



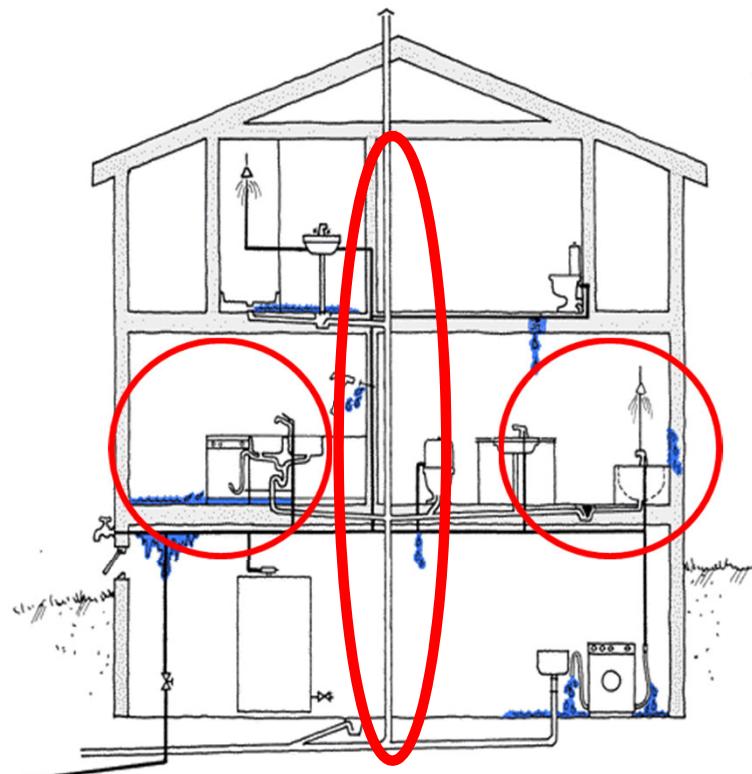
HOW TO PREVENT WATER DAMAGES IN KITCHEN AND TOILET ROOMS

NORDISK VANNSKADESEMINAR, ICELAND 2019

Lars-Erik Fiskum

SINTEF Community

Today's topic



2



The evolution of kitchens and risk for water damages

Risk of leakage



The evolution of toilets and risk for water damages

Risk of leakage

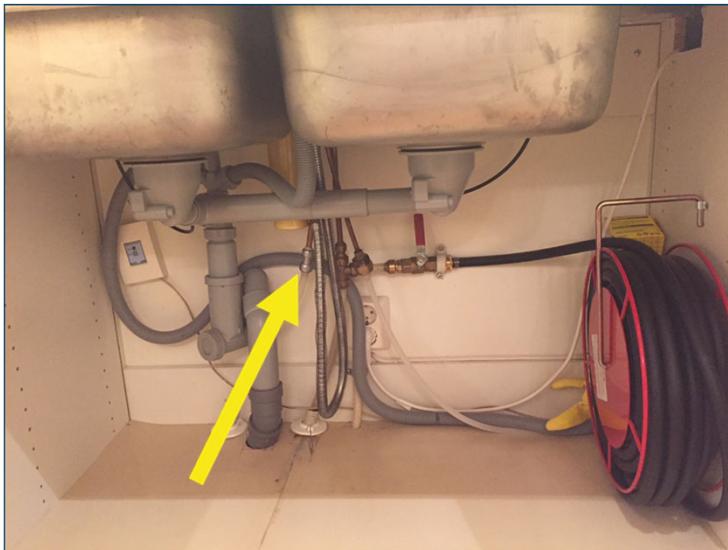


Why is there water damage in the kitchen unit?

- Drip leakage from pipe joints
- Leakage from water trap
- Leakage from refrigerator connected to water line
- Leakage from dishwasher
- Hoses of poor quality
- Manifold for pipe-in-tube system without preventive action
- Floor covering that can't withstand water



Where is it leaking in the kitchen unit?

