances of the shafts. These are made of steel, stainless steel, aluminium or plastics, depending on the user's application and specific conditions. This provides the optimal base for the special fibre covering.

For the assembly of the special fibre covering, which is loaded axially onto the shaft as a sleeve, we use our own horizontal pressing machines with capacities of up to 15 m.

The surface of the roll covering is ground cylindrical, convex or concave according to its application. Here, too, CNC-controlled machines are used for a perfect final finish.

Finally all JVM Rolls are dynamically or statically balanced.



The company JVM was founded in Germany in 1988 and has its headquarters in Erkrath near Düsseldorf.

Today, JVM Industries GmbH is the leading producer of rolls with special fibre coverings in Europe.

Ongoing co-operation with the producer of the base materials, assures greater efficiency and effectiveness of JVM Rolls wherever they are used. We work closely together with our worldwide customers in order to support

them in achieving new quality standards.

Our main company target is to help our customers increase their productivity and reduce their operating costs.

Due to the high quality and extremely resistant material structure of our special fibre covering, which is deliverable in a variety of fibre grades, JVM Rolls offer the best requirements to attain this goal.



JVM Rolls replace conventional rolls, such as:

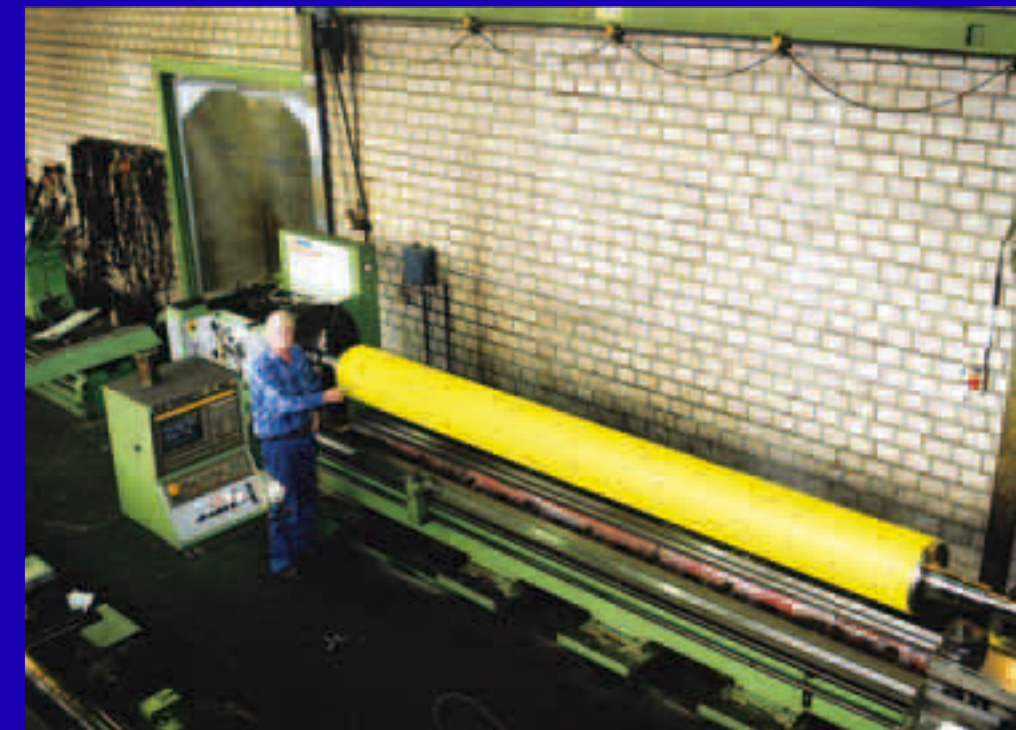
- ▷ Rubber coated rolls
- ▷ Urethane coated rolls
- ▷ Polyurethane coated rolls
- ▷ Non-woven covered rolls
- ▷ Felt covered rolls
- ▷ Steel rolls
- ▷ Bronze coated steel rolls
- ▷ Alloyed steel rolls
- ▷ Hardened steel rolls
- ▷ Other rolls

These are used in a great variety of manufacturing lines to produce, treat and process strips, sheets, plates, tubes and pipes.



