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Chapter 1 : Automatic Control System | Glass Machine Manufacturer | Yuntong

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Moreover, the control limits indicated by the author 0. We must point out that the method recommended by the author - rate-impulse intermittent asiatic pressure c o n t r o l - was tried out on our works in 19h with the aid of more sensitive instruments. The rather complicated pressure-control system developed by the Glass Institute in has been recently simplified at our works by elimination of the bridge servo system for passing the impulse to the jet relay 1. The best place from which to take the impulses is the region immediately in front of the baffle, or behind this in the cooling part of the furnace. When there w e r e n o pressure regulators of adequate sensitivity, this procedure eliminated the effects of such factors as the composition and temperature of the flue gases and atmospheric conditions on the pressure in the furnace. This measure, which was very successful, can be successfully taken even now, when it is not necessary to maintain constancy Of pressure with particularly great accuracy. The author is also incorrect in stating that Oet regulators are unreliable and lose their sensitivity with time. Moreover, during this time there have been no cases of jamming of dampers. Obukhov, Glass and Ceramics, No. The author is undoubtedly correct in stating that the theoretically most correct method would be the control of the supply of air to the furnace in accordance with the results of the combustion, evaluated from the oxygen content of the exit gases. However, having pointed out, correctly, that this is not yet realizable, the author proposes to control the air supply by the flame temperature with the aid of the three-impulse regulator that he has devised. We consider that such a method of contro. Moreover, the estimation of the flame temperature from the readings of a radiation pyrometer cannot be regarded as reliable. Changes in the brightness of the flame, associated with changes in the composition, degree of purity, and moistness of the gas, may result in Very substantial errors. Unfortunately, the author does not indicate where his proposed control system has been used and in what types o f furnaces, and he does not give the results of its application. One is perplexed by Fig. Everyone will agree with Korobko that the system of flame variation developed by the Glass Institute is unnecessarily complicated. However, the author is incorrect in stating that it is unreliable. Such systems have been in use for five years in two furnaces at our works, and with proper maintenance cases of breakdown are exceptionally ra re. Korobko asserts that the system carries out only three operations and that there is a pause between the switchings of the taps. The cams of the master schedule apparatus were set so that the pause between the changes of the valves was 8. The use of a large number of intermediate relays enabled us to reduce the amount of cable used and the length of external lines to a minimum. On the contrary, at out works, as also at others, in order to avoid pressure jolts we try to open the damper at the switch-overs so as to remove unburnt gas from the regenerator as soon as possib le. In examining the question of measuring and controlling temperatures in furnaces, Korobko gives two charts on which temperatures registered by radiation pyrometers are recorded, one being sighted right through the furnace on the opposite wall, and the other on the crown at a distance of mm from the skewback. The record given in Fig. This method of mea: We have not observed sharp variations indicative of the effect of the composition of the gaseous medium see curve a in the diagram.