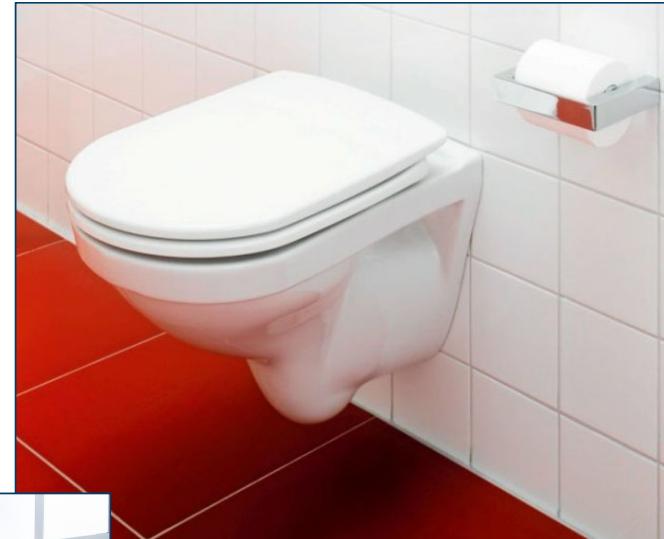


Vulnerable installations:

Dishwasher, water heaters, refrigerator, water filter, coffee machine etc.



Where is it leaking in the toilet room?



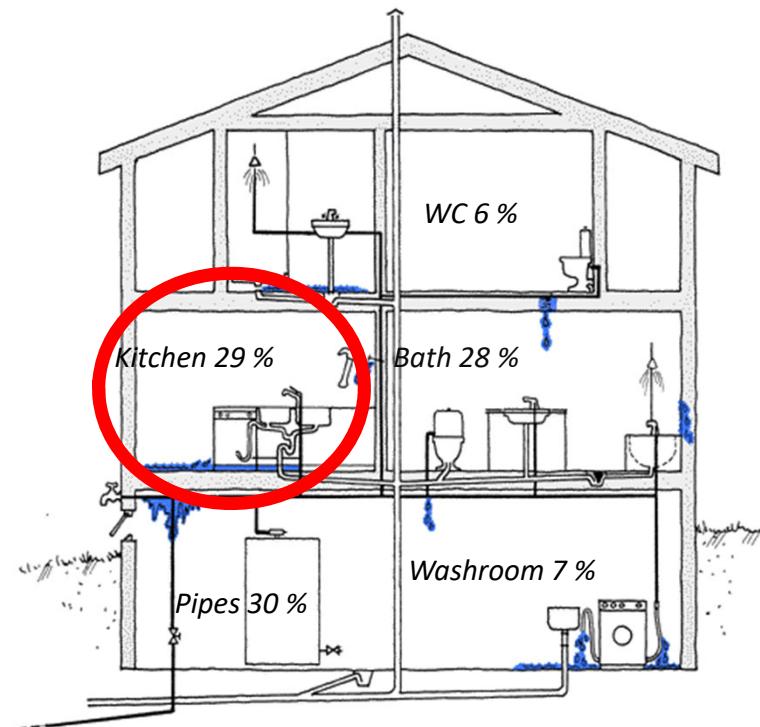
Cost of water leakages in norwegian kitchens in 2018

Leakages from pipes, joints, mixers, machines etc.



Water damages in 2018:
Cost 4,5 bil. NOK
(91 000 damages)

Currency	Cost for kitchen
NOK	1,3 bil.
SEK	1,4 bil.
DKK	0,97 bil.
ISK	17,9 bil.
Euro	0,13 bil.



