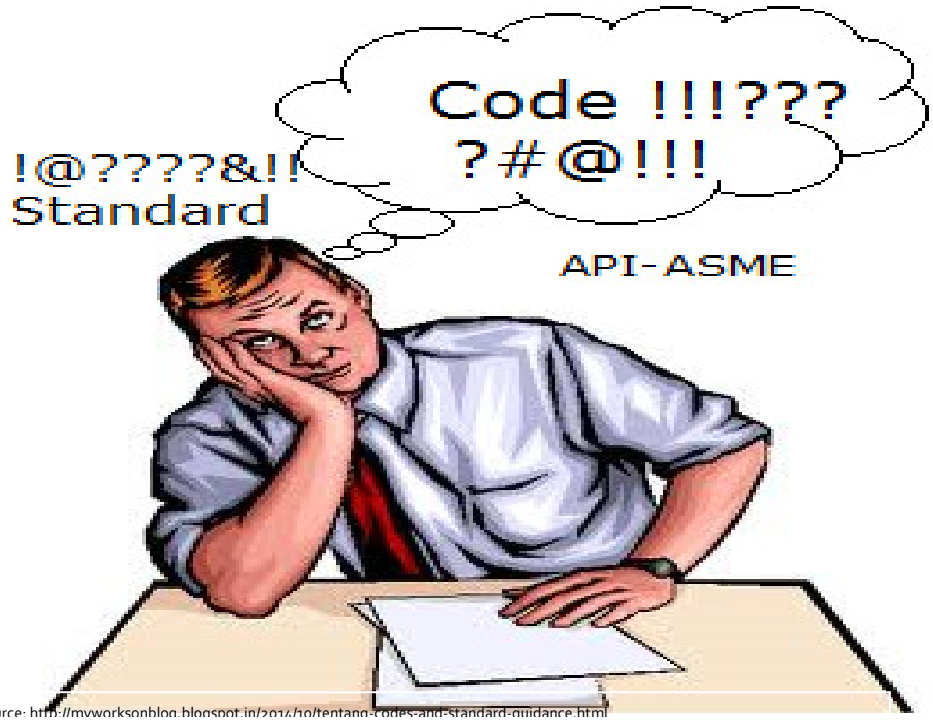

Source: http://myworksonblog.blogspot.in/2014/09/tentang-codes-and-standard-guidance.html

IIChE-NRC Newsletter

Jul-Aug 2016

INSPECTION OF REFINERY EQUIPMENTS

Codes that govern..

Compiled by Karthik Prakash

Inspection of equipment is one of the most core activity to ensure and improve the reliability of production and when it comes to refinery and hydrocarbon it becomes even more critical. Codes and standard are developed to standardized, guide and ensure quality and complains. API Codes are one such most acceptable codes and following is the brief account of API codes related to inspection.

API 510, Pressure Vessel Inspection Code: Maintenance Inspection, Rating, Repair, and Alteration

Covers the maintenance inspection, repair, alteration, and rerating procedures for pressure vessels used by the petroleum and chemical process industries. Applies to vessels that have been placed in service and have been inspected by an authorized inspection agency or repaired by a repair organization. Except as provided in the code, the use of the code is restricted to organizations that employ or have access to engineering and inspection personnel or organizations that are technically qualified to maintain, inspect, repair, alter, or rerate pressure vessels. Pressure vessel inspectors are to be certified as stated in the code.

API 570, Piping Inspection Code: Inspection, Repair, Alteration, and Rerating of In-Service Piping Systems.

Covers inspection, repair, alteration, and rerating procedures for in-service metallic piping systems. Establishes requirements and guidelines that allow owner/users of piping systems to maintain the safety and mechanical integrity of systems after they have been placed into service. Intended for use by organizations that maintain or have access to an authorized inspection agency, repair organization, and technically qualified personnel. Piping inspectors are to be certified as stated in this inspection code.

RP 572, Inspection of Pressure Vessels

Covers the inspection of pressure vessels. It includes a description of the various types of pressure vessels and the standards that can be used for their construction and maintenance. The reasons for inspection, the causes of deterioration, the frequency and methods of inspection, the methods of repair, and the preparation of records and reports are also covered.