Chapter 2 : Motorized Blinds & Remote Control Shades| Blindsgalore

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The theoretical understanding and application dates from the s, and they are implemented in nearly all analogue control systems; originally in mechanical controllers, and then using discrete electronics and latterly in industrial process computers. Sequential control and logical sequence or system state control[edit] Sequential control may be either to a fixed sequence or to a logical one that will perform different actions depending on various system states. An example of an adjustable but otherwise fixed sequence is a timer on a lawn sprinkler. State Abstraction This state diagram shows how UML can be used for designing a door system that can only be opened and closed States refer to the various conditions that can occur in a use or sequence scenario of the system. An example is an elevator, which uses logic based on the system state to perform certain actions in response to its state and operator input. For example, if the operator presses the floor n button, the system will respond depending on whether the elevator is stopped or moving, going up or down, or if the door is open or closed, and other conditions. Relays were first used in telegraph networks before being developed for controlling other devices, such as when starting and stopping industrial-sized electric motors or opening and closing solenoid valves. Using relays for control purposes allowed event-driven control, where actions could be triggered out of sequence, in response to external events. These were more flexible in their response than the rigid single-sequence cam timers. More complicated examples involved maintaining safe sequences for devices such as swing bridge controls, where a lock bolt needed to be disengaged before the bridge could be moved, and the lock bolt could not be released until the safety gates had already been closed. The total number of relays, cam timers and drum sequencers can number into the hundreds or even thousands in some factories. Early programming techniques and languages were needed to make such systems manageable, one of the first being ladder logic , where diagrams of the interconnected relays resembled the rungs of a ladder. Special computers called programmable logic controllers were later designed to replace these collections of hardware with a single, more easily re-programmed unit. In a typical hard wired motor start and stop circuit called a control circuit a motor is started by pushing a "Start" or "Run" button that activates a pair of electrical relays. The "lock-in" relay locks in contacts that keep the control circuit energized when the push button is released. The start button is a normally open contact and the stop button is normally closed contact. Another relay energizes a switch that powers the device that throws the motor starter switch three sets of contacts for three phase industrial power in the main power circuit. Large motors use high voltage and experience high in-rush current, making speed important in making and breaking contact. This can be dangerous for personnel and property with manual switches. The "lock in" contacts in the start circuit and the main power contacts for the motor are held engaged by their respective electromagnets until a "stop" or "off" button is pressed, which de-energizes the lock in relay. Suppose that the motor in the example is powering machinery that has a critical need for lubrication. In this case an interlock could be added to insure that the oil pump is running before the motor starts. Timers, limit switches and electric eyes are other common elements in control circuits. Solenoid valves are widely used on compressed air or hydraulic fluid for powering actuators on mechanical components. While motors are used to supply continuous rotary motion, actuators are typically a better choice for intermittently creating a limited range of movement for a mechanical component, such as moving various mechanical arms, opening or closing valves, raising heavy press rolls, applying pressure to presses. Computer control[edit] Computers can perform both sequential control and feedback control, and typically a single computer will do both in an industrial application. Programmable logic controllers PLCs are a type of special purpose microprocessor that replaced many hardware components such as timers and drum sequencers used in relay logic type systems. General purpose process control computers have increasingly replaced stand alone controllers, with a single computer able to perform the operations of hundreds of controllers. Process control computers can process data from a network of PLCs, instruments and controllers in order to implement typical such as PID control of many individual variables or, in some cases, to implement complex control algorithms using multiple inputs and mathematical manipulations. They can also analyze data and create real time graphical displays for operators and run reports for operators, engineers and management. Control of an automated teller machine ATM is an example of an interactive process in which a computer will perform a logic derived response to a user selection based on information retrieved from a networked database. The ATM process has similarities with other online transaction processes. The different logical responses are called scenarios. Such processes are typically designed with the aid of use cases and flowcharts , which guide the writing of the software code. It was a preoccupation of the Greeks and Arabs in the period between about BC and about AD to keep accurate track of time. In Ptolemaic Egypt , about BC, Ctesibius described a float regulator for a water clock , a device not unlike the ball and cock in a modern flush toilet. This was the earliest feedback controlled mechanism. Another control mechanism was used to tent the sails of windmills. It was patented by Edmund Lee in The design of feedback control systems up through the Industrial Revolution was by trial-and-error, together with a great deal of engineering intuition. Thus, it was more of an art than a science. In the midth century mathematics was first used to analyze the stability of feedback control systems. Since mathematics is the formal language of automatic control theory, we could call the period before this