Covered with particular high-quality and extremely resistant special fibre material, JVM Rolls offer considerable quality advantages, with up to 100 times longer working life, compared to conventional rolls. They are employed by users and machine builders in a great variety of industries, such as:

- ▷ Steel
- ▷ Stainless steel
- ▷ Copper
- ▷ Brass
- ▷ Aluminium
- ▷ Automotive
- ▷ Printing
- ▷ Paint/Lacquer
- ▷ Plastics
- ▷ Glass
- ▷ Textile
- ▷ Paper



JVM Rolls® With Special Fibre Covering – a Technology That Sets New Standards



JVM special fibre coverings are made of thin, non-woven, special synthetic fibre discs and are bonded together with a flexible and resistant – specifically developed – binding resin.

The result is an elastic, self-regenerating roll covering that is extremely resistant against cuts. In contrast to rubber or polyurethane coated rolls, JVM Rolls are porous, with up to 40% void volume, which is helpful for the absorption of solutions (liquids) in squeezing, oiling, driving and brake applications.

With JVM Rolls, loosened particles from the strip or sheet or residual dirt and debris can penetrate the roll surface without being deposited there – in contrast to rubber or polyurethane coated rolls and steel rolls. This prevents marks and scratches on the material surface. Moreover, the porosity offers great advantages when adding lubricants, as they can be applied more uniformly and at a pre-determined thickness. In wringing/squeezing, oiling, tension or supporting applications, JVM Rolls raise

productivity and increase the cost-benefit ratio in running the lines. Deficiencies caused by conventional rolls, such as friction problems or carry-over of solutions (liquids) are virtually eliminated.

Technical Benefits:

- Extremely resistant and elastic surface
- Roll surface cannot be destroyed by distortion
- High nip pressure reserves, therefore no danger of burning or destroying the roll covering by strip buckles or twisting
- Roll surface does not become glazed, like rubber, polyurethane or similar coated rolls
- Constant, extremely high friction values to achieve high tension and more precise steering control
- No aquaplaning/hydroplaning or air planing

Economic Benefits:

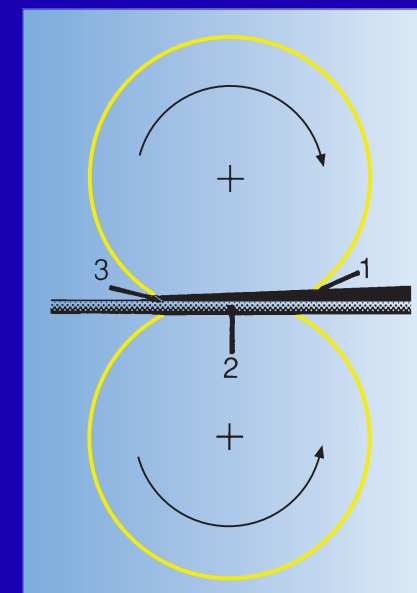
- Higher line productivity
- Extreme reduction in maintenance costs
- Visible quality improvements
- Higher strip speeds
- Considerably longer roll life
- Less downtime of line
- Much lower maintenance expenditure
- Low set-up costs
- Less scrap
- Substantial overall cost savings

Environmental Benefits:

- Carry-over in wringing/squeezing applications will be greatly reduced. Consequently, the replacement intervals of the cleaning and rinsing solutions (liquids), such as demineralised water, acids and alkalis are substantially higher
- Up to 50% lower oil consumption due to more uniform oiling or more effective de-oiling
- Much lower costs for disposal of liquids
- Cleaner line

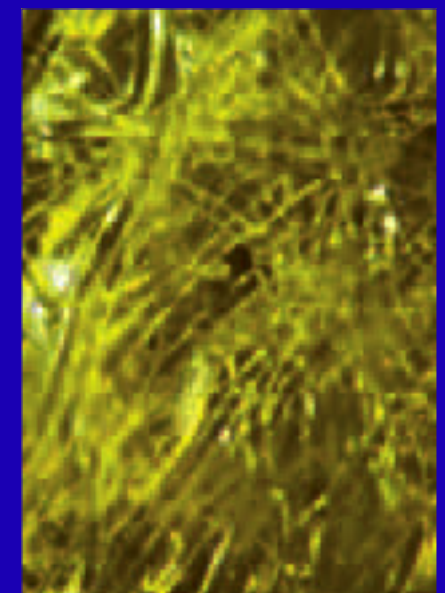
Technical Data of JVM Rolls®

| | |
|-------------------------|--------------------|
| Roll outside Ø: | 40–1500 mm |
| Face (covering) length: | max. 8000 mm |
| Hardness range: | 30–100° Shore A |
| Nip (roll) pressure: | max. 90 kg/cm |
| Range of application: | pH 0–14 |
| Operating temperature: | max. 150 °C |
| Strip speed: | max. 2000 m/min |
| Roll revolution: | max. 2500 r. p. m. |

