INTERMITTENT SUPPLY –
Experiences from Southern Italy

Ing. Dewi Rogers
INTERMITTENT SUPPLY

CONSUMPTION $+$ LEAKAGE $>$ PRODUCTION CAPACITY

Interrupted supply

Damage to the network
IMPACT

- Air enters the system when closed
- Re-opening supply damages the pipes
- Disruption to the customers
- Installation of customer storage tanks
- Possible infiltration of contaminants
- Very low quality of service

INVARIBLY CAUSED BY HIGH LEAKAGE
MAKES THINGS WORSE
INTERMITTENT SUPPLY

Extreme case - India
STARTING POINT

- Total
- Apparent Water Loss
- Customer consumption
- Real Water Loss – 24 hour supply

Volume

24 hours
REALITY

- Inaccurate maps
- Little monitoring
- Unknown closed valves
- Low pressure areas
- Situation out of control!

CALIBRATED MATHEMATICAL MODEL
PERMANENT CONTROL SYSTEM

Permanent sectors

Application of hydraulic model for design

Single supply pipe

Flow meter and PRV on inlet

Quantify leakage in each DMA

Locate leaks
QUANTIFY THE PROBLEM

MODIFY EXISTING ISOLATION PROCEDURE
HYDRAULICS OF LEAKAGE

New supply

Network reinforcement

Low pressure / intermittent supply
PRESSURE CONTROL

Objective:
Lower existing leakage level
Avoid the formation of new leaks
Control the filling of the tanks
PERMANENT SYSTEM

High Pressure

Low Pressure

PRV
RESULTS - DMA

Initial av 9,8 l/s
Final av 5,7 l/s
RESULTS
Southern Italy

- Initial leakage level (intermittent) = 57.3 l/s
- Final leakage level (continuous) = 8.8 l/s
- Leakage recovered = 48.5 l/s (1.5 million m³/yr)
- Economic saving = 500,000 euro / year
CONCLUSIONS

- The need for intermittent supply is invariably due to high leakage.

- The solution is to recover the leakage.

- With the application of a hydraulic model it is possible to create a permanent leakage control system even in very complex networks.

- Pressure control is essential to control the operation of the network and avoid the formation of new leaks.
NON-REVENUE WATER REDUCTION IN URBAN WATER UTILITIES

Experiences and challenges in the Mediterranean region

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DEWI S.r.l.
Developing an Efficient Water Industry