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Galcon Dynamic Pressure Management (G-DPM)

G-DPM from Galcon is an **intelligent and dynamic water pressure management solution** that helps governments, municipalities and water utilities significantly reduce water and revenue loss from water leakage.

Galcon G-DPM offers a unique approach to pressure management with a fully integrated solution that combines best-of-breed individual components: a highly robust flexible pressure controller with a sophisticated Internet-based management system that ensures full control of the system at all times. The solution includes tools for communication, sophisticated optimization, data gathering and history-based analysis. These capabilities enable water utilities to define pressure policies, track leakage data over time, follow consumption trends, and improve the overall operational performance, thus ensuring an on-going and constant process of improvement

Key features and benefits:

- Integrated solution with best-of-breed components for a "one-stop shop"
- High impact: handles all leaks – detectable and undetectable.
- Intelligent controller with highly flexible programming features
- Management application with sophisticated optimization and data gathering
- Fast implementation with immediate measurable results leading to fast ROI
- Web-based interface accessible anywhere
- Can be configured as a solution within the customer premises or as a "cloud" service
- Full professional services package: planning, implementation, on-going monitoring
- Works with any Pressure Reducing Valve

About Dynamic Pressure Management

It is increasingly evident that water is a scarce and valuable resource. At the same time however huge amounts of treated water is lost from urban water supplies around the world. The World Bank estimates that every year \$16.6B of potential revenue from water is lost, and in extreme case the average loss NRW (Non-Revenue Water) approaches 50% of the water produced.

Out of this amount \$10B is estimated to be real loss occurring from leaks in the system. Water utilities cannot sustain such losses in the long term, and as a result leakage is becoming one of the major strategic issues that need to be dealt with in a swift and efficient manner.

Pressure Management being both an immediate and cost-effective solution is therefore fast becoming a preferred option. Through improved pressure management utilities gain an immediate

Whitewater Group

Tel: +972-4-690-0222, Fax: +972-4-690-2727, Email: info@galcon.co.il

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reduction in leakage and improvements in operational performance. In many cases the relationship is linear (so that a certain % reduction in pressure results in the same % reduction in leakage) representing huge savings.

With the advent of new technology, specifically innovative computerized control systems and state-of-the-art communications, optimized results can be obtained through the use of the more advanced method of Dynamic Pressure Management (DPM).

As opposed to static Pressure Reduction, DPM enables control, feedback and management of the system, characteristics that are critical to the long term success and usefulness of the solution. DPM is by definition a dynamic method, enabling contiguous adjustment of water pressure, ensuring optimal service to customers is provided while minimizing leakage.

Advantages of Dynamic Pressure Management

- Handles all leaks – detectable and undetectable
- Fast ROI
- Quick to implement
- Immediate measurable results
- Long time benefits: burst reduction, infrastructure protection
- Cheaper than other methods
- Independent of other methods

More and more utilities are therefore searching for effective Dynamic Pressure Management solutions to lower leakage. Most solutions currently available on the market provide only static pressure reduction and do not respond to the need for genuine Dynamic Pressure Management. These solutions lack true sophistication and are limited in their ability to ensure optimal pressure is obtained and maintained in the long run.

Utilities require solutions that provide a combination of low-cost (in implementation and operation), high reliability and most importantly the ability to control and manage pressure in a sophisticated manner over time to ensure constant improvements and savings are created in both short and long term.

Solution Features

Galcon's Dynamic Pressure Management System is an integrated system combining a highly robust flexible pressure controller with a sophisticated Internet-based management system and works with any Pressure Reducing Valve. The solution includes tools for communication, data gathering optimization and analysis that enable water utilities to define pressure policies, track leakage data over time, follow consumption trends, and improve the overall operational performance.

Each DMA in the network is configured with the G-DPM Controller at the DMA entry, as well as a

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G-DPM Pressure Gauge at a critical point (CP) within the DMA. Information regarding pressure and flow is collected from both the Controller and CP and transmitted to the G-DPM Server.

Based on the captured data and using the optimization algorithms the Server application builds a relevant pressure policy for each DMA. The target is to ensure the pressure at the CP of each DMA is held at the required level defined (SLA), ensuring service levels are met while lowering leakage levels.