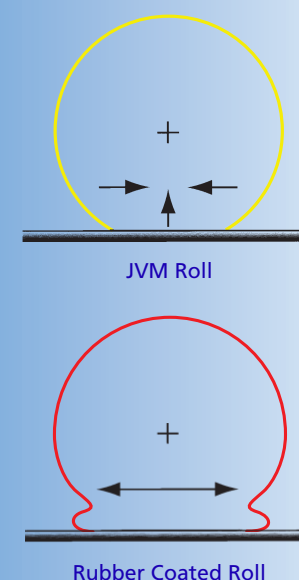


Working Method of JVM Rolls With Special Fibre Covering

1. The porous roll surface absorbs the solution (fluid) enabling relief, in spite of pressure, while still keeping the tight contact with the strip.
2. The void volume of the roll is compressed to near zero at the nip centre, creating a seal which is restored with each revolution of the roll.
3. The porous roll surface reopens when the compression decreases. This sponge-like function removes residual moisture from the strip.



Comparison



Operation Mode of Rolls Under Pressure

In the working process the roll is squeezed together, i. e. pressure is applied to it. In contrast to JVM Rolls, rubber and polyurethane coated rolls are prone to substantial plastic deformation. This leads to a distortion of the coating in the work area (nip) of the rolls. The contact pressure, which is adjusted by hydraulic or pneumatic cylinders, causes tensions in the surface of the rubber or the polyurethane coating.

As a result, the rubber-coating (figure left) bulges. This leads to strip edges cutting and tearing the roll surface. These cuts grow with subsequent stretching.

However, JVM Rolls are slightly compressible. This is due to the porosity of the JVM special fibre covering (figure above). Under pressure, the JVM covering is able to increase in density in the compressed (nip) area without changing its general circular form. In this way, the JVM Roll stays in constant contact with the strip.

Due to the self-healing effect of the JVM special fibre covering, normal cuts and tears close again; the JVM Roll regenerates itself.

JVM Rolls® – Higher Quality Standards For Many Industries

Coil Coating Lines

- Wringer/Squeegee rolls in rinse stations of pre-treatment and cleaning sections
- Wringer/Squeegee rolls in final rinse stations after coating/painting/lacquering
- Deflector rolls
- Tension/Bridle rolls

Cleaning Lines

- Wringer/Squeegee rolls in rinse stations
- De-oiler rolls before cleaning section

