

Emerging green plumbing design, systems and technologies



Dr Steve Cummings

Green plumbing design – Key water consuming fixtures

1. Toilets

WELS
ASFlow Research into
reduced flush volumes

2. Urinals

More efficient water-
saving technology –
ASFlow total system

3. Tapware

Wels
Electronic technology

4. Showers

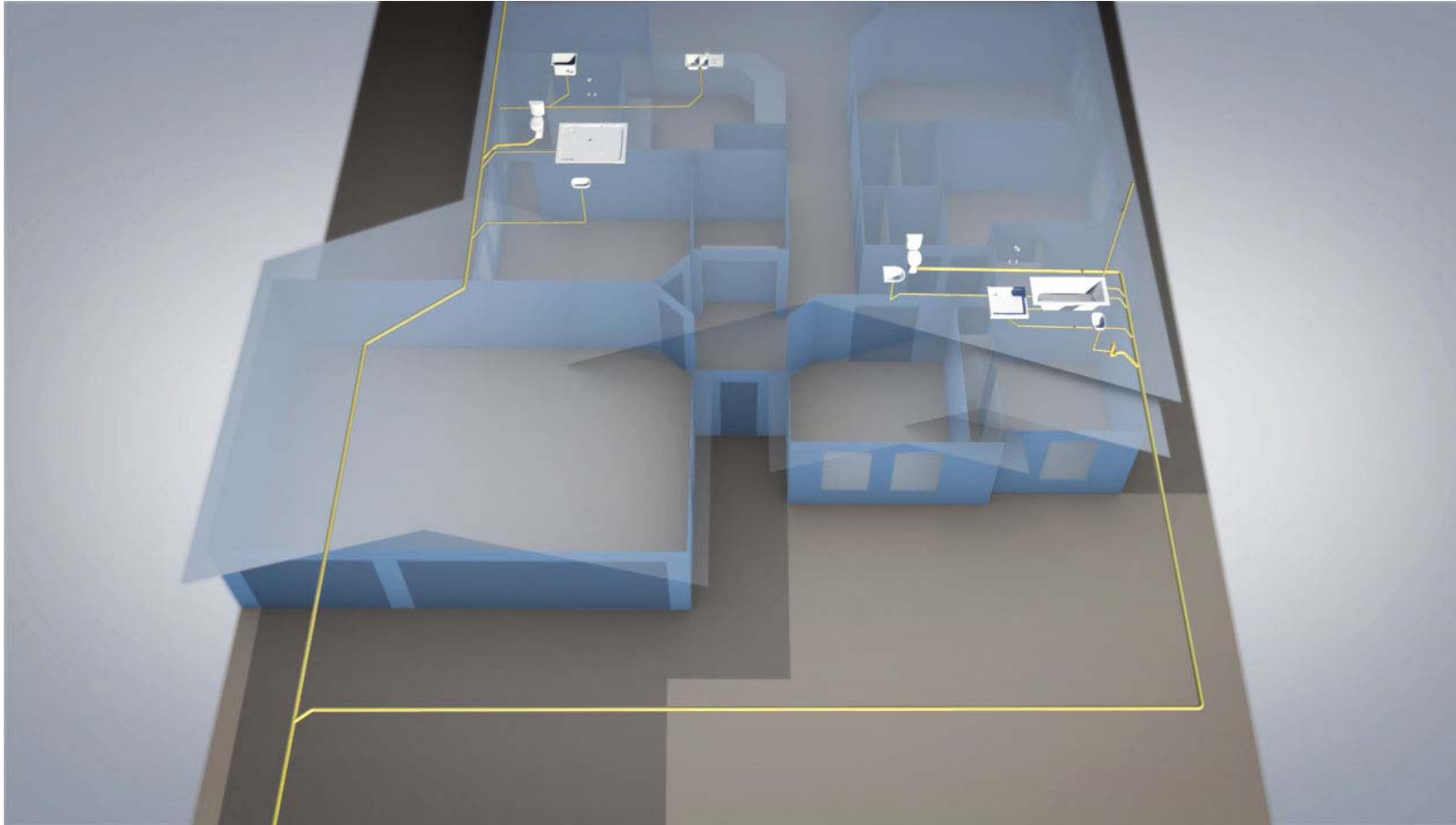
Low flow shower research
WELS
WaterSense – US

