



CIA Inspection Inc.

Volume 2, Issue 2

August 2000

# The Profiler

A NEWSLETTER OF INFORMATION FOR COKE DRUM OPERATORS

## Laser Inspection of Coke Drums - The Real Story

Recent events within the industry have created an environment where more alternatives exist when it comes to remote inspection of delayed coke drums.

We are writing this article to explain the differences and advantages that CIAI's service offers the industry.

As a potential customer to our service for remote coke drum inspection you need to ask yourself: "**WHY DO I WANT TO DO THIS INSPECTION?**", "**WHAT DO I EXPECT TO GAIN FROM THIS SORT OF SERVICE?**" and "**WHY USE CIA?**".

When assessing the alternatives to our service it is easy to gloss over many important points and focus on price. You need to consider in detail what you are buying and what you can expect from these alternatives before you select a supplier.

For years, CIAI's service has been evolving from the relatively simple process of collecting profile data to include sophisticated analysis, interpretation and presentations. With a history of 250 drum scans, we now consider ourselves partners with our clients in the management of coke drum reliability.

We have furthered this evolution through strengthened alliances with industry-leading companies like **Stress Engineering** and **Chicago Bridge & Iron** to offer a total package to our clients. With this team, we can offer a complete range of services including, Finite Element Modeling, strain gauging, customized weld repair or course replacement procedures, and general consultation. The overall objective is

to significantly improve the reliability of your DCU.

### *A Closer Look at the Fine Points of Remote Coke Drum Inspection*

- Our service includes a safe and comfortable **ground-level control room** where our operators control the equipment and your inspectors can participate in real-time. Since the control room is off the coker, it is not affected by ongoing operation of adjacent drums.
- Our service was designed and built to **work in an operating coker**. It is designed for the steam and high temperatures in a drum immediately after it is cut and incorporates explosion-proof and pressure-purged components to allow operation in the atmosphere of an unblinded coke drum. Since no equipment is mounted to the top or bottom drum flanges, our service is not effected by water or oil which frequently drips out of the bottom of the drum or the steam and heat rushing out of the top.
- CIAI's service is a **combined laser and video inspection**. We scan drums simultaneously with a laser and a video camera from the same computer-controlled positioner and we can even point the laser within video images to register features. This way, our laser map and visual images are always in sync and we can properly register scans taken in subsequent years. Erroneous results will occur if the only basis for interpretation is the laser scan information. Our video results are

second to none. By combining a zoom lens camera with the computer-controlled laser positioner moving up and down inside the drum, we can look at tiny features from different angles and always have the correct elevation and azimuth logged on the video image.

- Finally, we analyze the results of the scan and **report on our findings before we leave the site**. A formal report is submitted, including trending analysis, remote video assessment, comparison with our extensive historical database of different drums and recommendations for follow-up work. All of this is typically summarized in a site meeting immediately following the inspection. This quick turnaround of inspection findings is imperative in instances where follow up action, such as crack investigation, is required.

Like any service business where you have alternatives, you need to seriously and thoroughly consider what you are buying and why you want to do it. Careful consideration of the above points clearly points out the advantages of a CIAI coke drum inspection.

CIAI will continue to offer competitive, high quality coke drum inspection services, and will not be undersold especially when you consider the true value of what is being offered.

## West Meets East as CIA travels to Asia



*Rick Clark with two Petronas employees at the bottom deck of the coke drums.*

As CIA Inspection continues to expand our unique coke drum inspection service worldwide, we had the opportunity to break into the Asian market. CIA inspected on the coke drums at the Petronas Penapisan Refinery in Melaka, Malaysia.

This state-owned oil company is also the namesake for the title of the tallest buildings in the world. As of January 2000, Kuala Lumpur's Petronas Towers hold the title as the tallest buildings in the world. Both towers reach a total height of 1,483 feet.

The towers took five years to build and more than 7,000 people took part in the construction of the twin towers. For the core structural support, a high-strength

concrete that is three times stronger than normal concrete and twice as effective as steel in sway reduction was chosen. Each tower contains 2 million square feet of office space. The complex also contains an art gallery, an 840-seat concert hall and a prayer room called a surau. No one lives in the buildings.



*Kuala Lumpur's Petronas Towers – the tallest buildings in the world.*

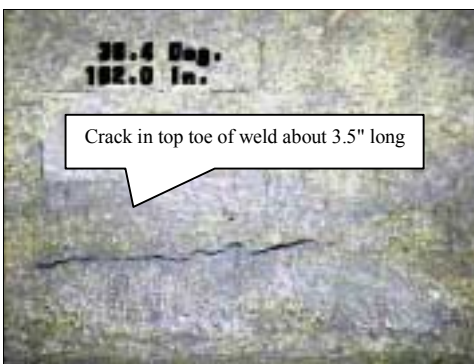
## Remote Visual Inspection Capabilities

CIAI offers a unique remote visual inspection service that is an integral part of the whole coke drum reliability package.

Our visual inspection provides the remote capability to inspect the vessel

surface with a high resolution camera operating through a 14x zoom lens picking up visual features such as "stretch marks", "orange peel", "striations", cladding defects, interior indications of cracks and other features of the vessel surface. Nozzles can be viewed for coking and if the nozzle to shell weld is clean this area can be viewed for in-service anomalies.

The elevation and azimuth are permanently recorded on the videotape and correspond directly with the laser image map. Both tools are used together to get a clear indication of the vessel condition. A VHS copy of the tape is left with the customer at the conclusion of the inspection. A certified API inspector reviews all video footage and a detailed report is given to the site before the crew leaves the inspection.



*Shows prominent crack in top toe of weld - Ultrasonic evaluation determined crack to be 0.328" deep extending at least 0.250" into pressure boundary.*

## CIA's SPI Boom



CIA's SPI (Special Purpose Inspection) Boom - made its debut at the Spring API in San Diego. Pictured above in the left hand corner with the light on the top of it, this unique device is designed for industrial applications requiring deployment of sensors, cameras, etc. into a confined, hazardous environment.

Using two spring tempered 301 stainless steel tapes, the boom can deploy to any length up to 60 feet, yet compacts to less than 5% of its maximum extended length.

If you would like more information on the SPI Boom, please call Rick Clark at 905-692-3678.

## Web Site Update

If you haven't checked out our web site lately - you should! We've made some very interesting changes and we always welcome your comments!!! You can find us at [www.cia-inspection.com](http://www.cia-inspection.com).



### CIA Inspection Inc.

Head Office:  
2399 Golf Club Road  
Hannon, Ontario Canada LOR 1P0

Phone: 905-692-3678  
Fax: 905-692-5410  
Email: [rclark@cia-inspection.com](mailto:rclark@cia-inspection.com)  
Web site: [www.cia-inspection.com](http://www.cia-inspection.com)