Strip and Blank Washers

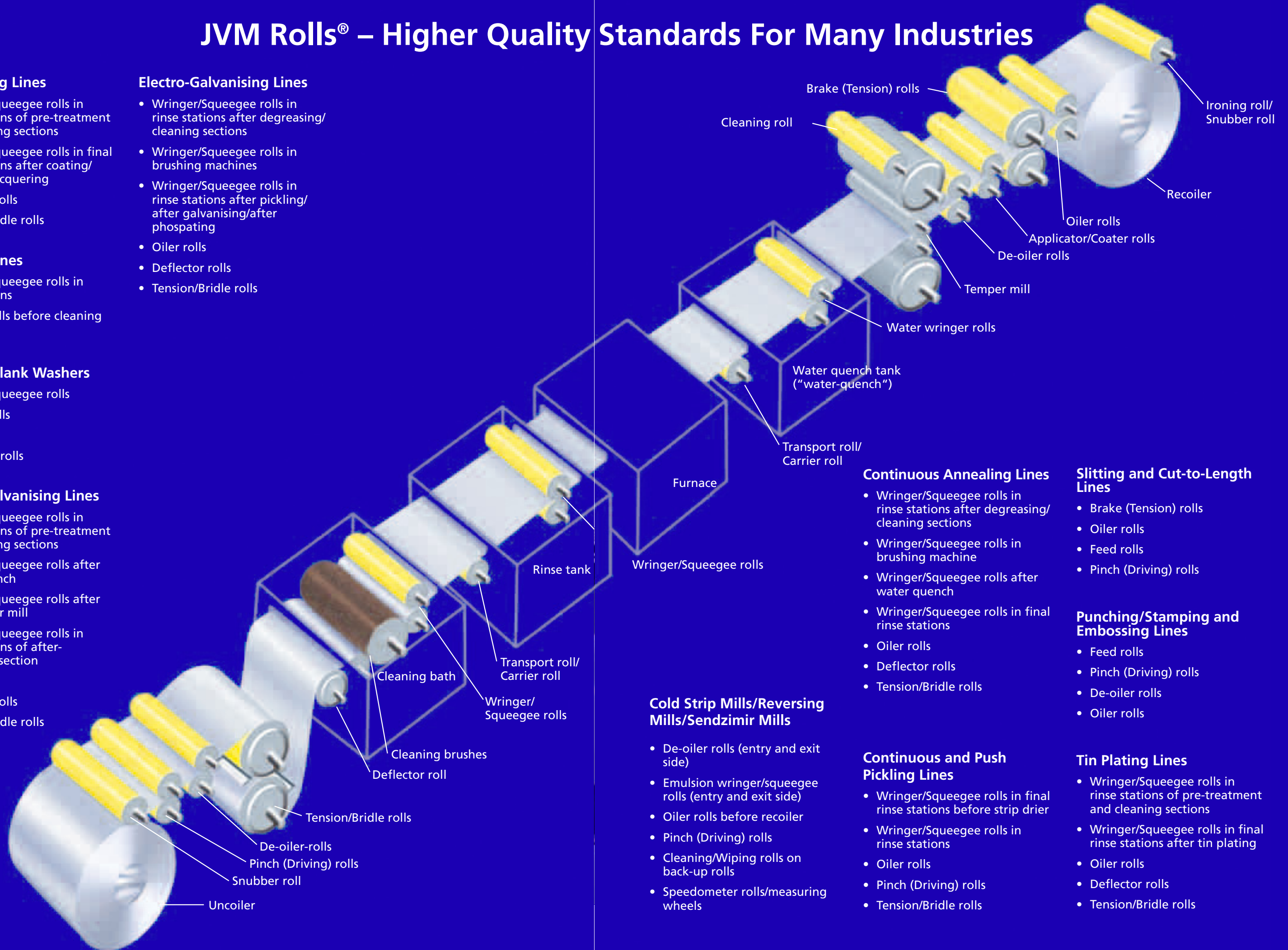
- Wringer/Squeegee rolls
- De-oiler rolls
- Oiler rolls
- Entry feed rolls

Hot Dip Galvanising Lines

- Wringer/Squeegee rolls in rinse stations of pre-treatment and cleaning sections
- Wringer/Squeegee rolls after water quench
- Wringer/Squeegee rolls after wet temper mill
- Wringer/Squeegee rolls in rinse stations of after-treatment section
- Oiler rolls
- Deflector rolls
- Tension/Bridle rolls

Electro-Galvanising Lines

- Wringer/Squeegee rolls in rinse stations after degreasing/cleaning sections
- Wringer/Squeegee rolls in brushing machines
- Wringer/Squeegee rolls in rinse stations after pickling/after galvanising/after phosphating
- Oiler rolls
- Deflector rolls
- Tension/Bridle rolls



Continuous Annealing Lines

- Wringer/Squeegee rolls in rinse stations after degreasing/cleaning sections
- Wringer/Squeegee rolls in brushing machine
- Wringer/Squeegee rolls after water quench
- Wringer/Squeegee rolls in final rinse stations
- Oiler rolls
- Deflector rolls
- Tension/Bridle rolls

Slitting and Cut-to-Length Lines

- Brake (Tension) rolls
- Oiler rolls
- Feed rolls
- Pinch (Driving) rolls

Punching/Stamping and Embossing Lines

- Feed rolls
- Pinch (Driving) rolls
- De-oiler rolls
- Oiler rolls

Cold Strip Mills/Reversing Mills/Senzimir Mills

- De-oiler rolls (entry and exit side)
- Emulsion wringer/squeegee rolls (entry and exit side)
- Oiler rolls before recoiler
- Pinch (Driving) rolls
- Cleaning/Wiping rolls on back-up rolls
- Speedometer rolls/measuring wheels

