Coke Drum Insulation

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Mineral wool is typically used:
- Coke drums are insulated to maintain heat for coking processes.
- Conventional System Failure
  - Coke drums are insulated to maintain heat for coking processes.
  - Mineral wool is typically used:
    - Temperature range to 1200°F.
    - Density of 8 lbs per cu ft.
  - Held in place with steel poultry netting and bands with springs.
Conventional System Failure

- The binder burns out at 350° - 400°F.
- Carbon steel poultry netting corrodes and breaks.
- Banding springs exceed spring life and break.

- The mineral wool slumps and leaves areas on drums exposed.
- This causes head loss and cold spots.
Conventional System Failure

- Aluminum jacket retaining band springs exceed spring life.
- Aluminum fasteners pull out.

- Welded attachments cause drum deformation.
Requirements for the System

- Survive expansion and contraction 8 inches (+ / -) vertical and 8 (+ / -) inches circumferentially.
- Survive 900°F (+ / -).
- Removable and replaceable for inspection.
- Reduce the number of installation days.
- Make operations safer.
- Consistent quality.

Solution: An Engineered System

1. & 2. Stainless steel jacketing allows fasteners to stay attached.
3. A rolled carbon steel angle.
4. Floats on bracket.
Solution: An Engineered System

5. & 6. Stainless steel foil and poultry netting wraps the wool and is pinned to jacketing.

7. Mineral Wool

8. Single folded seam with no fasteners.

Strap System ("Bird Cage")

- Allows insulation to move and still function, with no welding to drum.
“Bird Cage”

- “Bird cage” and panels can be attached in the horizontal or vertical position.

“Bird Cage” Attachment

- Center nozzle is a secure point for stabilizing “bird cage”.

Head Cage Attachment

- Straps on head have welded clips for panel attachment.

Head Insulation

- Fabricated into pads of mineral wool wrapped in stainless steel foil and stainless steel poultry netting.
- These pads are held in place with stainless steel round bar passed through clips on straps.
Head Insulation

- Stainless steel jacketing is fabricated into trapezoids with double folded standing seams for water protection.

Head Insulation

- The jacketing on the head is able to withstand the coke dust wash downs and thermal movements of the drum.
Head Nozzles

- Nozzles get special attention for water tightness and longevity.

Jacketing

- Shell and head jacketing receive a bolted transition connection.
Installation

- Straps start at the head’s center nozzle and align down the shell for floating rings to attach.

Shell Installation

- Panels, chimney affect baffles, and expansion joints are attached to floating rings.
Shell Installation

- Panels are attached with TEK screws through the panel end into the floating ring.

Shell Installation

- More than one row can be installed simultaneously.
Shell Installation

- Rows of panels can be started or stopped as needed.

Installation

- Alterations can be handled at the job site.
Completed installations offer a durable, long life system that allow for inspections.

Installation Video
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