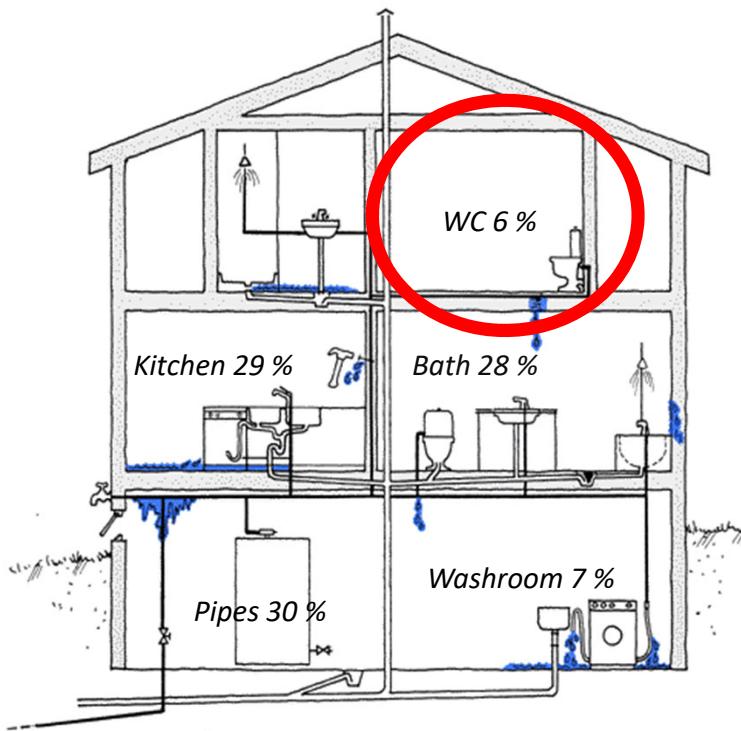
Cost of water leakages in norwegian toilet rooms in 2018

Leakages from pipes, joints, cisterns, mixers, etc.



Water damages in 2018:
Cost 4,5 bil. NOK
(91 000 damages)

Currency	Cost for WC
NOK	270 mill.
SEK	290 mill.
DKK	201 mill.
ISK	3715 mill.
Euro	27 mill.



Kilde: Vannskadecentrum 2018

Effect of installation of leakage detection

Survey conducted by Boligbyggerlagenes Partner

- 732 apartments installed leakage detection in 2015
- Equal number of registered damages before and after installation
- The cost of damages were reduced by 50 % after installation

Available solutions to reduce the extent of damages

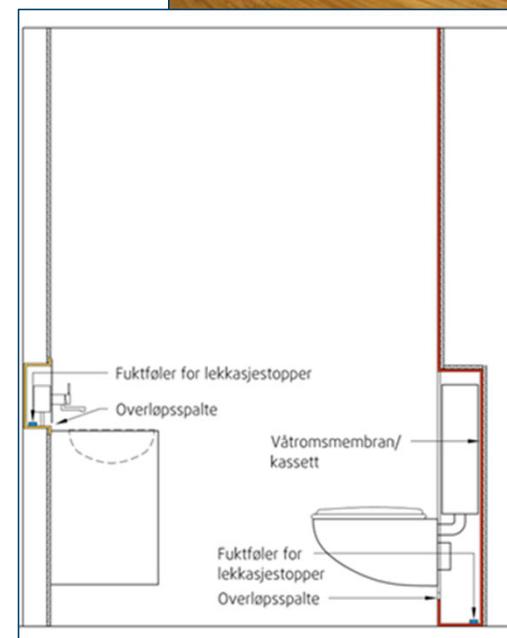
- Regulation/ legislation
- Technical solutions
- Information for craftsmen/ homeowners



TEK17 § 13-15 Wet rooms and rooms with water installations

- 3a) Floors and walls that may be subject to water spills, leaking water or condensation shall be made from moisture-resistant materials.
- 3b) Rooms shall be designed so that any leaks are made visible.
- 3c) Building elements with built-in cisterns or similar installations shall be protected against moisture penetration from leaks from the installation.

Pre-accepted solution: Cisterns and similar installations must be placed in a pre-fabricated box with watertight surface or in a void with a watertight layer. The box or void must have overflow in to the room so that any leaks are made visible.



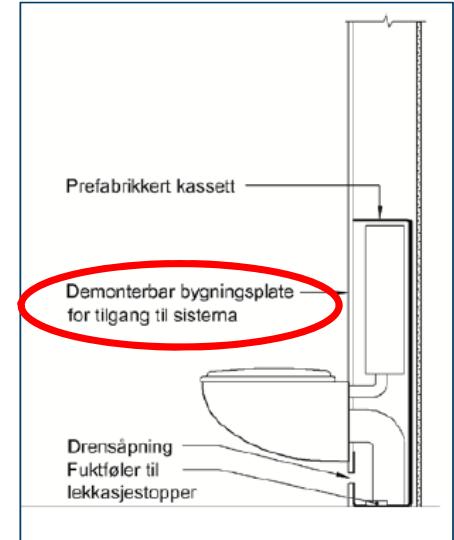
TEK17 § 15-5 Indoor water installations*