Continuous and Push Pickling Lines

- Wringer/Squeegee rolls in final rinse stations before strip drier
- Wringer/Squeegee rolls in rinse stations
- Oiler rolls
- Pinch (Driving) rolls
- Tension/Bridle rolls

Tin Plating Lines

- Wringer/Squeegee rolls in rinse stations of pre-treatment and cleaning sections
- Wringer/Squeegee rolls in final rinse stations after tin plating
- Oiler rolls
- Deflector rolls
- Tension/Bridle rolls

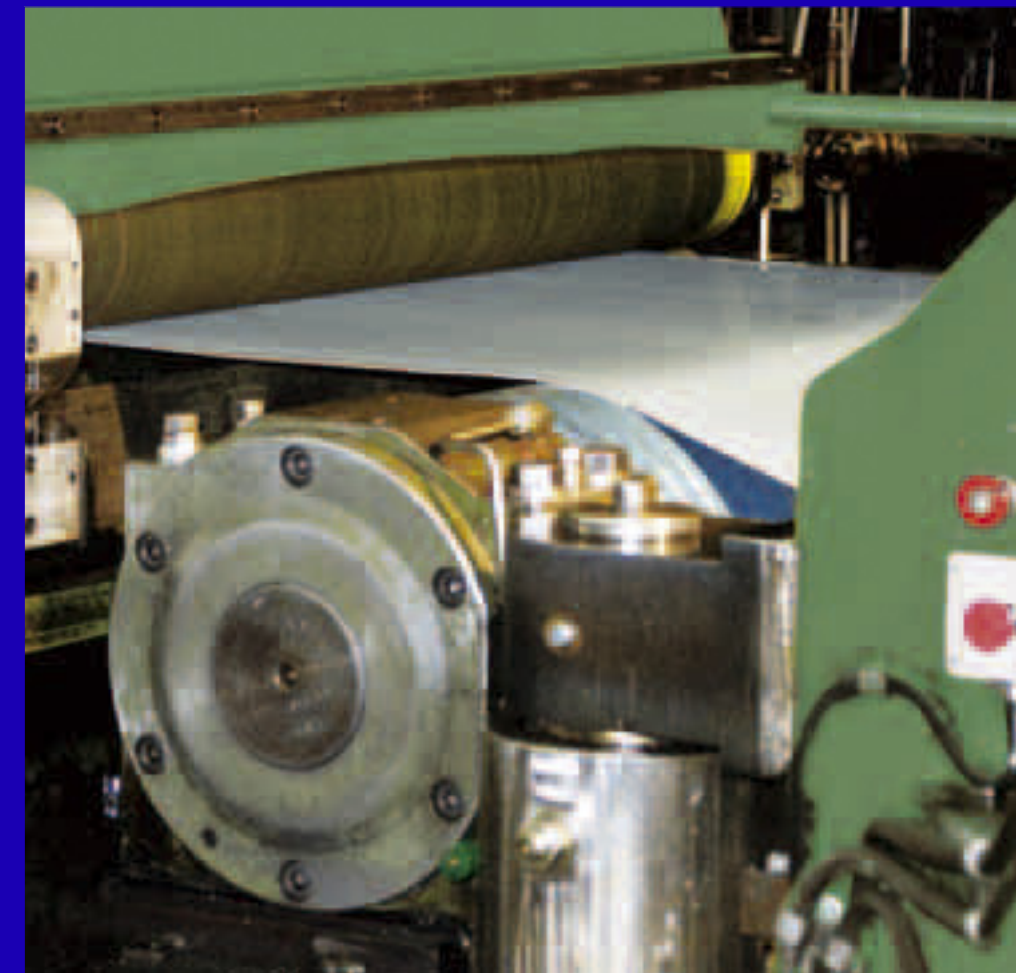
JVM Rolls® – Worldwide Use in a Great Variety of Applications



Oiler Rolls

- ▷ Applying a definable, streak-free oil film
- ▷ Easy control of the oil film by adjusting the contact pressure of the rolls
- ▷ Up to 50% lower oil consumption
- ▷ Non-marking roll surface

- ▷ No scratching of the work piece surfaces
- ▷ Roll surface is resilient and extremely resistant against cuts from work pieces
- ▷ Very long life
- ▷ Cleaner line/plant
- ▷ Safer line/plant