RP 573, Inspection of Fired Boilers and Heaters

IN THE FOLDS

Provides guidance on the inspection of fired boilers and heaters. Promotes proactive inspection procedures and to thereby prevent equipment failures and increase overall equipment reliability and plant safety.

RP 574, Inspection Practices for Piping System Components

Covers inspection practices for piping, tubing, valves (not including control valves), and fittings used in petroleum refineries and chemical plants. Although not specifically intended to cover specialty items, many of the inspection methods described are applicable to items such as control valves, level gages, instrument control columns, etc.

RP 575, Inspection of Atmospheric & Low Pressure Storage Tanks

Covers the inspection of atmospheric and low-pressure storage tanks that have been designed to operate at pressures from atmospheric to 15 psig. Includes reasons for inspection, frequency and methods of inspection, methods of repair, and preparation of records and reports. This RP is intended to supplement API Standard 653, which covers the minimum requirements for maintaining the integrity of storage tanks after they have been placed in service.

RP 576, Inspection of Pressure Relieving Devices

Describes automatic pressure-relieving devices commonly used in the oil and petrochemical industries. As a guide to the inspection and control of these devices in the users' plant, it is intended to ensure their proper performance. Covers such automatic devices as spring-loaded pressure relief valves, pilot-operated valves, and rupture disks.

RP 578, Material Verification Program for New and Existing Alloy Piping Systems

Provides guidelines for a material quality assurance system to verify the consistency between the nominal compositions of alloy components within the pressure envelop of a process piping system with the selected or specified construction materials to minimize the potential for catastrophic release of toxic or hazardous liquids or vapors. Presents material control and verification programs on ferrous and nonferrous alloys during construction, installation, maintenance, and inspection of new and existing process piping systems covered under the ASME B31.3 and API 570 codes.

RP 579, Fitness-For-Service

Describes standardized fitness-for-service assessment techniques for pressurized equipment used in the petrochemical industry. Fitness-for-service is defined as the ability to demonstrate the structural integrity of an in-service component containing a flaw. This publication is intended to supplement the requirements in API 510, 570, and 653 by: (i) ensuring safety of plant personnel and the public while older equipment continues to operate; (ii)providing technically sound fitness-for-service assessment procedures to ensure that different service providers furnish consistent life predictions; and (iii) helping optimize maintenance and operation of existing facilities to maintain the availability of older plants and enhance their long term economic viability.
The assessment procedures can be used for fitness-for-service evaluation and rerating of pressure vessels designed and constructed to the ASME Boiler and Pressure Vessel Code; ASME B31.3 Piping Code; and aboveground storage tanks API 650 and 620.

API 581, Base Resource Document—Risk Based Inspection

API has researched and developed an approach to risk-based inspection (RBI). This document details the procedures and methodology of RBI. RBI is an integrated methodology that uses risk as a basis for prioritizing and managing an in-service equipment inspection program by combining both the likelihood of failure and the consequence of failure. The following are three major of the RBI program: (i) Provide the capability to define and quantify the risk of process equipment failure, creating an effective tool for managing many of the important elements of a process plant; (ii) Allow management to review safety, environmental, and business-interruption risks in an integrated, cost-effective manner; (iii) Systematically reduce the likelihood and consequence of failure by allocating inspection resources to high risk equipment. The RBI methodology provides the basis for managing risk, by making informed decisions on the inspection method, coverage required and frequency of inspections. In most plants, a large percent of the total unit risk will be concentrated in a relatively small percent of the equipment items. These potential high-risk components may require greater attention, perhaps through a revised inspection plan. With an RBI program in place, inspections will continue to be conducted as defined in existing working documents, but priorities and frequencies will be guided by the RBI procedure. The RBI analysis looks not only at inspection, equipment design, and maintenance records, but also at numerous process safety management issues and all other significant issues that can affect the overall mechanical integrity and safety of a process unit.

Std 653, Tank Inspection, Repair, Alteration, and Reconstruction

Covers the inspection, repair, alteration, and reconstruction of steel aboveground storage tanks used in the petroleum and chemical industries. Provides the minimum requirements for maintaining the integrity of welded or riveted, non-refrigerated, atmospheric pressure, aboveground storage tanks after they have been placed in service.