Green plumbing design - ASFlow new high efficiency WC/drainline systems



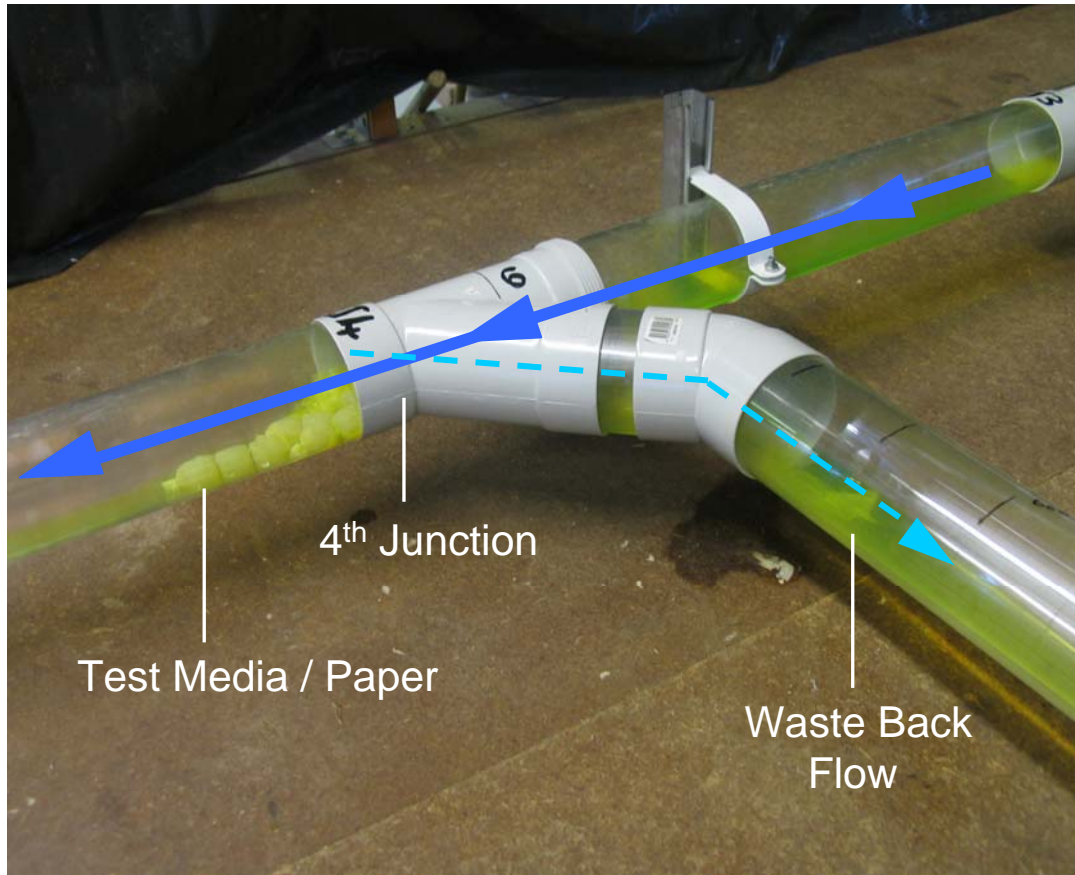
Canberra Institute of Technology (CIT) drainline simulation test rig

