

# GRUNDFOS

## EXECUTIVE SUMMARY

### **SAVE WATER, ENERGY AND COSTS USING PRESSURE MANAGEMENT**

Grundfos Demand Driven Distribution reduces leakage losses, increases energy efficiency and saves operation and maintenance costs

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## **INTRODUCTION**

Municipalities around the world are facing major challenges in water resource management. Pressure management represents a cost-effective way to reduce water loss (Non-Revenue Water – NRW), improve energy efficiency and reduce operation and maintenance costs. The Grundfos Demand Driven Distribution pressure management solution addresses all three aspects.

Grundfos Demand Driven Distribution is the first pressure management system that combines precise measurement of the network pressure and advanced pump control at the pumping station according to these measurements.

Let's look at the three major issues facing municipalities, and the difference a Grundfos Demand Driven Distribution solution can make

**ISSUE 1 – LEAKAGE (NRW) REDUCTION:**

Non-Revenue Water (NRW) is the difference between the amount of water put into the distribution system and the amount of water billed to consumers. High levels of NRW seriously affect the financial viability of water utilities through lost revenues and increased operational costs.

- Optimal pressure management using Grundfos Demand Driven Distribution can stabilise and reduce the average pressure, which can reduce leakage with up to 20 %, depending on pipe materials and types of leak.

**ISSUE 2 – ENERGY EFFICIENCY:**

Water supply systems are massive consumers of energy along the multiple stages of water production and supply and for most water companies, energy is the highest operating cost item after manpower.

- Reducing excess pressure can generate up to a 20 % decrease in energy costs from pumping

**ISSUE 3 – OPERATION AND MAINTENANCE COSTS:**

Water utilities face a number of challenges related to distribution networks that will need to be refurbished over the next 10 to 30 years. This will not be cheap, and prioritisation and optimisation of these investments is urgently needed.

- A 10 % reduction of average pressure decreases economic intervention costs of active leakage control by 10 %
- Deferred renewals and residual asset life extension can be a substantial benefit; prediction methodology for pressure reduction is currently being developed
- Stabilising pressure over a 24 hour period has proven successful in reducing pipe bursts. Studies show that a lowering of night time pressure with 16 % can reduce burst rates with 50 %.

**How it works**

To obtain the best possible pressure management, the network pressure must be measured and the pumping station controlled according to these measurements. Grundfos Demand Driven Distribution places battery-driven network pressure sensors in critical areas of the distribution network to do just this. Data are transmitted once during the day and the power requirements for the network pressure sensors are therefore extremely low. This ensures a low maintenance, long lifetime solution.

The measured data are then used in a smart adaptive approach that controls the pumping station, keeping the pressure in the network at the desired value, without troublesome analysis and re-configurations of the system to obtain proper operation.

In addition to the benefits of reduced water loss, improved energy efficiency and reduced operation costs discussed above, the impact on service and maintenance costs long-term because of extended infrastructure life is also substantial. Grundfos Demand Driven Distribution helps reduce the frequency and effect of water pipe failures, for example by reducing night time pressure as mentioned in 'issue three' above, saving money for the water utility by lowering the total cost of ownership for the water distribution system.

**Everyone benefits in all operating conditions**

The effective application of a pressure management solution results in considerable savings for municipalities from the three main benefits discussed above and also offers substantial benefits for customers and communities:

- Better water resource management
- Delivery of improved customer service – better comfort
- Reduced disruption to the community from pipe bursts
- Minimised damage to customers' plumbing
- Reduced liability costs

Because Demand Driven Distribution is highly integrated into the pump system, Grundfos delivers a strong pressure management solution that offers unique benefits in the given operating conditions, whether a continuous supply situation, in areas

affected by droughts, and where water shortages are managed by intermittent supply.

### **Read our in-depth presentation of pressure management**

Grundfos has written a whitepaper that explains and demonstrates the benefits related to pressure management implementation based on the latest research, best practice methods developed by the Pressure Management Team of the IWA Water Loss Specialist Group, and the advanced tools and technologies available.

The Grundfos whitepaper '*Pressure Management: An effective way to reduce Non-Revenue Water (NRW), improve energy efficiency and reduce operation and maintenance costs*' is available from <http://ddd.grundfos.com> and addresses the three main areas of benefits related to pressure management implementation discussed above. The whitepaper has been prepared by Marco Fantozzi, an active member of the Water Loss Specialist Group of the International Water Association (IWA) and a leading consultant in water loss management. Marco Fantozzi has worked closely with Grundfos developing Demand Driven Distribution.

The Grundfos Whitepaper explains the latest research advances in assessing pressure management benefits and how municipalities can benefit from large scale pressure management implementation. Models for predicting burst frequency are now more precise, and extended asset life, based on latest research results, is expected to be the largest benefit with pressure management in the future.

Find more information about Grundfos Demand Driven Distribution, including videos, case stories and technical details, on our website <http://ddd.grundfos.com>.