

AZULOOP

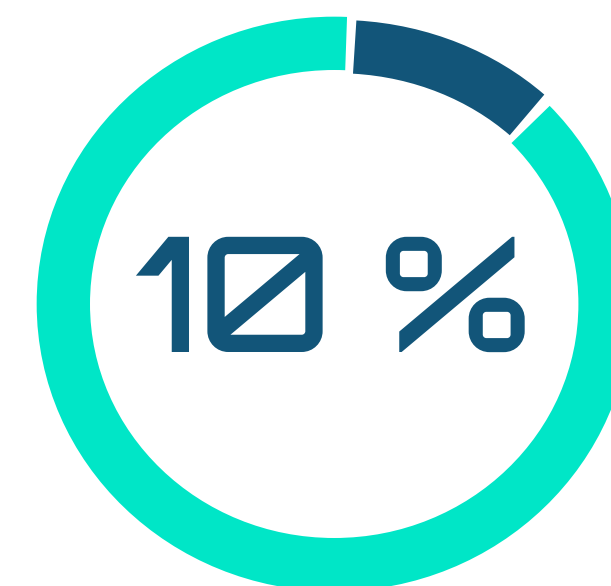
Smartifying everyday objects

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The shower

1. Problem statement.



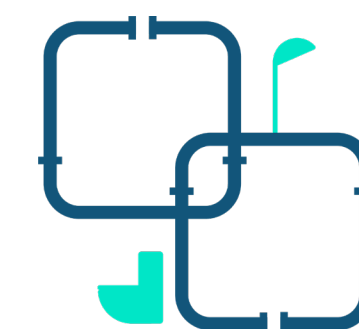
10 % of our shower water is wasted by waiting for the water to warm up



That means an average waste between **5 L to 10 L** per shower



Which often adds up to **30 L/day** in a family household of four



2. Solution.



And objectives.

