

Control Valve for Forklift

Forklift Control Valve - Automatic control systems were first created more than two thousand years ago. The ancient water clock of Ktesibios in Alexandria Egypt dating to the 3rd century B.C. is believed to be the first feedback control machine on record. This particular clock kept time by regulating the water level in a vessel and the water flow from the vessel. A popular style, this successful tool was being made in a similar manner in Baghdad when the Mongols captured the city in 1258 A.D.

Through history, a variety of automatic tools have been used in order to accomplish specific tasks or to simply entertain. A popular European design during the seventeenth and eighteenth centuries was the automata. This particular device was an example of "open-loop" control, consisting dancing figures that would repeat the same job again and again.

Feedback or also known as "closed-loop" automatic control devices consist of the temperature regulator found on a furnace. This was actually developed during 1620 and attributed to Drebbel. One more example is the centrifugal fly ball governor developed during 1788 by James Watt and utilized for regulating the speed of steam engines.

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

In the next 100 years control theory made huge strides. New developments in mathematical techniques made it possible to more precisely control significantly more dynamic systems than the first fly ball governor. These updated techniques consist of different developments in optimal control in the 1950s and 1960s, followed by advancement in robust, stochastic, optimal and adaptive control methods in the 1970s and the 1980s.

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

In the beginning, control engineering was performed as just a part of mechanical engineering. Control theories were originally studied with electrical engineering since electrical circuits could simply be explained with control theory techniques. Currently, 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 right technology was unavailable then, the designers were left with less efficient systems and the alternative of slow responding mechanical systems. The governor is a very effective mechanical controller which is still often used by some hydro factories. Ultimately, process control systems became obtainable prior to modern power electronics. These process controls systems were usually utilized in industrial applications and were devised by mechanical engineers making use of pneumatic and hydraulic control devices, many of which are still being used these days.