time the prehistory of control theory. In Richard Arkwright invented the first fully automated spinning mill driven by water power, known at the time as the water frame. The centrifugal governor , which was invented by Christian Huygens in the seventeenth century, was used to adjust the gap between millstones. Bunce of England in as part of a model steam crane. The governor was able to handle smaller variations such as those caused by fluctuating heat load to the boiler. Also, there was a tendency for oscillation whenever there was a speed change. As a consequence, engines equipped with this governor were not suitable for operations requiring constant speed, such as cotton spinning. Advances in the steam engine stayed well ahead of science, both thermodynamics and control theory. Development of the electronic amplifier during the s, which was important for long distance telephony, required a higher signal to noise ratio, which was solved by negative feedback noise cancellation. This and other telephony applications contributed to control theory. In the s and s, German mathematician Irmgard Flugge-Lotz developed the theory of discontinuous automatic controls, which found military applications during the Second World War to fire control systems and aircraft navigation systems. Central electric power stations were also undergoing rapid growth and operation of new high pressure boilers, steam turbines and electrical substations created a large demand for instruments and controls. Central control rooms became common in the s, but as late as the early s, most process control was on-off. Operators typically monitored charts drawn by recorders that plotted data from instruments. To make corrections, operators manually opened or closed valves or turned switches on or off. Control rooms also used color coded lights to send signals to workers in the plant to manually make certain changes. Controllers allowed manufacturing to continue showing productivity gains to offset the declining influence of factory electrification. Alexander Field notes that spending on non-medical instruments increased significantly from â€”33 and remained strong thereafter. Significant applications[edit] The automatic telephone switchboard was introduced in along with dial telephones. Automatic telephone switching originally used vacuum tube amplifiers and electro-mechanical switches, which consumed a large amount of electricity. Call volume eventually grew so fast that it was feared the telephone system would consume all electricity production, prompting Bell Labs to begin research on the transistor. The first commercially successful glass bottle blowing machine was an automatic model introduced in Sectional electric drives were developed using control theory. Sectional electric drives are used on different sections of a machine where a precise differential must be maintained between the sections. In steel rolling, the metal elongates as it passes through pairs of rollers, which must run at successively faster speeds. In paper making the paper sheet shrinks as it passes around steam heated drying arranged in groups, which must run at successively slower speeds. The first application of a sectional electric drive was on a paper machine in In , with the widespread use of instruments and the emerging use of controllers, the founder of Dow Chemical Co. This soon evolved into computerized numerical control CNC. Today extensive automation is practiced in practically every type of manufacturing and assembly process. Some of the larger processes include electrical power generation, oil refining, chemicals, steel mills, plastics, cement plants, fertilizer plants, pulp and paper mills, automobile and truck assembly, aircraft production, glass manufacturing, natural gas separation plants, food and beverage processing, canning and bottling and manufacture of various kinds of parts. Robots are especially useful in hazardous applications like automobile spray painting. Robots are also used to assemble electronic circuit boards. Automotive welding is done with robots and automatic welders are used in applications like pipelines. During the s and s, German mathematician Irmgard Flugge-Lotz developed the theory of discontinuous automatic control, which became widely used in hysteresis control systems such as navigation systems , fire-control systems , and electronics. Through Flugge-Lotz and others, the modern era saw time-domain design for nonlinear systems , navigation , optimal control and estimation theory , nonlinear control theory , digital control and filtering theory , and the personal computer Advantages and disadvantages[edit] Perhaps the most cited advantage of automation in industry is that it is associated with faster production and cheaper labor costs. Another benefit could be that it replaces hard, physical, or monotonous work. They can also be maintained with simple quality checks. However, at the time being, not all tasks can be automated, and some tasks are more expensive to automate than others. Initial costs of installing the machinery in factory settings are high, and failure to maintain a system could result in the loss of the product itself. Moreover, some studies seem to indicate that industrial automation could impose ill effects beyond operational concerns, including worker displacement due to systemic loss of employment and compounded environmental damage; however, these findings are both convoluted and controversial in nature, and could potentially be circumvented. Increased throughput or productivity. Improved quality or increased predictability of quality. Improved robustness consistency , of processes or product. Increased consistency of output. Reduced direct human labor costs and expenses. Installation in operations reduces cycle time. Can complete tasks where a high degree of accuracy is required. Replaces human operators in tasks that involve hard physical or monotonous work e. Performs tasks that are beyond human capabilities of size, weight, speed, endurance, etc. Reduces operation time and work handling time significantly. Frees up workers to take on other roles. Provides higher level jobs in the development, deployment, maintenance and running of the automated processes. The main disadvantages of automation are: Unpredictable or excessive development costs. Displaces workers due to job replacement.

