

Control Valve for Forklift

Forklift Control Valve - Automatic control systems were primarily developed over two thousand years ago. The ancient water clock of Ktesibios in Alexandria Egypt dating to the third century B.C. is thought to be the first feedback control machine on record. This clock kept time by regulating the water level within a vessel and the water flow from the vessel. A common style, this successful device was being made in a similar fashion in Baghdad when the Mongols captured the city in 1258 A.D.

Through history, different automatic devices have been utilized to simply entertain or to accomplish specific tasks. A popular European design through the 17th and 18th centuries was the automata. This machine was an example of "open-loop" control, featuring dancing figures which will repeat the same job repeatedly.

Feedback or likewise known as "closed-loop" automatic control machines include the temperature regulator found on a furnace. This was actually developed in 1620 and attributed to Drebbel. One more example is the centrifugal fly ball governor developed during the year 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 the year 1868 "On Governors," that was able to clarify the instabilities demonstrated by the fly ball governor. He utilized differential equations in order to describe the control system. This paper demonstrated the usefulness and importance of mathematical models and methods 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 but not as convincingly and as dramatically 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 accurately control considerably more dynamic systems as opposed to the original fly ball governor. These updated techniques consist of various developments in optimal control during the 1950s and 1960s, followed by advancement in stochastic, robust, optimal and adaptive control techniques during the 1970s and the 1980s.

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

Initially, control engineering was practiced as just a part of mechanical engineering. Control theories were initially studied with electrical engineering for the reason that electrical circuits could simply be explained with control theory techniques. Nowadays, control engineering has emerged as a unique discipline.

The first controls had current outputs represented with a voltage control input. To be able to implement electrical control systems, the correct technology was unavailable at that moment, the designers were left with less efficient systems and the choice of slow responding mechanical systems. The governor is a really effective mechanical controller that is still normally utilized by some hydro factories. Ultimately, process control systems became offered previous to modern power electronics. These process controls systems were often used in industrial applications and were devised by mechanical engineers utilizing hydraulic and pneumatic control equipments, a lot of which are still being utilized nowadays.