Green plumbing design - new drainline systems



ASFlow – Domestic problem installation in Western Australia

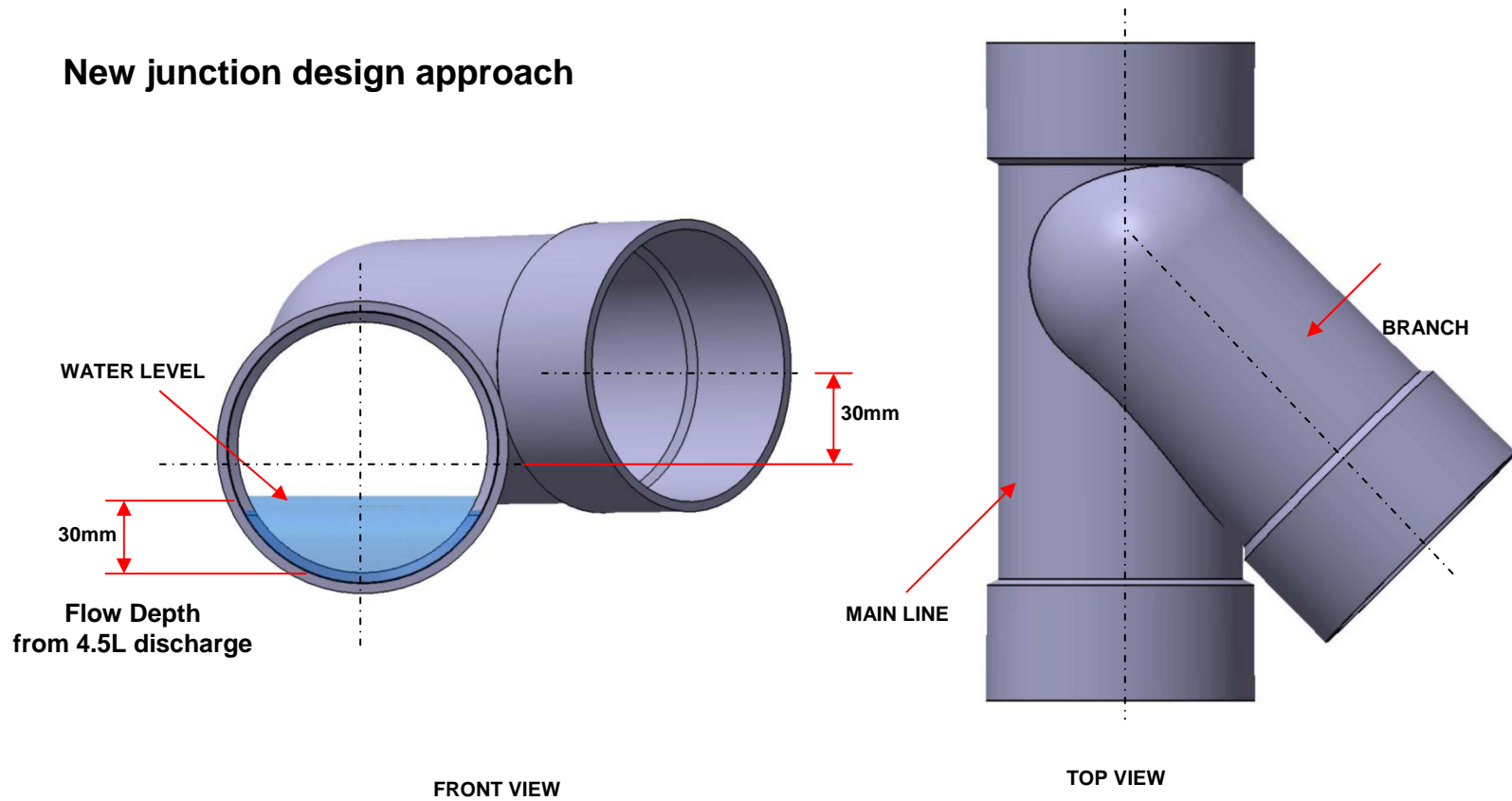
Green plumbing design - new drainline systems