Wringer/Squeegee rolls

- ▷ Excellent wringing/squeezing performance
- ▷ Up to 95% reduction in carry-over of solutions (liquids) compared to rubber or polyurethane coated rolls
- ▷ Up to 100 times longer life in comparison with rubber or polyurethane coated rolls
- ▷ Normally a drive motor is not required
- ▷ No aquaplaning/hydroplaning
- ▷ Non-marking roll surface
- ▷ No scratching of the work piece surfaces
- ▷ Roll surface is resilient and extremely resistant against cuts from work pieces
- ▷ "Self-healing effect" of the roll covering in case of cuts caused by strip edges, tack welds or welding seams
- ▷ Very long life



De-oiler Rolls

- ▷ Very effective and uniform squeezing of oil or emulsion
- ▷ Control of the residual oil film by adjusting the contact pressure of the rolls
- ▷ No aquaplaning/hydroplaning effect
- ▷ Non-marking roll surface
- ▷ No scratching of the work piece surfaces
- ▷ Roll surface is resilient and extremely resistant against cuts from work pieces
- ▷ Long life
- ▷ Cleaner line/plant
- ▷ Safer line/plant

JVM Rolls® With Extremely High Friction Values ...



as brake, bridle, steering, transport, pinch (driving), deflector or tension rolls

JVM tension and bridle rolls build up controlled tension levels due to their high frictional values whereby the coil material does not droop, and the wound coil is kept tight.

In many cases rubber or polyurethane coated rolls, as well as steel rolls, do not have enough friction to produce sufficient tension. They often lead to marks or scratches on the strip caused by the speed differences (relative speeds) between rolls and strip. This slippage is particularly common when the strip is wet or oiled.

This is because the surfaces of these rolls are not porous and a thin liquid film forms between the rolls and the strip material, which consequently causes the rolls to aquaplane.

JVM special fibre coverings have a porous surface, with up to 40% void volume. The solution (liquid) is absorbed by the JVM Roll, creating a considerably better contact between the JVM Roll and the strip surface. This results in a substantially higher frictional value compared to conventional rolls.



... and Their Special Strengths

Advantages of JVM Rolls:

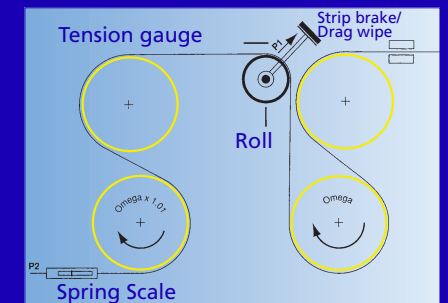
- ⊃ Extremely high, constant friction value, for example in comparison with rubber coated roll surfaces
 - 50% higher on dry strips
 - up to 40 times higher on oiled strips
- ⊃ Non-marking roll surface
- ⊃ The roll surface does not become "glazed" like rubber, polyurethane or comparable plastic coated rolls
- ⊃ Roll surface is resilient and extremely resistant against cuts from strip edges
- ⊃ No aquaplaning/hydroplaning or air planing
- ⊃ Very long life
- ⊃ Increased productivity of the line
 - higher strip speeds
 - considerably higher strip tensions
 - no scratching of strip surfaces as a result of strip slipping
- ⊃ Tighter wound coils
- ⊃ Better strip control
- ⊃ More precise coil winding
- ⊃ More consistent movement of strips and better strip control during follow-up treatment in continuous annealing furnace



Comparison of Friction Factors, Data of the Friction Values in μ

| | JVM Roll | Rubber Coated Roll |
|------------------------------|----------|--------------------|
| Steel strip | | |
| Dry | 0.52 | 0.36 |
| Wet | 0.44 | -- |
| Oily | 0.36 | 0.01 |
| Stainless steel strip | | |
| Dry | 0.29 | -- |
| Wet | 0.27 | -- |
| Oily | 0.25 | -- |
| Aluminium strip | | |
| Dry | 0.29 | 0.36 |
| Wet | 0.31 | -- |
| Oily | 0.32 | 0.01 |
| Copper strip | | |
| Dry | 0.34 | -- |
| Wet | 0.31 | -- |
| Oily | 0.34 | -- |
| Brass strip | | |
| Dry | 0.34 | -- |
| Wet | 0.37 | -- |
| Oily | 0.30 | -- |

Note: Coefficients of friction measured with a strip guide of 180° (see schematic drawing)



Also for pinch (driving) and brake rolls, a higher and constant friction value is required, particularly in case the strip surface is wet or oily. Conventional rolls have low friction values even when they are new, and generally deteriorate significantly after short time of operation. JVM Rolls are perfectly suitable for these different tasks, regardless of the strip surfaces being dry, wet or oiled.

