

Choosing the Right Concrete From the Start

New testing methods for long-lasting sewer systems

What is the project about?

Concrete sewers are hidden underground, but they are critical for modern society. Around the world, cities invest billions in large concrete tunnels, pumping stations, and storage tanks. These structures are expected to last for many decades.

A major threat to these systems is a natural process in which bacteria in sewers produce corrosive substances that slowly degrade the concrete. This damage is difficult to detect and develops over many years, but it can ultimately lead to costly repairs or even structural failure.

This project develops a faster and more reliable way to test how well different types of concrete can withstand this type of corrosion.

Who is behind the project?

The project is a collaboration between researchers from Aalborg University and professional engineers from COWI. The team combines scientific expertise with practical experience from large infrastructure projects. The work will primarily take place in Denmark, both in laboratories at Aalborg University and in real sewer environments. The project runs for three years.

How does it work?

Current testing methods are either very slow, often taking many months, or too simplified to provide trustworthy results. As a result, engineers cannot always be confident that they are choosing the most durable concrete for long-lasting sewer systems.

In this project, we will develop new test methods that are fast while still delivering reliable results. Concrete samples will be exposed to carefully controlled conditions that closely resemble real sewers. Advanced measurements will detect early signs of damage, long before severe corrosion becomes visible.

Why is this important?

Faster and more accurate testing will help cities, consultants, and concrete producers make better decisions. Selecting the right concrete from the outset reduces the risk of premature damage, avoids costly overdesign, and makes it easier to use modern, climate-friendly concretes without compromising durability. The result is safer, more sustainable sewer systems and better protection of public investments.

What happens next?

The project will establish a testing facility at Aalborg University that can be used by consultants, utilities, and concrete producers. It will strengthen Danish expertise, support sustainable infrastructure, and help protect public investments—both in Denmark and internationally.