CIT WC Drainline transportation performance testing

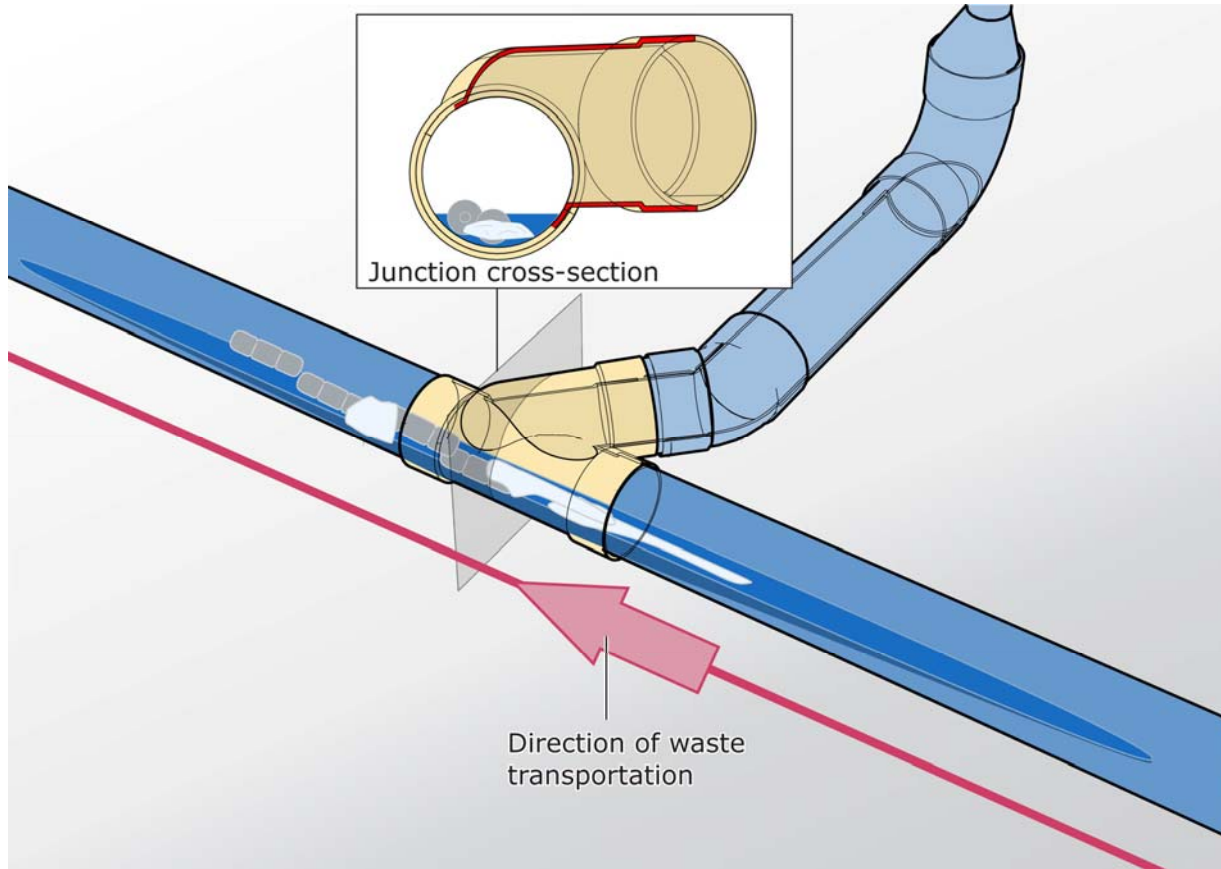
Green plumbing design - new drainline systems

New junction design approach



Horizontal Sweep Junctions – Alternative junction configurations

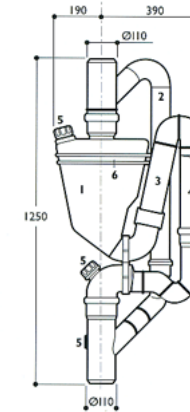
Green plumbing design - new drainline systems



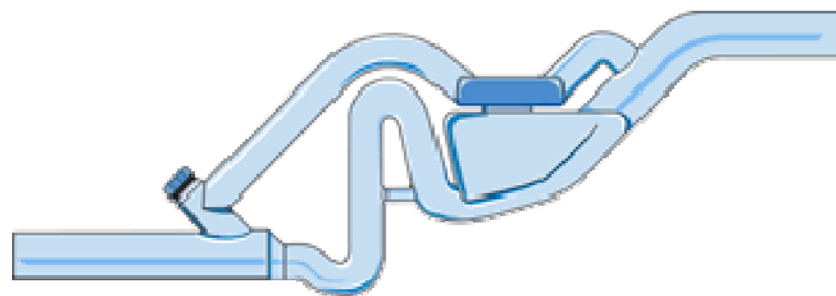
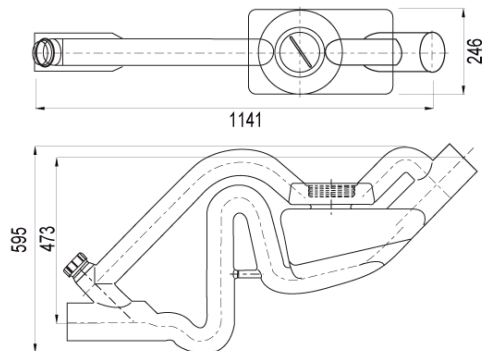
Alternative horizontal sweep junction design