JVM Squeegee/Wringer Rolls® and Entry Feed Rolls in Blank and Strip Washers in the Automotive Industry



In Operation

JVM squeegee/wringer rolls and entry feed rolls are used in blank and strip washers of various German and international manufacturers (for example SCHULER, Schleifenbaum & Steinmetz, MÜLLER WEINGARTEN, amongst others). They have been well-tried and proved reliable worldwide for more than 10 years and successfully used by renowned international automotive manufacturers, as well as in the automotive supplying industry.

The Result

- ▷ Residual oil film of 0.5–4 g/m² dependent on:
 - operating speed
 - cleaning fluid
 - viscosity of the fluid
 - number of JVM squeegee/wringer roll pairs



Clean Blank Surfaces Provide Superior Product Quality

In order to manufacture high-quality press components, it is necessary to clean the blank or strip surface from dirt and deposits. This ensures good surface quality and at the same time reduces contamination of the deep-draw dies.

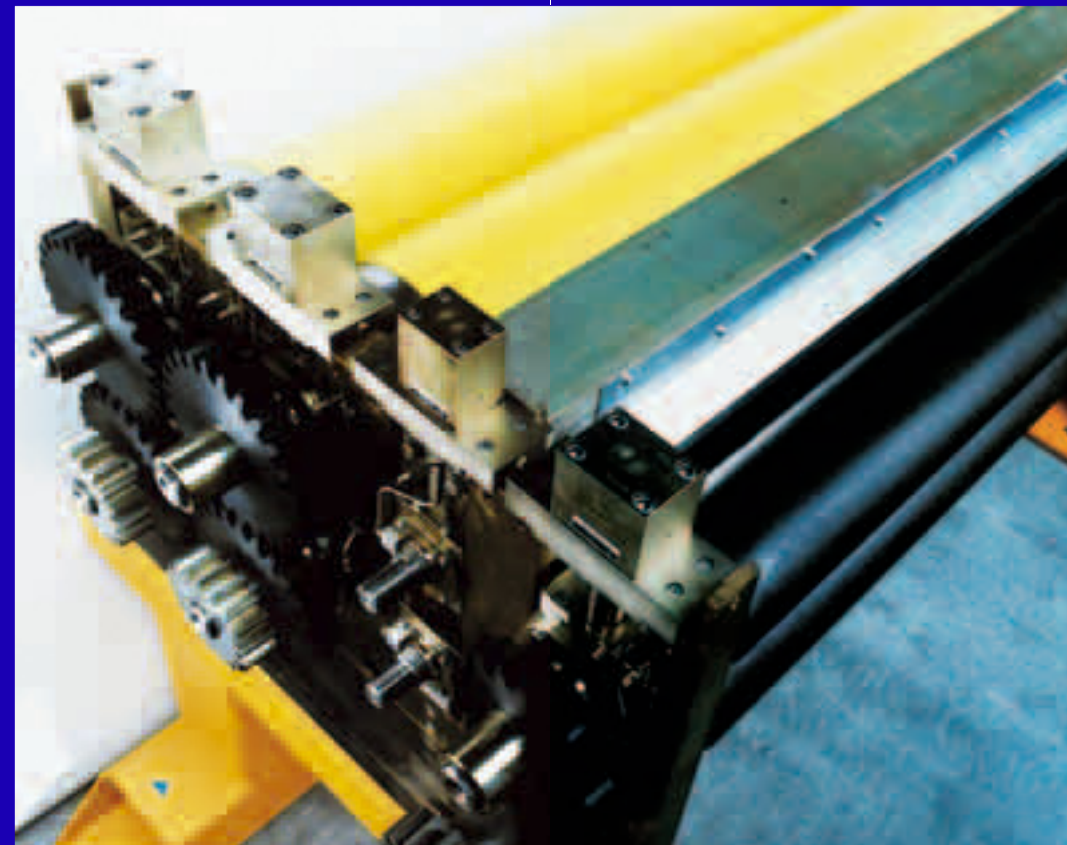
Though operating at extremely high throughput speeds, JVM squeegee/wringer rolls in blank and strip washers are capable of reducing the oil film on the blank or strip to a minimum.