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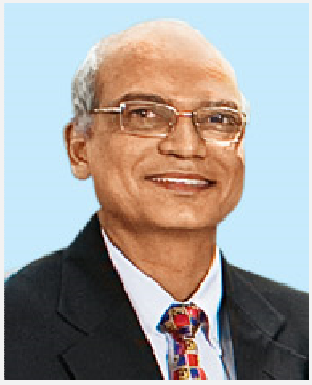
Mr. Shyam Bang



Mr. Shyam Bang President, IIChE serves as an Executive Director of Manufacturing & Supply Chain Operations at Jubilant Life Sciences Limited. Mr. Bang has been with Jubilant Life Sciences since February 1, 1997. He served as Technical Manager of Jubilant Life Sciences. He served as Head of R&D Formulations at Jubilant Life Sciences Limited. He was instrumental in developing new technologies, developing and managing projects and developing new business opportunities for Jubilant Life Sciences. He served as President of Enpro India Limited. He has an experience of 43 years with various industries. He started his career with Indo Berolina Industries, Mumbai, a design engineering company. Mr. Bang worked with Jaycee Chemicals Pvt Ltd., Mumbai and Pure Chem Co Ltd., Bangkok where he managed various chemical projects. He has been an Executive Director of Jubilant Life Sciences Limited since November 1, 1998. He serves as Director of U. C. Gas Engineering Limited, Jubilant Infrastructure Limited and Asia Infrastructure Development Co. Private Limited. He holds B.Tech degree. Mr. Bang graduated as M.Tech in Chem Engg. from Nagpur University in 1971 and Masters in Chemical Engineering (Process Development) from UDCT, Mumbai in 1973.

IICHE-NRC EVENTS

4 th Council Meeting of IIChE (9 July 2016) Attended by Council members

4th council meeting of IIChE was held at IIChE NRC Delhi on 7 July attended by council members. Meeting was successfully conducted followed by plantation of "Royal Palm" by Mr Shyam Bang, President, IIChE and plantation of "Silver Oak" by Prof P De, Hony. Secy., IIChE . Award were also presented during council meeting.

Upcoming events

Formal opening of Student Chapter at Shiv Nadar University, Uttar Pradesh (19 Aug 2016)
Even will include:-

- Meeting with vice chancellor
- Introduction by Mr. Abhijit Pal
- Presentation by Dr. S N Chakravarty and Mr Abhijit Pal
- Award on Student Chapter Certificate and
- Chai Pe Charcha

43rd Annual General Meeting (27 Aug 2016)
Even will include:-

- Welcome address by chairman
- Presentation of secretary's report and NRC account
- Formation of new executive committee and appointment of auditors
- Award on Student Chapter Certificate and
- Award of NRC Golden Jubilee Scholarship

CHEMICAL ENGINEERING NEWS

Compiled by Karthikeyan Prakash

China drafts rules to lower natural gas transportation costs

China's state planner has proposed new rules regulating the cost of transporting natural gas by pipeline that analysts say will lower prices in order to boost consumption of the cleaner-burning fuel.The government will use an "allowed cost plus reasonable margin" scheme in setting the transportation cost for natural gas.

Essar Oil's Vadinar refinery recognized as "Refinery of the Year" by PetroFed

Essar Oil's 20 MMtpy Vadinar refinery received the coveted "Refinery of the Year" award by Petroleum Federation of India (PetroFed).
Mr. Lalit Kumar Gupta, Managing Director & Chief Executive Officer, and Mr C. Manoharan, Director-Refinery, accepted the award at a glittering ceremony in New Delhi on 8 August, 2016. This is the second instance that the refinery has received the award, after having won it for the first time in 2011.

Refiners on track to spend record on US clean fuel standards

Major refiners like Valero Energy Corp. are on track to pay record amounts this year for credits to comply with US renewable fuel rules, corporate filings show, a trend that hurts profits and has some looking to export more to avoid the cost.
Refiners and fuel importers are required to meet a US biofuel quota of roughly 10% through blending products like ethanol into gasoline and diesel. If they fall short, they can buy credits generated by companies in compliance. But the cost of the credits, known as Renewable Identification Numbers (RINs), has jumped.