Chapter 3 : Exterior Glass Doors - Pocket or Sliding Panel Doors | Marvin

This is the story of an American dynasty. It is the story of the father, who built the fortune. Of the son, who cleansed the name. Of the Brothers, who manipulated both the name and the fortune to their own ends.

Lifting device is used to adjust the height of the rotary tables and clamps of machine to adapt to the bottle height. Its power comes from the lifting lever. Lever rotates drive screw rotation to realize the rotary tables lift. When the clamp rotate to star wheel with rotating table, bottle into the middle of clamp, open clamp cam close the clip claw and clip the bottleneck with the rotating clamp. When rotary tables to rotate, clamp pieces will rotate with over turn cam, guide cams rotates around over turn cam and flip the bottleneck to degree till the bottle mouth is top downwards and directly face the spray nozzle, then the clean water in the spray nozzle sprays and wash the inside of the bottle, Drain, turn degree downwards and then goes out from the star wheel. Filling part of Glass Bottle Beer Filling Machine Beer filling machine is specially designed according to the beer feature, and the filling part is designed to be twice pre-evacuation. The filling part is made up of main liquid pipe, rotating cylinder bearing base, filling cylinder fulcrum loop, wine or carbonated drink tank, filling valve, filling cylinder pipe, control loop device, ascending device, the distributor, height adjusting control, stimulating bubble arm, vacuum system, etc. The first Vacuumize Open the Vacuum valve stem, in the bottle and vacuum channels forming a road. The air in the bottle will be discharged from bottle through this channel, in the bottle will form a vacuum. After reach the fixed time, Vacuum valve closed, then it will be finished. Gas injection Open the filling valve, a pathway is formed between the bottle and the gas channel. The gas filling into the bottle through this channel till gas pressure in wine tank equals to the beer tank pressure. The second vacuumizing After gas injection into the bottles, little air will be concentrated on the top of the bottle neck. By the second vacuumizing, this part of resting air will be removed and generate a slight-vacuum state, which is better for the filling work. Wine or carbonated drink filling Open liquid valve and form pathway between the bottle and the beer tank, the material will feed into the bottle from this channel, at the same time, the CO2 in bottle return back to the beer tank at the same speed through air-back pipe. Compressed CO2 in the bottle seal material to continue to run till the material in bottle rising over air-back pipe and form pressure balance e. Close valve After the bottle finish filling stand for long time, close the liquor valves and air filling valves, cut off the channel between wine tank and bottle. Air discharge Open the discharge valves and form a pathway between bottle and air. Blow remaining liquid When the filling parts locates between bottle-out and bottle-in star wheel, open the gas filling valves and close it after reach the fixed time. So that the gas in bottle will blow the remaining liquid. The up and down movement of the capping nozzle is driven by the capping cam, which is fixed. The screw or crown caps one machine can only has one kind of capping part are sending to the cap slideway by a mixer in the cap container, and then slid to the capping mould of the capping nozzle. The capping nozzle is driven by power and move in circle. The capping nozzle would move upword and downward one time in each circle of the capping. The cam, set up in the upper fixed part of the capping machine, controls the upward and downward movement of the capping nozzle. After the bottle is transmitted from the filling machine, the capping nozzles have been fed with a bottle cap. The capping nozzles moves downwards the bottle under the capping platform driven by cam guideway, then the bottle cap with the aid of the damping ring. We will make the arrangement to pick you up when you come.

Chapter 4 : Automation - Wikipedia

A zone system of automatic control of the temperature regime in a glass-melting furnace Integrated automatic control of blast-furnace smelting Automation of the vertical and horizontal distribution of solid and gaseous materials in the blast furnace is considered.

Chapter 5 : STANLEY Access | PERFORMANCE IN ACTIONâ„¢

The automatic control system is used for parameter detection, data processing, automatic control and scientific management of such control indexes as temperature, pressure, flow, liquid level, etc. of the melting furnace, tin bath and annealing equipment.

Chapter 6 : Automatic glass inspection & quality control systems - Glass IQ

Automatic Control. For the ultimate in convenience, open or close the Multi-Slide Door with wallmounted and hand-held remote touchpad controls. The motorized system can be adapted to interface with home automation systems and smart phone technologies.

Chapter 7 : Automatic Doors

Automatic Control Glass Straight Line Beveling Machine JXMD Chain transmitting,suitable for bevelling and edging various flat glass and mirror,Model A is manual controlled while model D is electric controlled with LED displaying thickness,bevel width and angle,working speed and finished meters.

Chapter 8 : TORMAX | Products - Automatic Doors - Sliding Doors

Smart glass (electric switchable glass) can be controlled manually or automatically, automated control can be programmed to switch on or off during certain times of day or the system can be connected to light sensors to activate when a certain level of light is detected.

Chapter 9 : Switchable Glass | Privacy Glass | Smartglass International

Since receiving a patent for the world's first automatic door operator more than 80 years ago, STANLEY has led the industry with state-of-the-art manual and automatic door solutions.