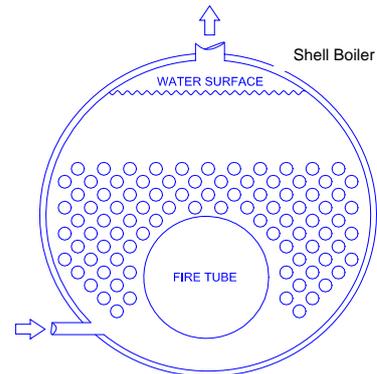


## CLAYTON BOILER SAFETY BULLETIN

### ***Clayton Industries explain the risks involved in using the common shell (or firetube) type boiler and compares this design with the inherent safety characteristics of the Clayton Steam Generator.***

Unless you have experienced it personally, the enormous destructive potential of steam is hard to imagine. In a shell boiler a large mass of water is stored in a cylindrical vessel and heated to form steam. A faulty shell boiler is just like a time bomb. It can produce a near instantaneous, uncontrolled, release of energy.

Every year explosions of shell boilers happen all over the world and some of these result in loss of life. Fortunately, due to government legislation and established design codes as well as proper operator training and modern control systems these explosions are now much less frequent than in days gone by. But there can be no cast iron guarantee that a disaster will not occur. Overheating caused by low water is the most frequent cause of boiler explosions, or other damage. Statistics from the US National Board of Boiler and Pressure Vessel Inspectors reveal that in 1999 there were 397 accidents which were attributed to low water conditions in steam boilers.



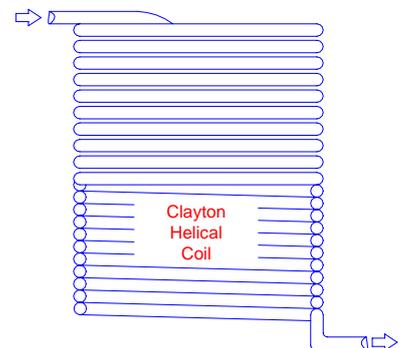
The most important rule for the safe operation of a shell boiler is to maintain the correct water level at all times.

In contrast a **Clayton Steam Generator** does not have a water level and it is not possible to have a steam explosion with the Clayton design.

Clayton famously demonstrated this when they tested a 500 boiler horsepower steam generator to destruction after removing all of the safety devices from the unit. This demonstration took place in front of an invited audience, including inspectors from the Technical Standards and Safety Authority of Ontario, Canada and the whole procedure was recorded on video.



The operating principle of the Clayton Steam Generator is very different from that of the common shell boiler. A shell boiler uses natural convection and subsequently a large amount of energy in the form of hot water must be stored within the shell. The Clayton Steam Generator, by comparison, uses forced circulation of water through a helical coil which is heated to produce steam. It follows therefore that there is relatively little water in a Clayton Steam Generator contained within the coil. Even if the coil itself is damaged in any way this cannot produce a dangerous condition.



The Clayton Steam Generator design has developed over the past 70 years and is used in all industrial and commercial steam applications.

The range of sizes available have been constantly expanded and **it is now no longer necessary to choose a shell boiler where up to 10 tonnes per hour of steam is required** from a single unit.

For further information on the safety aspects of the Clayton Steam Generator design contact your local Clayton representative or visit [www.claytonindustries.com](http://www.claytonindustries.com).