VACUROLL DRYING SYSTEM

COMPLETE EDGE-TO-EDGE DRYING

Spraying Systems Co.
Experts in Spray Technology
ACHIEVE TOP QUALITY STRIP THROUGH BETTER DRYING

**BENEFITS**

- The VacuRoll system quickly and efficiently removes water and oil without scratching
- Unique vacuum process dries strip right to the edge and eliminates messy run-off
- Operation at high line speeds – up to 5200 ft/min (1585 m/min) – boosts production
- Lower operating costs than conventional systems – the VacuRoll system uses compressed air for just 60 seconds during roll cleaning process. Compressed air is not used for drying. The minimal use of compressed air eliminates the need for hoods and leaves all air for critical mill processes while in operation
- Low-noise operation
- Environmentally safe
- Minimal downtime – system is cleaned in place. Plus, the VacuRoll system operates longer without routine maintenance than other systems
- Wide range of configurations available – system is suitable for use on most cold strip and process lines; usually replaces existing equipment with minor modifications to the physical space

Annual maintenance costs and operating costs for the VacuRoll system are typically **US$200,000 to US$300,000 less** than air blow-off systems that use high volumes of compressed air and require frequent header replacement.

SEE THE VACUROLL CLEANING AND DRYING SYSTEM IN USE: spray.com/vacuroll
VACUROLL SYSTEM: IDEAL FOR A WIDE RANGE OF OPERATIONS

For quick and efficient removal of water and oil from moving metal strip, the VacuRoll system is unsurpassed. The system dries strip without scratching using a unique vacuum process. The VacuRoll system is versatile enough that it is suitable for use on any type of metal strip in nearly every mill environment.

VacuRoll systems are customized based on the fluids/contaminants to be removed and other operating conditions. Standard VacuRoll systems are designed to create an even vacuum along the full length of the roll including the edges, but can be configured to concentrate the vacuum near strip edges.

IDEAL FOR:
- Cold mills
- Temper mills
- Z mills
- Continuous annealing lines
- Galvanizing lines
- Paint lines
- Processing lines
- Slitting lines
The rollers are hollow steel shafts with several keyways of different sizes and shapes. The shafts are covered with a material consisting of many paper-thin disks that are pressed into a semi-solid formation.

A vacuum pump is attached to one or both ends of the VacuRoll shaft.

As fluid is removed from the strip, it passes through the cover. Dirt and solid contaminants are pulled into the roll cover away from the moving metal surface to prevent scratching of the strip. The fluid continues to flow through the hollow center of the roll shaft to the vacuum pump and then is returned to the system for re-use.

The roll cover is cleaned one to three times per day or after a pre-determined number of coils. A fluid, typically the fluid being removed, is pumped through the roll from the inside to remove dirt and solids from the roll cover. A small amount of compressed air is then used to accelerate the roll cleaning process. The fluid phase and air phase last approximately 60 seconds and can be repeated as necessary to ensure the covering is completely clean.

