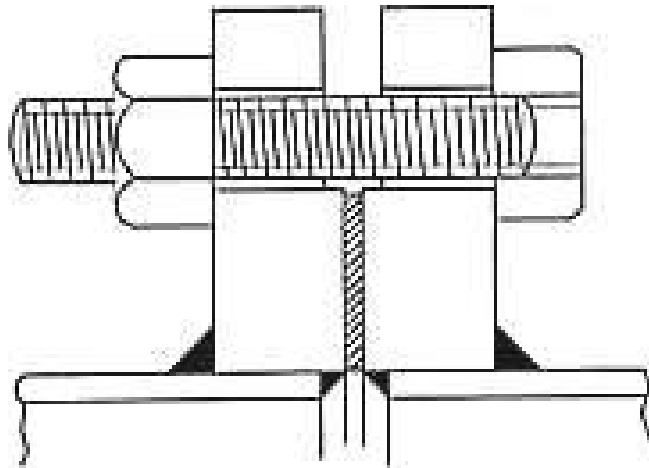


COULD THIS HAPPEN ON YOUR PLANT?

When a plant came back on line after a long shutdown it was found that some of the flanges had been secured with stud bolts and nuts instead of ordinary bolts and nuts, and that some of the stud bolts were located so that there was more protruding on one side than on the other. In some cases one of the nuts was secured by only two or three threads.



Nobody knew why this had been done. Probably one nut was tighter than the other and, in attempting to tighten this nut, the whole stud was screwed through the second nut. Whatever the reason it produced a dangerous situation as the pressure on different parts of the flange was not the same. The plant contained a liquid similar to gasoline in its properties, at a pressure of about 10 bar (150 psig) and a temperature of about 150°C (300°F), much the same as the plant at Flixborough where a leak exploded in 1974, killing 28 people.

Stud bolts should not be indiscriminately mixed with ordinary bolts or used in their place, as they are often made of different grades of steel and produce a different tension.

On the plant concerned, the eight-bolt joints the bolts were changed one bolt at a time. Four-bolt joints were secured with clamps until the next shutdown.

When visiting another plant I saw nuts held by just two or three threads as the bolts were too short. No one had noticed them or, if they had they did nothing about them. In this case the pressure was low.

Look out for any similar installations on your plant. If you find any nuts held by only some of its threads I shall be interested to know (T.Kletz@Lboro.ac.uk). I don't want to know the location but I would be interested to know what was inside the pipe.

If a thing is not exactly right it will be vastly wrong. - John Buchan. He was writing about life at sea but it applies to oil and chemical plants as well. We need to run a 'tight ship'.