

Control Valves for Forklift

Forklift Control Valve - The first automatic control systems were being utilized over two thousand years ago. In Alexandria Egypt, the ancient Ktesibios water clock made in the 3rd century is considered 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 popular design, this successful machine was being made in a similar fashion in Baghdad when the Mongols captured the city in 1258 A.D.

Different automatic machines throughout history, have been used so as to carry out particular jobs. A popular desing used all through the 17th and 18th centuries in Europe, was the automata. This piece of equipment was an example of "open-loop" control, consisting dancing figures that will repeat the same job again and again.

Closed loop or feedback controlled devices include the temperature regulator common on furnaces. This was actually developed in 1620 and attributed to Drebbel. Another example is the centrifugal fly ball governor developed during 1788 by James Watt and utilized for regulating the speed of steam engines.

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

Within the following 100 years control theory made huge strides. New developments in mathematical methods made it possible to more precisely control considerably more dynamic systems compared to the original fly ball governor. These updated methods comprise various developments in optimal control in the 1950s and 1960s, followed by progress in stochastic, robust, optimal and adaptive control methods in the 1970s and the 1980s.

New applications and technology of control methodology has helped produce cleaner engines, with cleaner and more efficient methods helped make communication satellites and even traveling in space possible.

In the beginning, control engineering was performed as a part of mechanical engineering. Additionally, control theory was firstly studied as part of electrical engineering because electrical circuits could often be simply described with control theory methods. Nowadays, control engineering has emerged as a unique discipline.

The very first controls had current outputs represented with a voltage control input. So as to implement electrical control systems, the right technology was unavailable at that time, the designers were left with less efficient systems and the alternative of slow responding mechanical systems. The governor is a very effective mechanical controller that is still often used by several hydro factories. In the long run, process control systems became accessible prior to modern power electronics. These process controls systems were often used in industrial applications and were devised by mechanical engineers using pneumatic and hydraulic control devices, a lot of which are still being used nowadays.