

Lifetime of Pre-1930 Steel Cylinders

Outline of the issue

In June 2002, Taylor Wharton issued “An open letter to the Compressed Gas Industry” recommending discontinuing the use of carbon steel cylinders manufactured before 1930, the so-called “first generation” cylinders. The reason invoked is a potential fragmentation on failure. The newer cylinders, the third and fourth generation made from chrome molybdenum alloy steels are to be preferred since they are of the “leak before break” type.

The question

Should the gas industry withdraw “first generation” cylinders from the market?

EIGA’s view

EIGA carefully reviewed the Taylor Wharton document within the expert cylinder-working group, and strongly objected to its conclusions. To the best of EIGA’s knowledge, the so-called “first” and “second” generation cylinders have been in satisfactory service for more than 60 years without incidents of the sort referred to in the open letter from Taylor Wharton.

Evidently, technological developments and innovations in the manufacturing process have greatly contributed to the production of high performance, lightweight “third” and “fourth” generation cylinders without compromising safety. It should be noted that safety was not the driving force behind the development of “third” and “fourth” generation cylinders.

The equivalence of safety between the generations of cylinders has been maintained. This is due to these older cylinders being manufactured from low strength steels (higher ductility), are used under less demanding wall stresses and are more resistant to corrosion, for example, a thicker wall.

Provided the cylinders are re-tested at the appropriate, specified intervals and maintained in a satisfactory condition between the re-test intervals, the cylinders can continue to be used without any lifetime restrictions.

Similar restrictions were proposed by the authorities of a European Country to the use of old cylinders. An industrial gases company, a member of EIGA, conducted a series of experiments, which successfully addressed these concerns. This study clearly demonstrated that “first” and “second” generation cylinders can safely continue in service.

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