This policy is then downloaded to the respective Controller. Each Controller applies the defined policy independently and without requiring further communications to the server until a new policy is downloaded.

As more information is gathered and new data collected and analyzed the Server adapts and adjusts the policies to reflect potential improvement as well as changes in consumption patterns enabling on-going improvement of the results and ensuring long-term success.

System Components

- **Pressure Management Controller**

This state-of-art controller works with any pressure reducing valve equipped with a hydraulic pilot. The controller can be operated in 3 different modes enabling the water utility to flexibly and easily define its pressure management policy.

Pressure – Flow mode: The controller will adjust the pressure according to the measured flow using a preset programming table. The controller allows deviation from the desired pressure according to user definitions

Pressure – Time mode: The pressure is regulated throughout the day according to a preset time table. This allows different pressures to be obtained based on predicted water flows during the day.

Exceptional Days: Specific days can be set for a different pressure routine. Allows consideration for holidays or other days in which anomalous flows may occur.

Additional Highlights:

- Highly durable and reliable IP68 enclosure submersible aluminum casing. For rough humidity and temperature conditions
- Easily operated with LCD display and 5 programming buttons for on-site operation
- Maintenance free. Internal battery sufficient for up to 5 years of operation depending on usage
- Remote connectivity and management with external application via GPRS modem

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- Logging of up to 400,000 readings in a non-volatile memory
- Upstream and downstream analogue pressure sensors
- **Web Based Management Application**

Central application that controls and optimizes the relevant parameters adjusting the pressure policy to optimal levels while maintaining service levels. This guarantees that under all demand levels, low to high, pressure is kept at the necessary service level defined by the utility. Database of information allows on-going analysis and constant improvement ensuring results are preserved for the long term.

The application has a straightforward ubiquitous Web-based interface that can be securely accessed from any point through any Internet connection.

The application includes a database and information gathering and analysis tools. These tools help build an on-going process of pressure management so as needs change and demands vary the solution "learns" and adapts. This approach ensures that pressure management is not a one-time event but truly a constant process of improvement.

DMA Optimization – Allows optimization of each DMA, as well as between DMAs ensuring full system considerations are implemented. Can adapt to changes as usage patterns develop over time.

Web-based access - Straightforward ubiquitous Web-based interface that can be securely accessed from any point through any Internet connection.

Additional Highlights

- Can assist in building water audit when combined with information from supply/metering/billing systems, assessing water loss and leakage levels
- Intelligent recommendations – as the network changes and develops new policies must be implemented.
- Database and information gathering and analysis tools create a "learning" and "adapting" solution that can answer new requirements and changes in the usage patterns.
- Management support – supports management decision making through extensive reporting capabilities.
- Easily installed operated and maintained.

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- **Pressure Reducing Valve (PRV)**

Galcon's DPM works with any PRV that can be managed with a hydraulic plot. The PRV is a robust valve that maintains a highly accurate reduced downstream pressure as required, independent of upstream pressure or flow.

This flexibility allows the utility to choose its solution based on its requirements and any existing relationships with PRV manufacturers, ensuring full compatibility to the existing environment,

G-DPM Advantages

- **Complete Solution:** Tightly integrated and complete solution. Lowers resources required and costs for implementation.
- **Best-of-Breed Independent Components:** Although integrated, each individual component can be used and implemented independently depending on the required configuration. Each component is a leading edge product with state-of-the-art technology and features.
- **Web-Based Application:** Easy to use Web-based interface provides ubiquitous Internet access. Secure access guarantees only authorized users can monitor and implement changes in the system.
- **Fully Learning and Adapting Solution:** The operational application constantly improves by "learning" the system through data collection and analysis. Any changes that occur over time are incorporated to improve and refine results.
- **Easily Installed and Operated:** Each component is easily installed on-site and requires minimum maintenance. Management of the system can be done remotely at a central point.
- **Complete Set of Professional Services.** Galcon capabilities cover all project aspect including planning and design of DMAs, implementation of the solution as well as on-going monitoring and support of the system.
- **Expertise and Experience.** With over 30 years of experience, Galcon, is one of the world's leading manufacturers of computerized irrigation timers and controllers. G-DPM has been installed and tested in real-life projects with highly successful results.