



## Coke Drum Insulation



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## 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.



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## Conventional System Failure



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

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## Conventional System Failure

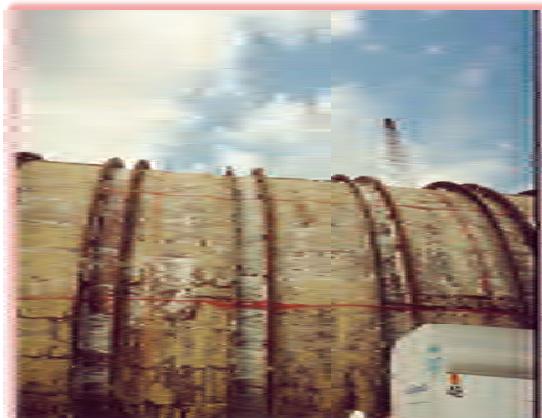
- Aluminum jacket retaining band springs exceed spring life.
- Aluminum fasteners pull out.



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## Conventional System Failure



- Welded attachments cause drum deformation.

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## Requirements for the System

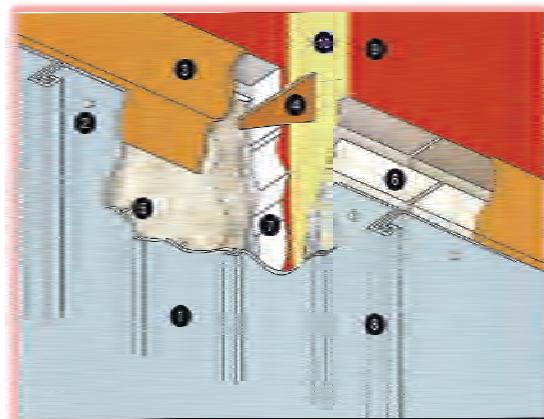
- Survive expansion and contraction 8 inches (+ / -) vertical and 8 (+ / -) inches circumferentially.
- Survive 900°F (+ / -).
- Removable and replaceable for inspection.
- Reduce the number of installation days.
- Make operations safer.
- Consistent quality.

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## Solution: An Engineered System

- 1.&2. Stainless steel jacketing allows fasteners to stay attached.
3. A rolled carbon steel angle.
4. Floats on bracket.



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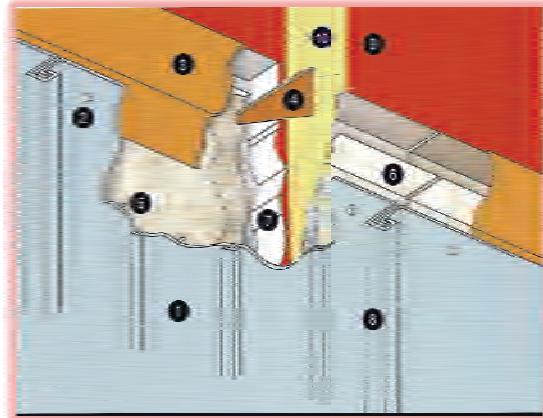


## Solution: An Engineered System

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

7. Mineral Wool

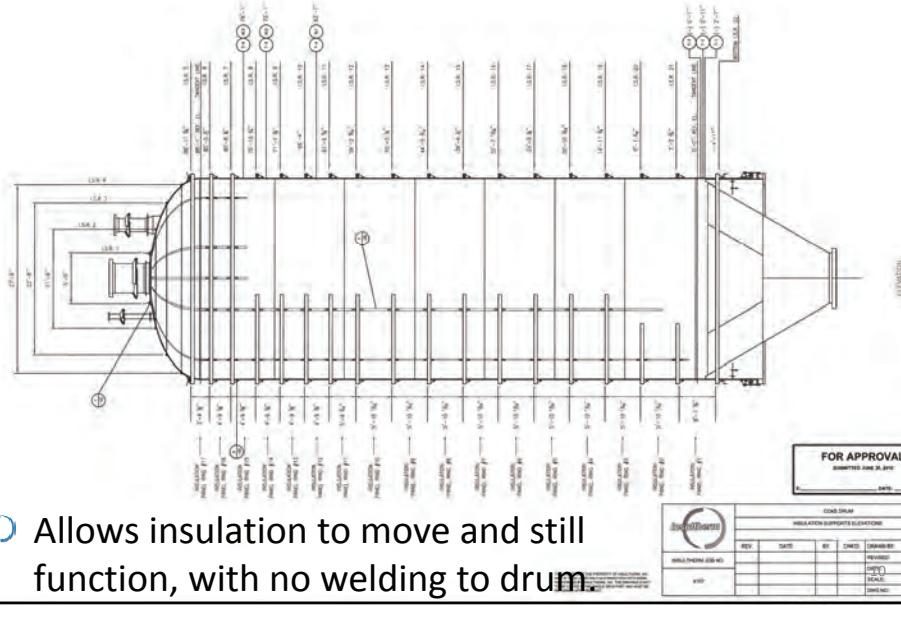
8. Single folded seam with no fasteners.



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## 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.

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## “Bird Cage” Attachment

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



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## Head Cage Attachment



- Straps on head have welded clips for panel attachment.

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## 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.



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## Head Insulation



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

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## Head Insulation

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



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## Head Nozzles



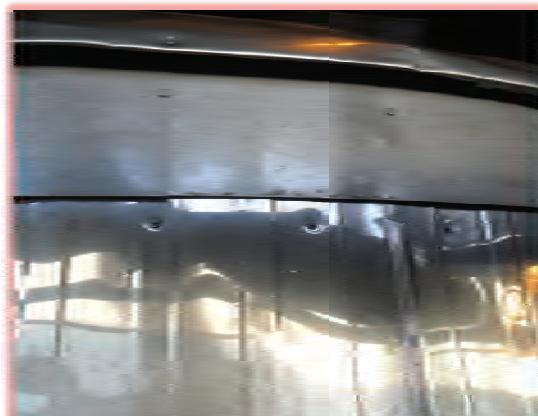
- Nozzles get special attention for water tightness and longevity.

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## Jacketing

- Shell and head jacketing receive a bolted transition connection.



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## Installation



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

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## Shell Installation

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



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## Shell Installation

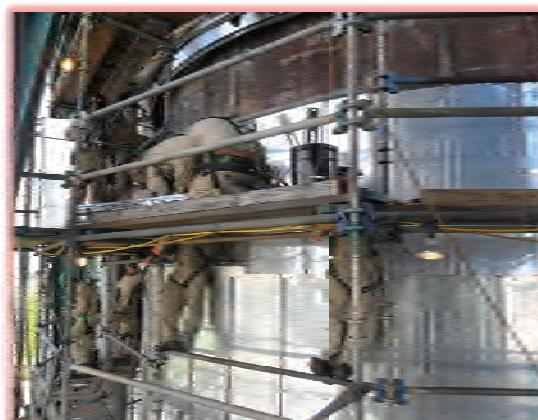


- Panels are attached with TEK screws through the panel end into the floating ring.

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## Shell Installation



- More than one row can be installed simultaneously.

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## Shell Installation



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

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## Installation

- Alterations can be handled at the job site.



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- Completed installations offer a durable, long life system that allow for inspections.

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## Installation Video



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