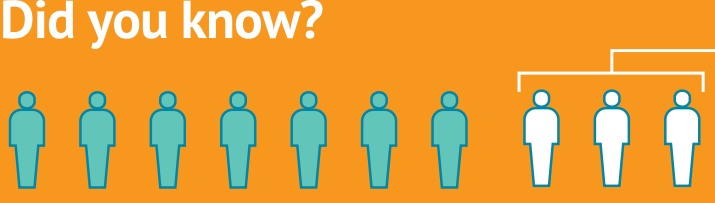
Reduce water loss with the virtual operator

Detect, find and minimise leakage in ageing pipes underground

Did you know?



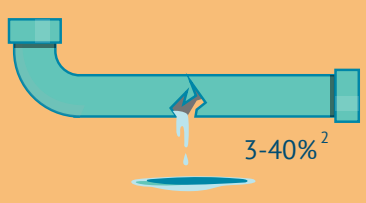
3 in 10 people
worldwide lack access to safe drinking water at home [1]
(2.1 billion people)

At the same time...

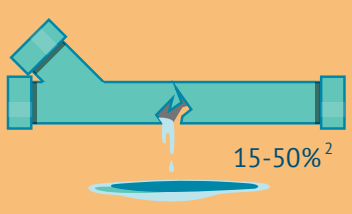
Water lost before reaching the tap

(estimated non-revenue water*)

Developed countries



Newly-industrialised countries



Developing countries

*non-revenue water is water that is produced, but "lost" before it reaches consumers. This can result from leaking and broken pipes, poor quality of underground assets, etc.

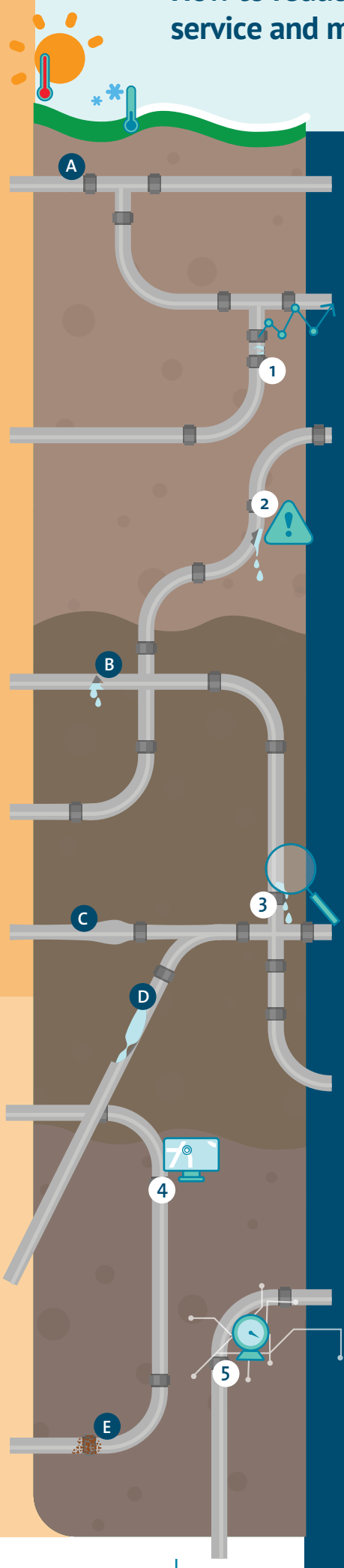
Leakage is one of the major causes of water loss

Factors affecting pipe bursts and leakage

- Rapid temperature change (A)
- Poor pipe condition (B)
- High pressure (C)
- Pressure transient (D)
- Ageing pipes (E)

Challenge:

How to reduce water loss, improve customer service and make smarter capital investment?



How the virtual operator can add value to reduce leakage

1 Predict pipe failure

A large dataset including historical data, calendar and weather forecast, is used to make accurate predictions of pipe lifetime. Data from iot sensors are used to validate these predictions.

2 Detect leaks

Accurate predictions of flow and pressure in supply networks, together with IoT data, are used to ensure new leaks are detected faster. This reduces leak run-time and enables near real-time reaction.

3 Find leaks

Machine learning with pressure data from IoT sensors is used to locate leaks in real-time. This is a unique method developed with extensive domain knowledge. Further inputs can be used to localise leaks such as noise, satellite data, temperature and water quality measures.

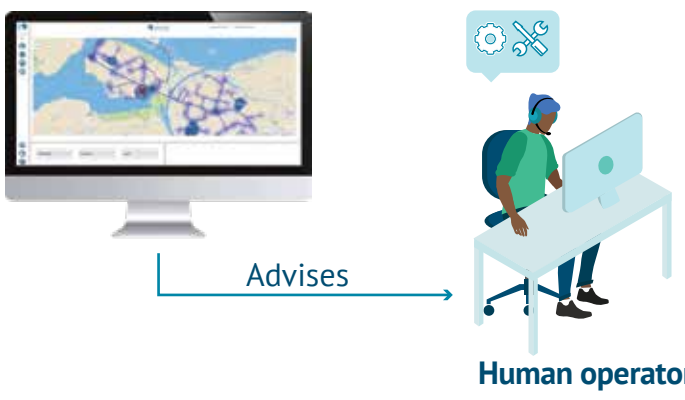
4 Minimise water loss

Finding leak locations in real-time reduces leak run-time and total water lost. Further reductions from advanced predictive pressure control can minimise background leakage by reducing average system pressure. Lower pressure means less water escaping from existing pipe breaks.

5 Calm operation of the distribution networks

Smart operation of the elements that control the pressure in the networks (pressure relief valves, PRVs, and pumping stations) to keep switching to a minimum avoids creating pressure transients within the supply network. Removing transients is a proven method to prevent failure of ageing pipes - reducing overall water loss, extending asset life and helping to improve water quality.

VIRTUAL OPERATOR



The virtual operator's capability to detect & locate even the smallest leaks is well proven in the Netherlands: **water utilities have 5-6% leakage rates.**

Note: the leak detection and localisation feature has been developed in collaboration with 6 Dutch drinking water companies.

IN THE LONG TERM

The virtual operator maps the condition of underground pipes.

Over longer time periods small leaks become more visible. The virtual operator advises operators on preventive maintenance to ensure assets are always in good health. Pipes can be replaced before catastrophic failures take place.

Learn more about how the virtual operator can help you to reduce leaks

Download the white paper

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Sources:
[1] New report by WHO and UNICEF:
https://www.who.int/news/item/12-07-2017-2-1-billion-people-lack-safe-drinking-water-at-home-more-than-twice-as-many-lack-safe-sanitation

[2] https://www.swan-forum.com/wp-content/uploads/sites/218/2016/05/stated_nrw_rates_in_urban_networks_-_swan_research_-_august_2011.pdf