



February 2017



Carmagen. Partnering in Engineering Excellence.

This article continues our short series on what our staff feel are top ways that a refinery may consider to help weather the current market conditions.

Top Ways a Refinery Can Use to Help Weather Current Market Conditions

By David Dean

As far as reliability and hence availability for production is concerned, this can be achieved by operating the plant within its design parameters and in part through the implementation of a well-managed inspection program. There are many reference tools available to the refinery industry, which include several well written API standards and recommended practices. The experience and professional knowledge of refinery inspection and engineering personnel is paramount to the successful and cost effective implementation of refinery programs. Training of such personnel has to be structured and complete.

The following lists several approaches and programs which I know have had beneficial and positive financial impacts:

1. Steam Trap Program – If implemented refinery wide, this will produce significant energy and associated cost savings. As winter approaches, for example, the performance of steam tracing on equipment is very important. A single leaking steam trap can cost a lot. Failure of a steam trap to operate can cause line blockage, etc.
2. External Insulation Program – The efficient consumption and recovery of energy related to maintaining hot and cold process temperatures, apart from the need for personnel protection, is essential. Maintenance of external insulation systems is essential to achieve this. It is also important that insulation outer weather protection systems are maintained to a high standard so as to prevent external corrosion under insulation (CUI), which can be manifested in many forms and be hidden for quite some time.
3. Equipment Design and Construction Quality Assurance Program – Design it right, build it right, and maintain it right. These are essential components which contribute to equipment integrity and reliability. Design codes are a minimum, and relying on the authorized inspector to act in the best interests of a refinery during the construction of a pressure vessel, for example, is naive. A refinery can positively influence the design, construction, and maintenance standards of its equipment through supplemental engineering standards and practices, and by involving experienced in-house or third party engineering, construction, and inspection personnel early enough in the process such that their recommendations can be implemented in a timely manner.

Upcoming Training Courses

- **API 510 Pressure Vessel Inspection**
March 14-16, 2017
Fort Erie, Ontario, Canada
- **API 936 Refractory Inspection & Code**
March 21-23, 2017
Fort Erie, Ontario, Canada
- **API 650 Storage Tank Design & Maintenance**
April 4-6, 2017
Cold Lake, Alberta, Canada
- **API 650 Storage Tank Design & Maintenance**
April 18-20, 2017
Edmonton, Alberta, Canada

For more information, see our website at www.carmagen.com.

Work Highlights

Analytical

- *Providing analytical chemist research and consulting support regarding naphthenic acid and sulfur corrosion.*

Process

- *Completed Independent Technology Assessment of third-party proprietary system/device developed for economical low-level heat recovery and process integration for a major licensor. Visited the technology holder's pilot facility and accessed technical data and performance information. This technology appears to have a broad potential.*

Reforming

- *Performed technical support and onsite catalyst regeneration support for a reformer in South America. Also provided technical reforming support to a client in Central America.*

4. Equipment Inspection Program for Major Plant Items and Piping Systems – Know the process, know the design, know the degradation processes, know the rates of degradation, and use this information to manage availability and planned and scheduled inspections, replacement, and/or maintenance.
5. Equipment Failure Root Cause Analysis and Corrective Action Program – There are various approaches which can be taken to facilitate an investigation and derive a solution to an equipment problem. There are pertinent industry codes and standards which can be referenced. The involvement of a team comprising representatives from Operations, Engineering, Inspection, Maintenance, and personnel with specialized knowledge when required is recommended.
6. Personnel – Cultivate personnel ownership and loyalty. This I consider to be essential if the best interests of any company are to be served. Institute structured training programs to suit the needs of individuals within functional groups. Consider the collective capabilities of functional groups.

About the Author

David Dean has over 40 years of broad mechanical, inspection, project, construction, and maintenance engineering experience in the oil refinery and petrochemical process industries. His representative positions have included mechanical integrity program development and management, inspection engineer and chief inspector, turnaround mechanical support engineer, project field engineer and project manager. Personal attributes include excellent problem solving capabilities, planning and execution skills, interpersonal relationships across a range of working levels, excellent written and verbal communication, and coordination experience both within and across work groups in a variety of situations.

Please contact Vince Carucci (vcarucci@carmagen.com) if you'd like more information on Carmagen's expertise in this area.