Iraq will boost oil exports after agreement on Kirkuk fields

Iraq, OPEC's second-biggest producer, will increase crude exports by about 5% in the next few days after an agreement to resume shipments from three oil fields in Kirkuk.

Numaligarh refinery plans $3 B expansion to treble capacity

Numaligarh refinery plans $3 B expansion of its 60 Mbpd refinery in Assam treble capacity.

EIA: Energy-related CO2 emissions from natural gas surpass coal as fuel use patterns change

According to the US Energy Information Administration (EIA), energy-associated CO_2 emissions from natural gas are expected to surpass those from coal for the first time since 1972. Even though natural gas is less carbon-intensive than coal, increases in natural gas consumption and decreases in coal consumption in the past decade have resulted in natural gas-related CO_2 emissions surpassing those from coal. The EIA's latest Short-Term Energy Outlook projects energy-related CO_2 emissions from natural gas to be 10% greater than those from coal in 2016.

European Commission begins Phase II review of Dow/DuPont merger

DuPont and The Dow Chemical Company confirmed that the European Commission (EC) has initiated a Phase II review for the proposed merger of equals transaction of the two companies. As stated previously, the companies expected a thorough review and are working closely with relevant regulators, including the EC. The companies continue to believe the merger is procompetitive and good for customers and consumers.

STUDENT'S CORNER

Things to Remember

by Karthik

Standard Condition for Gases

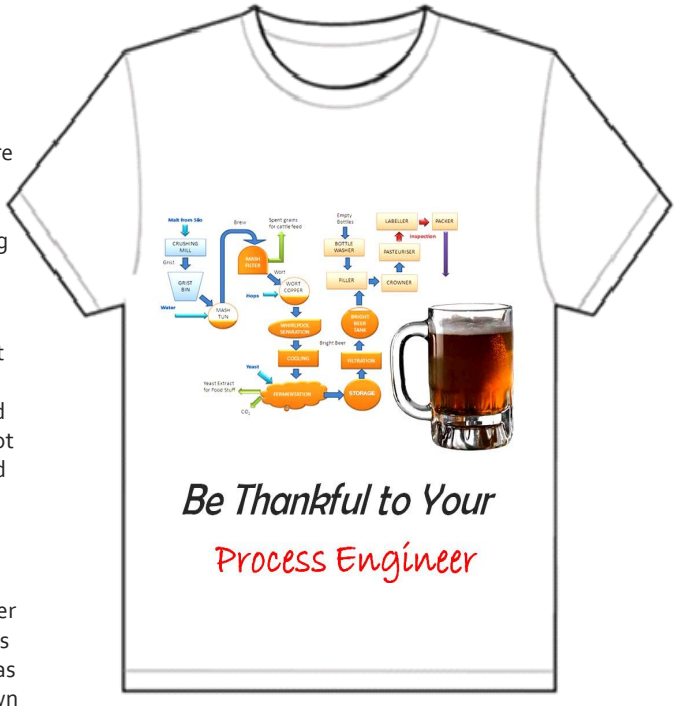
Standard Temperature and Pressure (STP) and Normal Temperature and Pressure (NTP) has always been haunted many of the students and working professionals. There are always confusion among set of temperature and pressure conditions (0^oC and 1 atm or 20^oC and 1 atm, or 25^oC and 1 atm or 0^oc and 1 bar or something else)

It is always more convenient to use STP is place of NTP (more likely to vary country to country) academically but what we have been using in industry cannot be changed so easily to standardize all across. Moreover IUPAC have also updated the definition from 0^oC and 1 atm to 0^oC and 1 bar sometime in 1982 and recommend to use later one. But the previous one is already used so much it is not easy task again. IUPAC further says "Note that flow meters calibrated in standard gas volumes per unit time often refer to volumes at 25^oC, not 0^oC."

So the problems remains the same and not expected to get resolved in near future. The best and only way to work with accurate information is to define STP and NTP whenever used and ask for the same from information supplier whenever in doubt while dealing with gas volume of flows. As long as same set of conditions are used to define Standard or Normal condition there is no problem since one gas volume will corresponds to one set of condition provided the conditions are known without any confusion.

T-Shirt Quote

by Hari Bajpai



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