

Advanced Control Systems for Plumbing and its Benefits

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Abstract – Customers are forced to purchase separate controllers for each programme in traditional systems, resulting in unattractive and uncomfortable installations. The new state-of-art technology controls are revolutionizing the industry. They meet IEC standards and help people to have a comfortable experience. Remote operation and smart home integration offer ability to monitor the entire facility's plumbing system remotely

Key Words: Plumbing, pumps, Monitor, Control.

1. INTRODUCTION

A better control system improves the user experience while also protecting the motors. Regardless of which pump we purchase or install at our facilities; the control system is what gives the user applications life and performance. Various facilities are all fitted with applications such as hot water circulation, pressure boosting, sewage transfer, and water transfer, among others.

A control system for each pump may be used to meet these requirements. Traditional systems force customers to buy different controllers for each program, resulting in unattractive and inconvenient installations. It results in a tangle of controllers, actuators, and cables. Currently, the control systems for pumps used in small-scale applications are disorganized and reliant on traditional technologies. This restricts users' ability to communicate remotely and integrate with smart systems, or results in a financial loss. In domestic and small commercial applications, substandard control systems result in improper operation, malfunction, and hazards for the consumer and pumps. IEC guidelines are not met.

2. SOLUTION

The modern advanced control systems are the new groundbreaking technologies that are coming up to this. These systems are designed to IEC requirements and provide users with a hassle-free experience. These systems come with an screen and modular technology that can be configured on-site. A single control system controls and operates all of the main applications in a far more effective manner. These advanced control systems will configure and control all of the major components of a plumbing system relating to pumps.

On-site configuration of input devices such as pressure switches, transmitters, and their scaling, outputs, and superimpositions allows for simple and efficient installation. These systems are eye-catching and aesthetically designed to minimize cabling work. On the HMI, the user can see and customize all of the data for service, status, and configurations. The consumer benefits from the fact that these controllers can be connected to the internet and remotely diagnosed. Any defects, configurations, or improvements should be reported to the suppliers.

The screen can be replicated on any computer, such as a smartphone, tablet PC, or laptop, and controlled remotely if necessary. The systems are IoT compliant and completely configurable. Pumps may be used for a variety of purposes, including water transfer, pressure boosting, hot water circulation, waste, and so on. Home automation and smart home systems such as Alexa and Google Nest can also be used to control and monitor these systems. Domestic consumers may also benefit from these control systems because they have an industrial user interface. These systems are designed to control more than 12 parameters from the systems in order to provide absolute motor safety. These systems are fitted with preventive failure analysis logarithms, ensuring that plumbing equipment has a long operational life.

The original controller does not need to be replaced if the user has to upgrade the whole system or add new components to the system. The system would be ready for new plumbing improvements simply by adding an additional modular unit to the system.

Efficiency

The numerous components that make up systems are designed and installed with great care so that pumps can provide hassle, and effective water pressure, and they can be specifically calibrated to fit each application.

A control system ensures that the speed of the pumps is continuously changed to provide the best performance as the demand for water and pressure increases. These systems, accomplishes that in the most effective manner possible by taking into account a variety of control parameters. These programs have been continuously improved, modified and gained from practice-based expertise, ensuring that it remains a progressive product in terms of quality and ease of control. These also eliminates

problems encounter as per each site and grows to be more adaptable for every situation.

Communication

These systems have a variety of features that give more input and control over the device so that the owner or manager, can keep track of what's going on and maintain safe and efficient service. It also helps read basic data and alerts from manufacturing processes or building management systems.

- Setup via a laptop or a Man Machine Interface
- Contact information for both non-urgent and urgent alarms
- Alarms for high and low pressure
- A level sensor, a pressure sensor, or a switch may be used to defend against a dry run.
- Extra warning outputs for two stages

Characteristics

Nowadays control systems are very sophisticated operating systems, they can accurately monitor systems of more than 1 pumps in a number of ways.

- Fixed speed control
- Controlling the pump speeds
- Controlling the jockey pump
- Hourly breakdown of pump runtime
- Optimization for the shortest possible run time*
- Programmable test running time.
- Storage reservoir control system
- Delay for dry run protection that can be adjusted
- Option for Manual override

The overrun time of each pump, which is as short as possible, is used to optimize the number of required circuits

Easy to use interface

A backlit monitor, feature keys, navigation keys, and control keys, LEDs, and two service interface connections are all found on the control panel. The monitor provides valuable details about the operation of the machine. The data is shown on the monitor as text, and the displayed parameters can be modified.

- Easy to control
- Multi lingual support
- Pressures unit conversion support
- Level in percentage, centimeters

Applications

Since the control system can be integrated into the following systems, it can be set up for drinking water, process water, and fire-extinguishing applications.

3. CONCLUSION

Multiple controller installations at the same location are more vulnerable to hazards and failures. This system is the future of pumping; it provides users with a world-class, trouble-free facility experience with no downtime. This approach is comparable in price to the traditional scheme. Remote operation and smart home integration offer users the ability to monitor the facility's entire plumbing system from anywhere. Contractors can enjoy a trouble-free and simple installation thanks to easy upgrades, on-site setup, and shorter lead times.

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