- 3a) Installations shall be designed for future maintenance and be easy to replace
- 4) Leaks shall be easy to detect and not result in damage to other installations and building elements

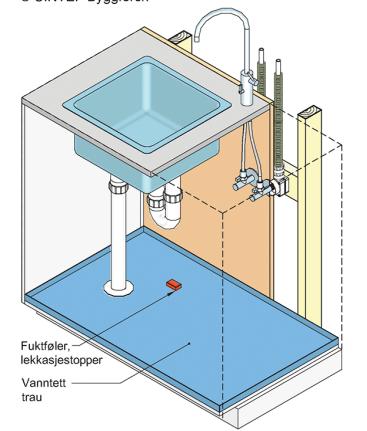
Pre-accepted solutions:

1. *Leakage from built-in cisterns or similar installations shall be made visible. In other rooms than wet rooms, a leakage must lead to automatic shutdown of water.*
2. *Where the point of connection or draw-off site is without an overflow, a valve that automatic shut off the water in case of any leakage must be installed.*

* Water installations includes all installations inside buildings conveying water for human consumption. Included are also installations and equipment that are permanent connected to the supply system as a neccessary part of operating the building, including draw-off taps on the outside



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Technical solutions to prevent water damages

Gully

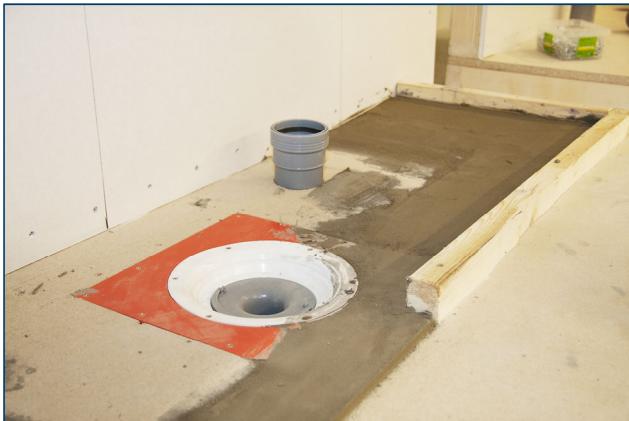


Foto: Säker Vatten

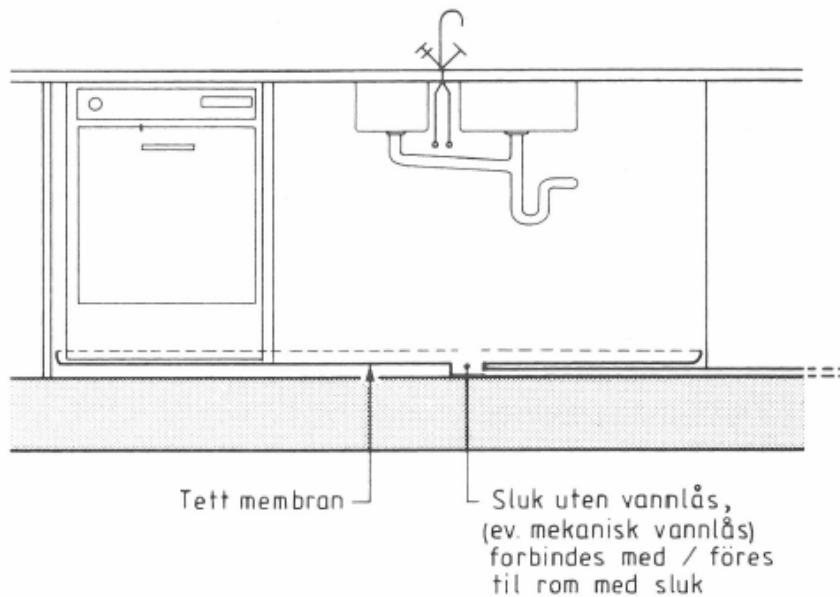
Leakage detection



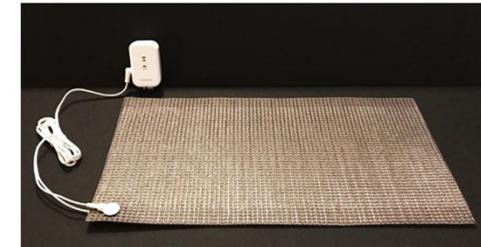
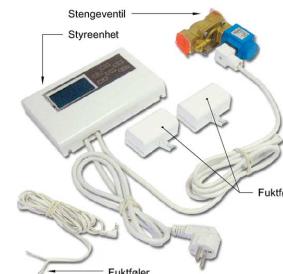
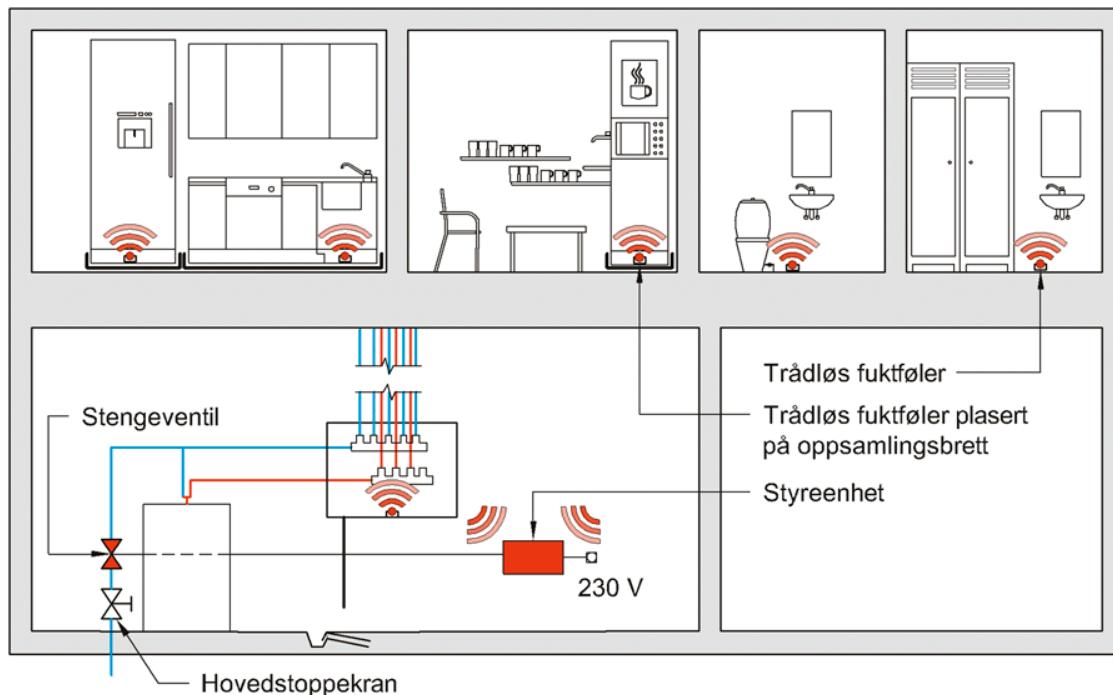
The Swedish solution