This ensures consistent component quality, while the cleaning intervals of the deep-draw dies are extended.

The residual oil film thickness can be varied by adjusting the contact (nip) pressure of the squeezing rolls.

The Process

The individual blanks are transported by feed rolls into the washer station. The cleaning fluid is sprayed at high speed on the blank by means of nozzles placed before and after a pair of brush rolls. The rotation of the brush rolls in the opposite direction, increases the cleaning effect. One or two JVM squeegee/wringer roll pairs are provided to ensure the controlled, uniform oil film distribution on the blanks or strips. The roll frame is designed for high efficiency and ease of maintenance, to make sure that consistent cleaning results and increased machine uptimes are achieved. All JVM Rolls can be disassembled quickly and easily, if necessary.



Benefits of JVM Squeegee/Wringer Rolls:

- ▷ Very effective and even squeezing of oil, emulsion or watery solution (liquid)
- ▷ Control of the residual oil film by adjusting the contact pressure of the rolls
- ▷ Cleaning effect – dirt particles are absorbed by the roll

Benefits of JVM Squeegee/Wringer and Entry Feed Rolls:

- ▷ Extremely high, constant friction value, for example up to 40 times higher in comparison to rubber or polyurethane coated rolls on oiled blanks or strips
- ▷ No aquaplaning/hydroplaning effect
- ▷ Non-marking roll surface
- ▷ Cleaning effect – dirt particles are absorbed by the roll
- ▷ No scratching of the blank or strip surface
- ▷ Roll surface is resilient and extremely resistant against cuts from blank or strip edges
- ▷ "Self-healing effect" of the roll covering in case of cuts caused by blank or strip edges
- ▷ Long life

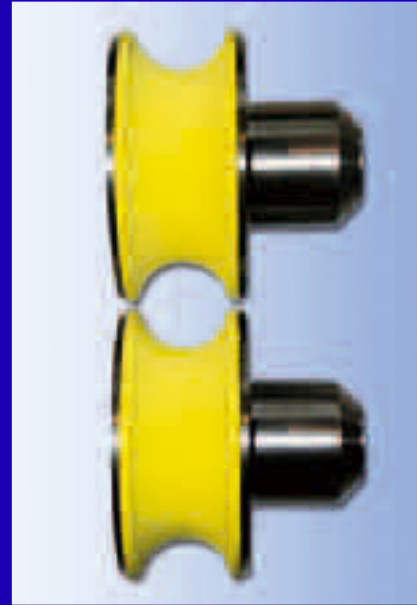
JVM Rolls® – Also Highly Effective for Manufacturing, Treating and Further Processing of Tubes, Pipes and Profiles

Tubes, pipes and profiles made of aluminium, copper, brass, stainless steel or steel are often covered with lubricants such as oil, emulsion or grease during the various manufacturing processes.

Conventional rubber or polyurethane coated rolls are often not as suitable for driving or braking tubes, pipes and profiles

or for applying or wringing/squeezing solutions (liquids), because they have a low coefficient of friction and they cut easily.

Steel rolls are also often used in order to work with higher contact pressure. However, these rolls cause scratches and marks on the work piece surface, which leads to scrap.




- Pinch (Driving) rolls
- Brake (Tension) rolls
- Entry feed rolls
- Feed rolls
- Applicator/Coater rolls
- Oiler rolls
- De-oiler rolls
- Wringer/Squeegee rolls
- Cleaning Rolls
- Speedometer rolls/ Measuring wheels

- ↳ Extremely high, durable friction value, for example up to 40 times higher in comparison with rubber or polyurethane coated rolls on oiled tubes, pipes or profiles.
- ↳ Non-marking roll surface
- ↳ No scratching of the tube, pipe or profile surfaces
- ↳ Very good and uniform oiling/lubrication effect (greasing)

- ↳ Very effective and even squeezing of oil or emulsion
- ↳ Excellent wringing/squeezing performance of watery solutions (liquids)
- ↳ Roll surface is resilient and extremely resistant against cuts from tube and pipe head ends or profile edges
- ↳ Long life



Important Notice: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties expressed or implied: Sellers' and manufacturers' only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or inability to use the product. Before using, user shall determine the suitability of the product for his own intended use and user assumes all risks and liability whatsoever in connection therewith. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.



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