

Control Valves for Forklift

Forklift Control Valve - The first automated control systems were being used more than two thousand years ago. In Alexandria, Egypt, the ancient Ktesibios water clock built in the third century is thought to be the very first feedback control tool on record. This clock kept time by regulating the water level within a vessel and the water flow from the vessel. A popular design, this successful machine was being made in a similar manner in Baghdad when the Mongols captured the city in 1258 A.D.

A variety of automatic machines throughout history, have been used so as to complete particular tasks. A popular style used in the 17th and 18th centuries in Europe, was the automata. This particular machine was an example of "open-loop" control, consisting of dancing figures that would repeat the same task over and over.

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

J.C. Maxwell, who discovered the Maxwell electromagnetic field equations, wrote a paper in 1868 "On Governors," which can describe the instabilities demonstrated by the fly ball governor. He made use of differential equations in order to describe the control system. This paper demonstrated the importance and helpfulness of mathematical models and methods in relation to understanding complex phenomena. It likewise signaled the start of mathematical control and systems theory. Previous elements of control theory had appeared earlier but not as dramatically and as convincingly as in Maxwell's analysis.

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

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

Initially, control engineering was performed as a part of mechanical engineering. As well, control theory was initially studied as part of electrical engineering since electrical circuits can often be simply explained with control theory methods. Nowadays, control engineering has emerged as a unique discipline.

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 really effective mechanical controller that is still normally utilized by some hydro factories. In the long run, process control systems became offered prior to modern power electronics. These process control systems were normally used in industrial applications and were devised by mechanical engineers utilizing pneumatic and hydraulic control equipments, a lot of which are still being utilized at present.