Gully in the kitchen unit



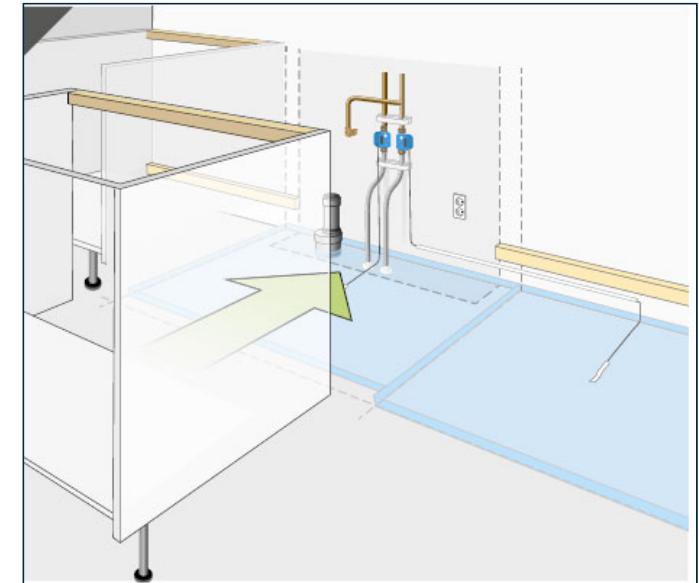
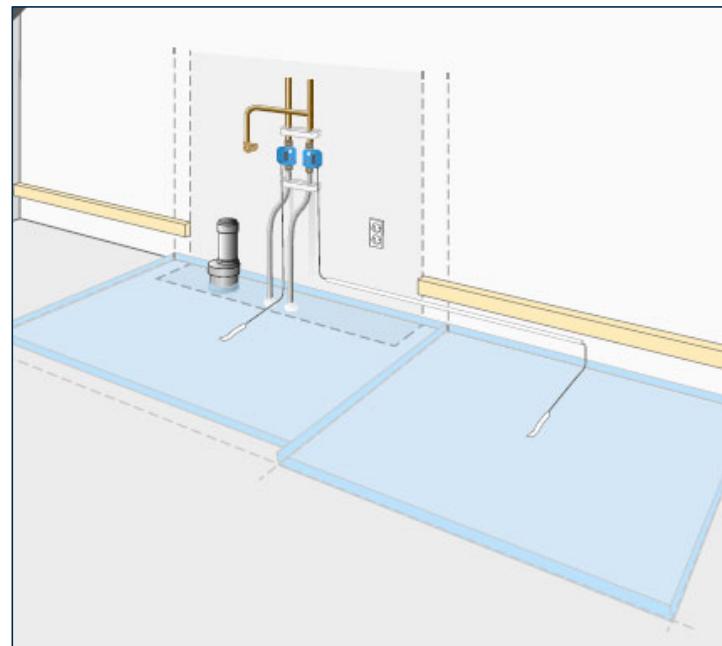
Location for automatic leakage detection



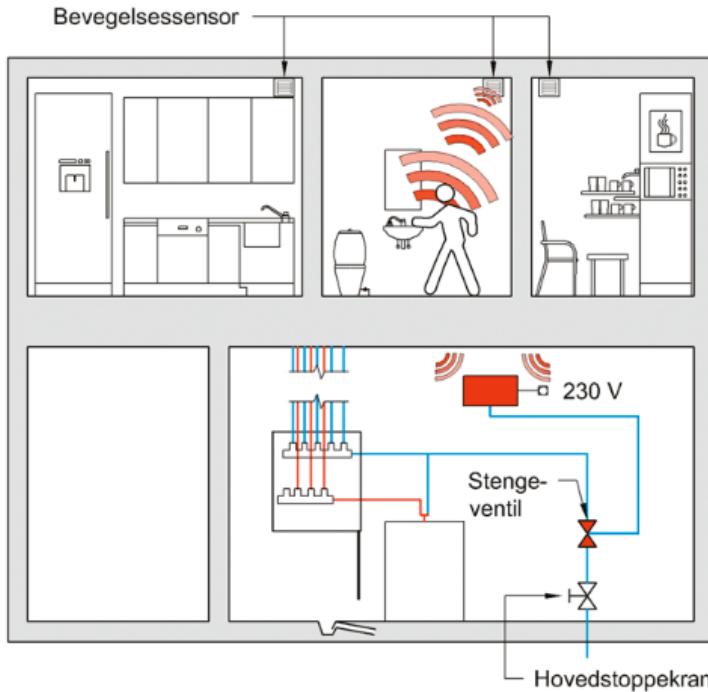
Lekkasjestopper

Nr.	Produkt	Innehaver
TG 20642	Arjonstop®	Armaturjónsson AS
TG 20619	Grohe Sense Guard	Grohe AG
TG 20598	LK VannStopp	LK Systems AB
TG 20520	FlowStop lekkasjestoppere	NINGBO Paili Electronic
TG 20407	PIE Vannsensor	O. Berge AS
TG 20546	DropStop 800 lekkasjestopper med oppsamlingsbrett AquaTeam+ for kjøkkenbenk	Tolico AB
TG 20615	WaterFuse Plug-In, VFB-700	Tolico AB
TG 20188	VIWA Watersafe lekkasjestoppere	Viggo Wahl Pedersen AS
TG 20544	Vatette Vattenfelsbrytare	Villeroy & Boch Gustavsberg AB
TG 20570	Vatette Vattenfelsbrytare med Vattendetektor	Villeroy & Boch Gustavsberg AB
TG 20042	Waterguard lekkasjestoppere	WaterGuard AS
TG 20420	WaterStop Lekkasjestopper	Waterstop AS

