



Coke Drum Services

Stress Engineering Services, Inc. utilizes state of the art technology and more than 40 years of applied experience to monitor, assess and extend the life and reliability of delayed coker components, especially coke drums, to meet the harsh demands of today's refinery operation, shorter cycles and zero leak tolerances. Our goal is to give operators a better understanding of how to optimize daily operation, inspection, and maintenance practices to maximize production and drum life at the same time.

COKE DRUM CONDITION ASSESSMENT

- How much fatigue life is left in my drums?
- When will they crack?
- How significant are the coke drum bulges?
- Where do I inspect and how often?
- How do I inspect?

Our expert staff has assisted with the design, inspections, fitness-for-service assessments, and acoustic emission (AE) testing of hundreds of coke drums.

COKE DRUM DEFECT ASSESSMENT AND REPAIR

- How long will it take before there is a through wall leak?
- What is the most cost effective method to repair coke drum cracks?

We regularly perform fitness-for-service assessments and help prepare detailed repair procedures for coke drums around the world. AE can also be an essential tool to monitor crack growth when shut-down is not preferred but cracks are known to exist.

COKE DRUM LIFE EXTENSION

- How do process changes, i.e. feed, shorter cycles, operating procedures, impact drum-life?
- Can you maximize production and drum life at the same time?

Our Health Monitoring System (HMS) program helps you optimize how you operate to achieve maximum drum life versus production demands. We have installed many HMS and monitored over 3,000 operating cycles.

NEW COKE DRUM DESIGN

- For new coke drums, how do you improve the life and lower the life-cost?
 - ◆ Design of Shell and Skirt
 - ◆ Material Selection
 - ◆ Fabrication
 - ◆ Shop QA / QC
 - ◆ Acoustic Emission Testing

Our personnel have been involved in the design of the latest state-of-the-art coke drums and can help you design and build drums to last.



Life Extension Program for Coke Drums

COMPLETE SOLUTIONS

1. Design Them Properly - Most drums are designed as pressure vessels only. They are not designed to withstand the thermal cycles and hard coke inside. As a result, many new drums have and will continue to crack in as little as five years.
2. Fabrication - It is critical that the fabricator pay special attention to fabrication procedures, weld profile, and geometry issues.
3. Once installed, inspection intervals should be established and updated based on sound engineering and evaluations of the various damage mechanisms and potential modes of failure.
4. Once cracks are found, , the ability to continue running without repairing should be evaluated based on the best engineering methods. When repairs are needed, various options exist and should be presented displaying quantified improvements.
5. Operation has a direct impact on how fast drums crack; you can improve this through:
 - ◆ **Health Monitoring**
 - ◆ **Daily Operational Optimization**
6. All of the above can dramatically extend drum life of your existing drums.

At Stress Engineering, our mission is to provide professional, results-oriented engineering solutions for the monitoring, analysis, assessment and design of plant equipment. Our goal is to become an extension of your in-house engineering staff, assisting you in solving problems. Through our experience, commitment, expertise and service, we're confident we can take on any problem you have. We have the know-how and drive to find solutions through skill, determination and the knowledge that comes from more than forty years in the problem-solving business. At Stress Engineering, you always get the **Right People**, the **Right Answers** and our **Commitment to Service**.



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