

## Control Valves for Forklift

Forklift Control Valves - The first automatic control systems were being used more than two thousand years ago. In Alexandria, Egypt, the ancient Ktesibios water clock built in the 3rd century is thought to be the first feedback control machine on record. This particular clock kept time by way of regulating the water level in a vessel and the water flow from the vessel. A common style, this successful equipment was being made in a similar fashion in Baghdad when the Mongols captured the city in 1258 A.D.

Throughout history, a variety of automatic devices have been used so as to simply entertain or to accomplish specific tasks. A common European style in the seventeenth and eighteenth centuries was the automata. This piece of equipment was an example of "open-loop" control, featuring dancing figures that would repeat the same task repeatedly.

Closed loop or otherwise called feedback controlled equipments comprise the temperature regulator common on furnaces. This was actually developed during 1620 and attributed to Drebbel. Another example is the centrifugal fly ball governor developed in 1788 by James Watt and used for regulating steam engine speed.

The Maxwell electromagnetic field equations, discovered by J.C. Maxwell wrote a paper in 1868 "On Governors," that was able to explain the exhibited by the fly ball governor. So as to describe the control system, he utilized differential equations. This paper demonstrated the usefulness and importance of mathematical models and methods in relation to understanding complex phenomena. It also signaled the start of mathematical control and systems theory. Previous elements of control theory had appeared before but not as dramatically and as convincingly as in Maxwell's analysis.

In the next one hundred years control theory made huge strides. New developments in mathematical techniques made it feasible to more precisely control considerably more dynamic systems compared to the first fly ball governor. These updated methods consist of different developments in optimal control in the 1950s and 1960s, followed by progress in stochastic, robust, adaptive and optimal control techniques in the 1970s and the 1980s.

New applications and technology of control methodology have helped produce cleaner auto engines, more efficient and cleaner chemical processes and have helped make communication and space travel satellites possible.

Initially, control engineering was performed as a part of mechanical engineering. Additionally, control theory was initially studied as part of electrical engineering as electrical circuits could often be simply explained with control theory methods. Nowadays, control engineering has emerged as a unique practice.

The first controls had current outputs represented with a voltage control input. To implement electrical control systems, the correct technology was unavailable then, the designers were left with less efficient systems and the option of slow responding mechanical systems. The governor is a very effective mechanical controller which is still usually utilized by several hydro plants. In the long run, process control systems became accessible previous to modern power electronics. These process control systems were often used in industrial applications and were devised by mechanical engineers using pneumatic and hydraulic control machines, lots of which are still being used these days.