Automatic leakage detection with watertight tray



Other efforts to stop water leakages



- Motion sensor connected to shut-off valve
- Light switch connected to shut-off valve
- Door switch connected to shut-off valve

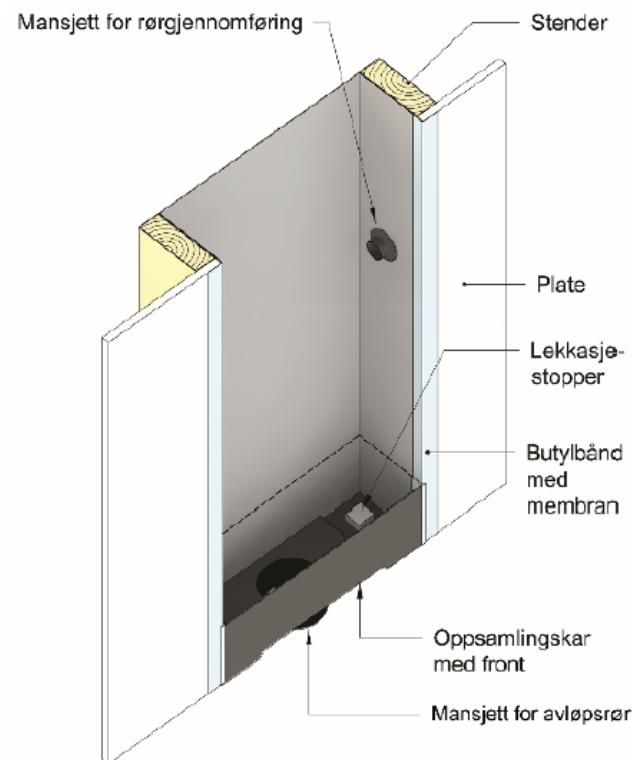
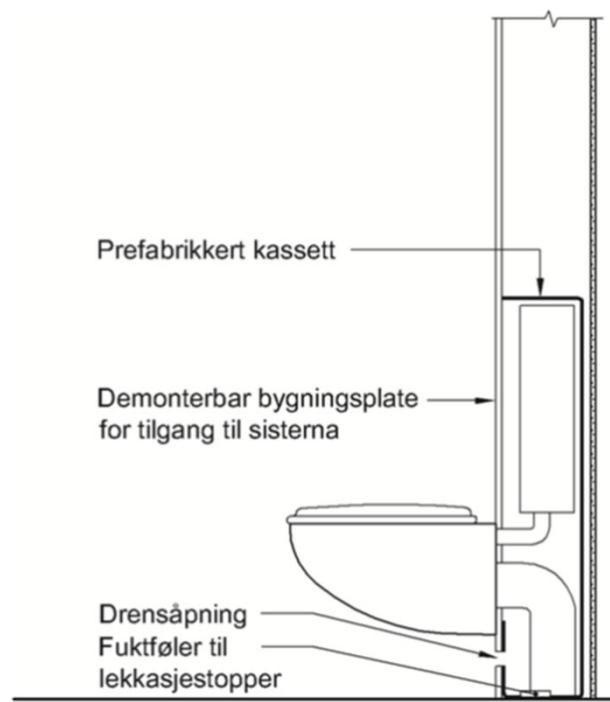