The rolls are typically reground and recovered at four- to six-month intervals and are replaced after four regrindings.
<table>
<thead>
<tr>
<th></th>
<th>VacuRoll System</th>
<th>Air Blow-Off</th>
<th>Wiper Bars</th>
<th>Wringer Rolls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cleaning Effectiveness</strong></td>
<td>Vacuum process removes dirt, contaminants and oil at high and low line speeds</td>
<td>Adequate removal of dirt and debris at low line speeds; staining can be caused by moisture in the air, poor edge drying and mist re-depositing on strip surface</td>
<td>Adequate removal of dirt and debris when wipers are new; effectiveness compromised at higher line speeds</td>
<td>Poor performance at strip edges</td>
</tr>
<tr>
<td><strong>Strip Damage/Scratches</strong></td>
<td>Absorbs metal slivers into the roll cover away from strip surface</td>
<td>None</td>
<td>Likely to scratch because metal slivers embed in wiper bars</td>
<td>Skidding along strip surface and metal slivers likely to embed as roll covers harden and wear</td>
</tr>
<tr>
<td><strong>Drying Effectiveness</strong></td>
<td>Up to 98% edge-to-edge even on tread plate or embossed surfaces</td>
<td>Varies – fluid spills off edges and re-deposits on strip and equipment</td>
<td>Varies – fluid passes through tears in bar material</td>
<td>Performance diminishes as rolls wear, frequent width changes or heavy gauge</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td>Low – similar to background noise</td>
<td>High – similar to loud siren; operator discomfort</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Operating Cost</strong></td>
<td>Low – no compressed air required for strip cleaning/drying; vacuum pump requires little energy; periodic roll regrinding and roll cover replacement</td>
<td>High consumption of compressed air; frequent replacement of headers after wrecks</td>
<td>Frequent replacement of wipers – several times per shift</td>
<td>Frequent roll cover replacement</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>Low – roll shafts are cleaned in place; cover remains in near-new condition with high coefficient of friction to ensure proper roll tracking</td>
<td>Frequent maintenance required on compressors and headers</td>
<td>High – wipers wear quickly and require frequent replacement</td>
<td>High – roll covers wear quickly and require replacement</td>
</tr>
<tr>
<td><strong>Environmental Issues</strong></td>
<td>Fluid from vacuum is discharged in a controlled manner; fluids may require removal from contained air stream</td>
<td>Mist caused by compressed air use requires exhaust hood and other safety equipment</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Purchase Price</strong></td>
<td>Higher, but low operating costs result in eight-to twelve-month payback; ongoing annual savings</td>
<td>Headers low cost; compressors high cost</td>
<td>Moderate – directly opposing bar clamping frame required</td>
<td>Moderate – roll support framework for higher loading forces required</td>
</tr>
</tbody>
</table>
To determine if the VacuRoll system is suitable for your strip or process line, complete the information below and fax it to 1.888.95.SPRAY. This form is also available at www.spray.com/vacuroll.

Name: ___________________________________________  Title: ___________________________________________

Company: ______________________________________________________________________________________

Address: _______________________________________________________________________________________

City: __________________________________________________ State/Province: _____________________________

Zip/Postal Code: __________________________________________ Country: _________________________________

Telephone: __________________________________________ Fax: __________________________________________

Email: ________________________________________________

Application (please describe): ______________________________________________________________________

_______________________________________________________________________________________________

Operating requirements (indicate units)

Strip width: Min ________________________ in or mm  Strip width: Max ________________________ in or mm

Strip gauge: Min ________________________ in or mm  Strip gauge: Max ________________________ in or mm

Product type(s): _______________________________________________________________________________

Shape considerations (describe all that apply): ________________________________________________________________________________________________

Waviness (describe): ____________________________________________________________________________

Turned edges (describe): _________________________________________________________________________

Excessive roughness (describe): __________________________________________________________________

Strip speed: Normal __________________________ ft/min or m/sec  Strip speed: Max __________________________ ft/min or m/sec

Wrap angle: Min __________________________ degrees  Wrap angle: Max __________________________ degrees

Max strip tension at min width: ______________ lb or N  Max strip tension at max width: ______________ lb or N

Fluids to remove and amount: ____________________________________________________________________ mg/ft² or mg/m² (side one)

Fluids to remove and amount: ____________________________________________________________________ mg/ft² or mg/m² (side two)

Contaminants to remove and amount: ____________________________________________________________________ mg/ft² or mg/m² (side one)

Contaminants to remove and amount: ____________________________________________________________________ mg/ft² or mg/m² (side two)

Fluid supply temperature: ______________ °F or °C  Pressure: __________________________ psi or bar

Strip temperature: Normal ______________ °F or °C  Strip temperature: Max __________________________ °F or °C

Existing method of cleaning: _______________________________________________________________________

Problems: ______________________________________________________________________________________