Green plumbing design - new drainline systems

Gustavsberg Toilet System



WISA Booster System



Green plumbing design - new drainline systems



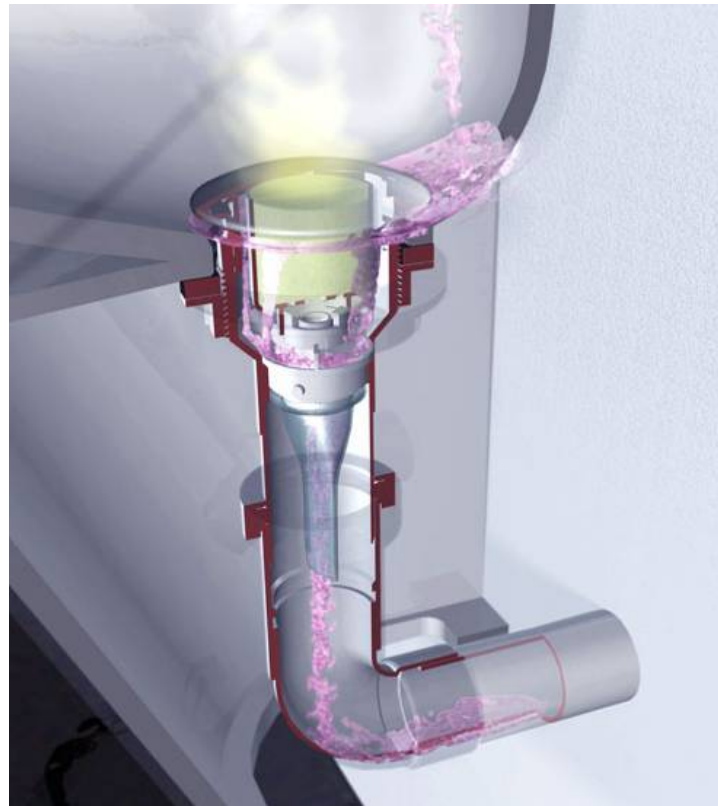
Syphonic System – receives discharge from

- 24 x 4L WC's
- 4 x Urinals
- 16 x Hand basins

Green plumbing design - Retrofit pan solutions



Green plumbing design - Urinals

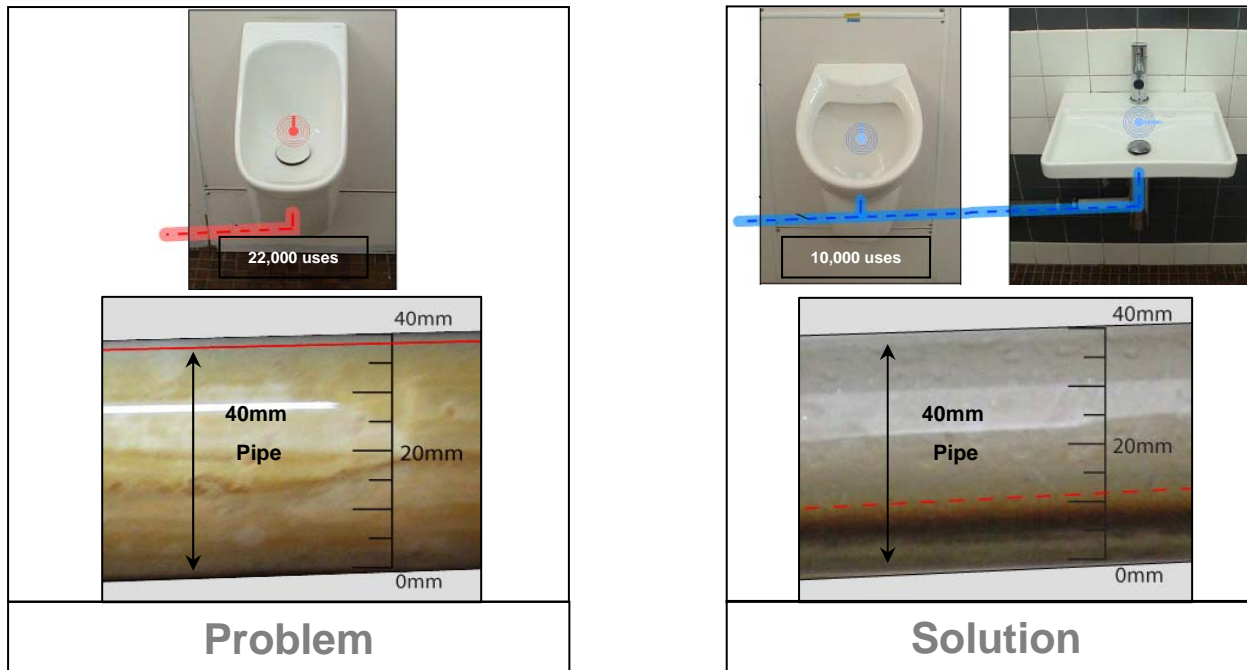


Green plumbing design - ASFlow waterless urinal drainline research

As a result of this research the following amendments have been prepared for AS/NZS 3500:

Waterless urinals

A minimum of two additional fixture units must be installed upstream of every waterless urinal, excluding cleaner sinks.



