Steam joint and stationary siphon – for optimum dryer performance

A proven and sound concept
- Several thousand paper machines equipped in more than 100 years
- For all paper grades, operating speeds and pressures
- The design follows the state of the art in paper machine development
- Steam joints and siphons are considered part of the steam and condensate system
- Stationary siphons have been in use for over 50 years

Results
- Reliable operation
- Light and compact yet rugged
- Adapted to the environment, not vice versa
- Easy carbon ring change
- Long service life
- Low maintenance and repair requirements

Your benefits
- Latest state of the art applied with new machine installations
- A rebuild of existing machines reflects the experience with new machine installations
- Simple design, easy to handle
- Lowest differential pressures and blow-through steam flows, lowest steam losses
- Increased production, fewer production interruptions, better energy usage, low maintenance cost
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The stationary siphon is suitable for every application as long as the steam joint can be soundly mounted to the bearing or gearbox cover. It is likewise suitable for low operating speeds and sump condition as it is for highest operating speeds and rimming condition. In all cases the differential pressure is minimal since it is independent of any centrifugal forces. The siphon shoe remains always in the condensate, flooding of dryers is, therefore, not possible. A temperature stable siphon support pipe, firmly held inside of the steam joint, keeps the siphon shoe at the proper clearance to the dryer shell as set when the dryer is cold.

Optimum effectiveness

Differential pressure and blow-through steam flow stay constant at approx. 150 mbar (2.3 psi) and 5% for all speeds.
In comparison to a rotating siphon at 1400 m/min (4600 fpm) it is approx. 800 mbar (12 psi) and 30%.

Carbon ring seal

- The glide ring compensates for radial misalignment
- The spherical piston compensates angular misalignment
- Large carbon wear reserve
- Status of carbon wear is visible and measurable
- A mechanical stop prevents metal-to-metal contact
- Spring loading for negative operating pressures
**Important features**

- Two anchor rods - due to their length insensible against temperature variations - hold the siphon support pipe securely in its position.
- The entering steam flows along the support pipe on both in- and outsides and the condensate flows back in a separate pipe. Thus, the support pipe is not influenced by temperature differences between steam and condensate and is, therefore, temperature stable.
- The siphon holder can be made horizontally adjustable. This can be advantageous when there is only unreliable information available about the location of the balancing weights inside of the dryer.
- The siphon shoe is made of Teflon and prevents the dryer shell from being damaged, should both get in contact.
- A whirl chamber in the siphon shoe assures safe condensate removal at lowest differential pressures and blow-through steam flows.

**Available sizes**

- **Steam connections:**
  - 50 / 65 / 80 / 100 / 125 / 150 mm
  - 2“ / 21/2“ / 3“ / 4“ / 5“ / 6“
- **Condensate connections:**
  - 32 / 40 / 50 / 65 / 80 mm
  - 11/4“ / 11/2“ / 2“ / 21/2“ / 3“
- **Siphon diameters:**
  - 16 / 19 / 22 / 26 / 29 / 32 mm
  - .63“ / .75“ / .87“ / 1“ / 1.14“ / 1.26“

**Insulation sleeve**

Insulation sleeves protect the dryer bearing from heat

**Carbon ring change**

- Removal of elbow and housing
- Replacement of the carbon ring
- Re-installation of housing and elbow
- Adjustment of stop pins for carbon wear

**Overhaul of the housing**

- Insertion into the piston push-down device
- Removal of the piston
- Replacement of the seal ring

**Special designs**

- Steam inlet only, as a rule on drive side
- Condensate outlet only, as a rule on tending side.
  - On tending side with extended piston length for CARB** (Compact Angular Roller Bearing) bearings, for compensation of dryer expansion

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