Motion sensor



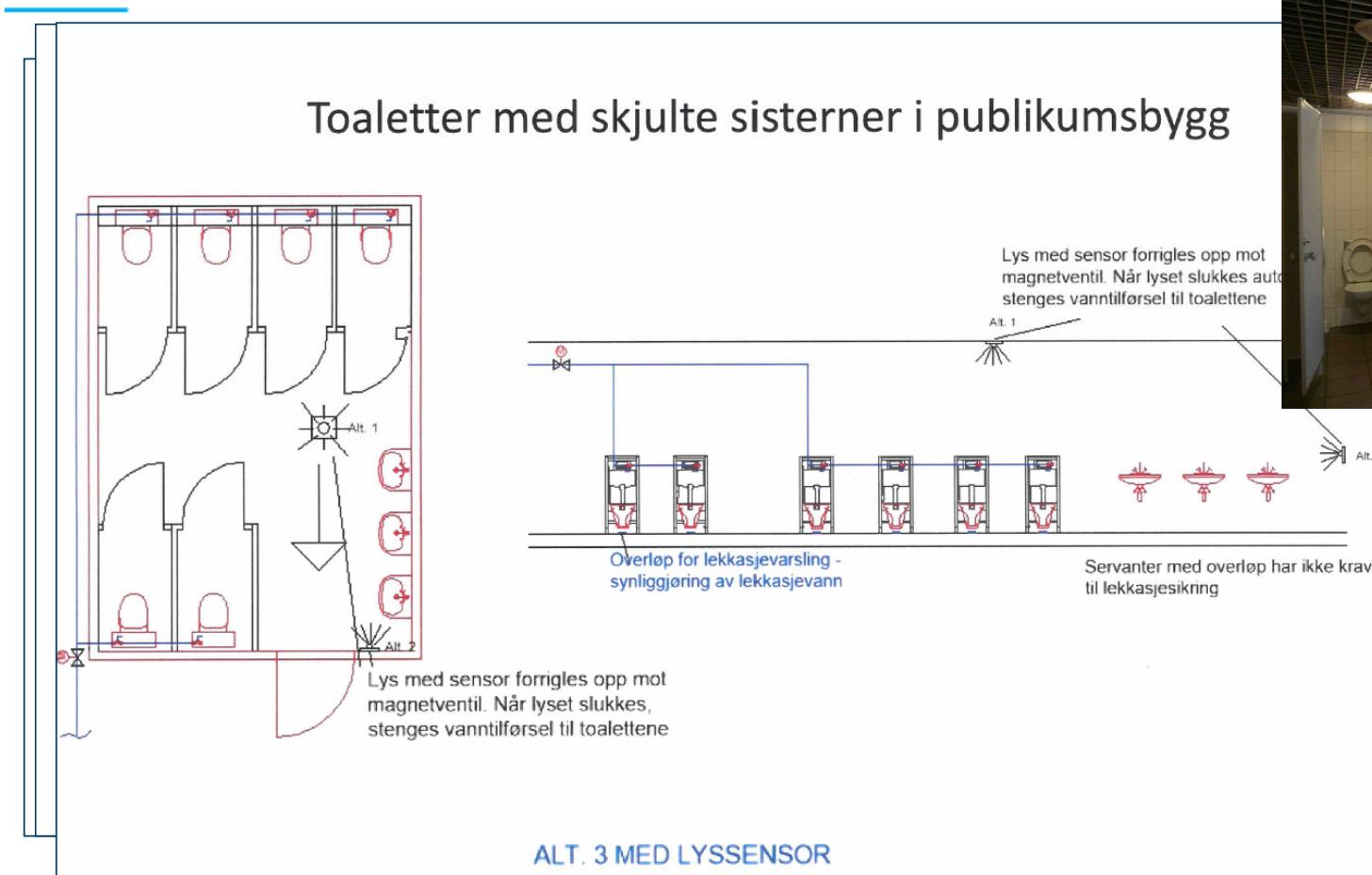
Door switch

How to stop water leakages from built-in cistern?



Leakage detection in commercial buildings

Kilde: Ole Larmerud, Rørhåndboka 2019



Correct installation of leakage detection

- The sensor should be placed near the installation it shall secure. The sensor must not be placed where it can be subject to normal water spills (e.g. hand wash/floor wash)
- The sensor must cover all area exposed to water



Latest advice:

- Leakage protection of rooms needs to be planned by qualified personnel (especially in commercial buildings)
- Sensors for leakage detection needs to be mounted on the right place and monitor the planned area
- Building owners needs training in operation and maintenance of the system





Teknologi for et bedre samfunn