Green plumbing design - More efficient flushing Urinal systems WELS driver



Green plumbing design - Smart electronic tapware energy efficient



Japanese electronic tapware generates its own power source through water delivery

Green plumbing design - WELS 5-Star rated tapware

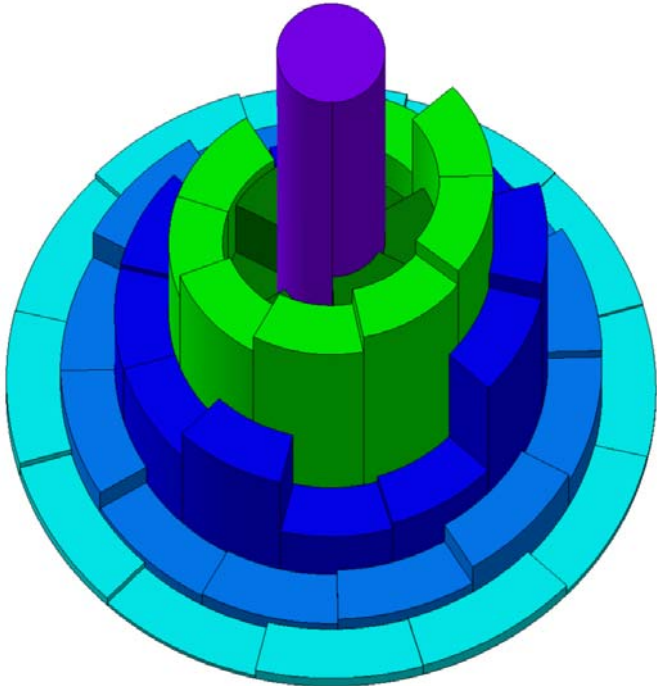


Green plumbing design - European showers



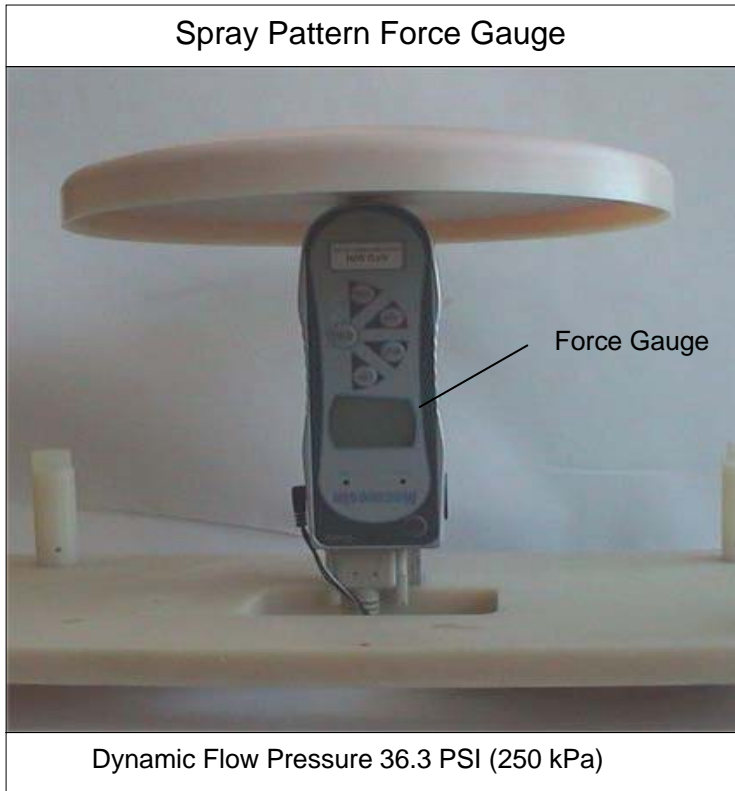
In-efficient water wasting showers.

Green plumbing design - Shower research testing AS/NZS 6400 WELS comfort tests



New Low-flow shower performance testing – Spray Coverage

Green plumbing design - Shower research testing AS/NZS 6400 WELS



New Low-flow shower performance testing – Spray Force

Green plumbing design - US showers comfort tests



New Low-flow shower performance testing – US Standards

Water efficient fixture systems that are matched in performance – total system approach