Water saving system

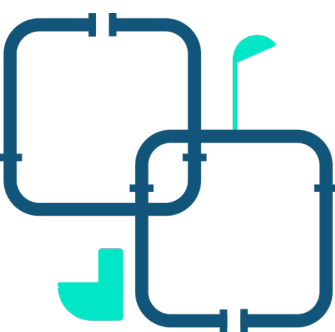
Electronics
Parts
Casing

Intuitive interaction

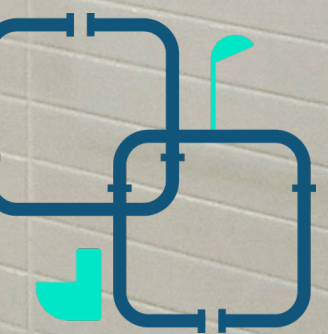
Personalizable
user settings

Sustainable and ethical design

Material selection
Energy-efficient
User safety



3. Design



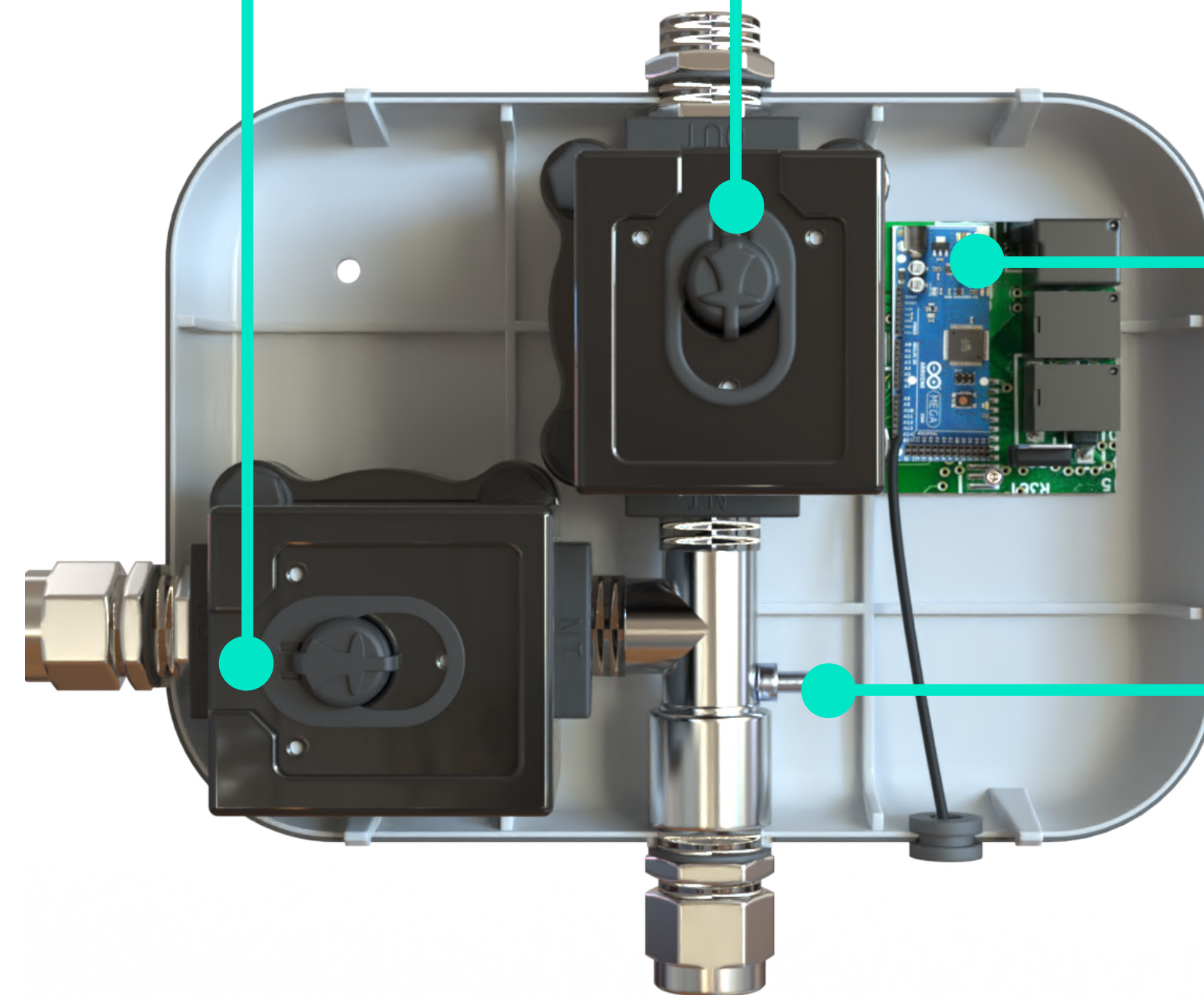
3.1

Shower part.

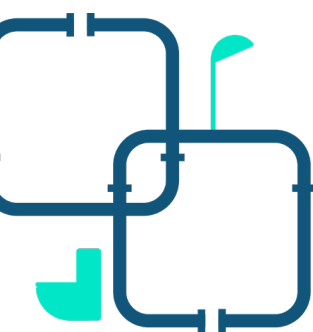


Solenoid valves

Micro-controller

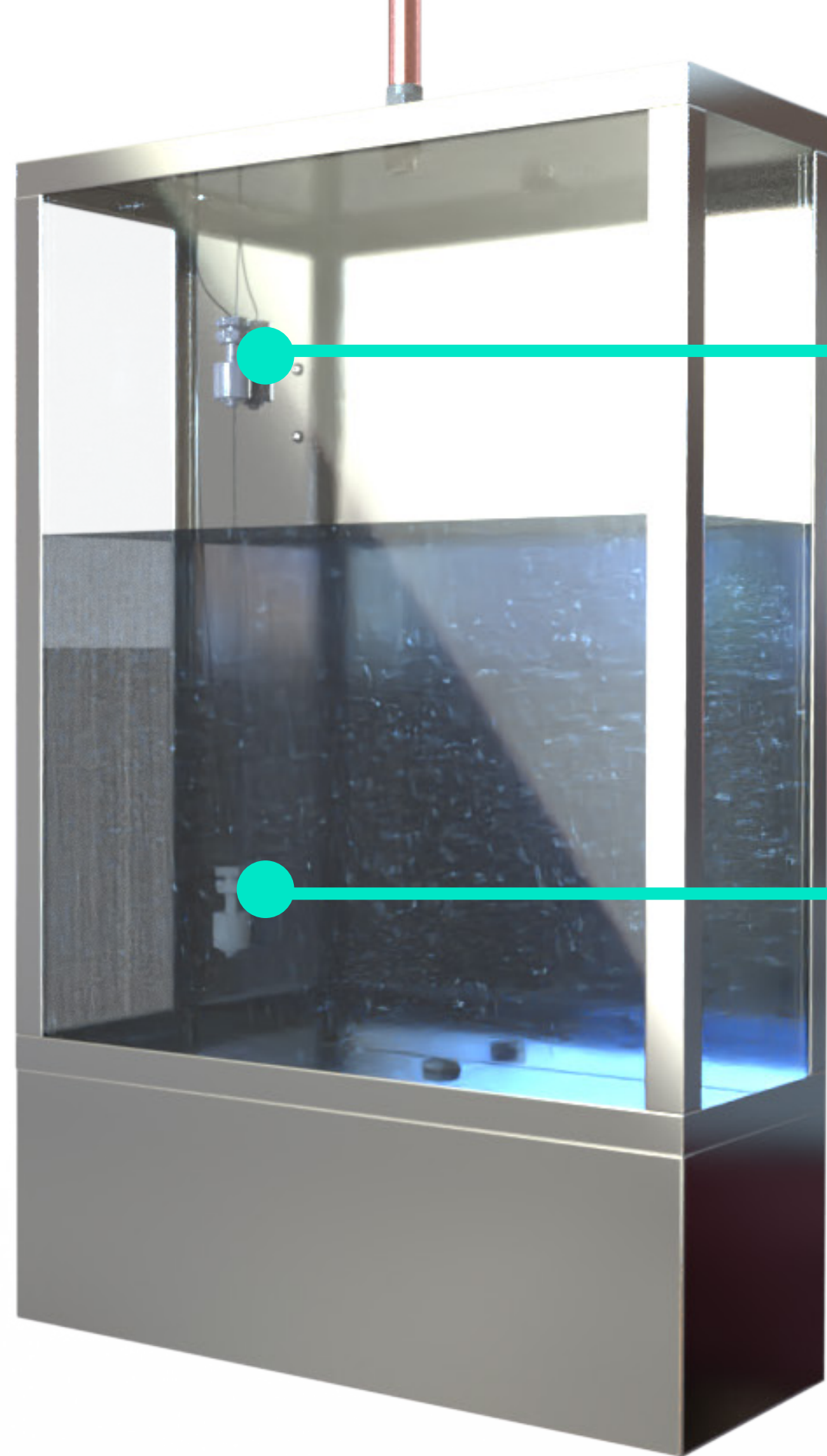
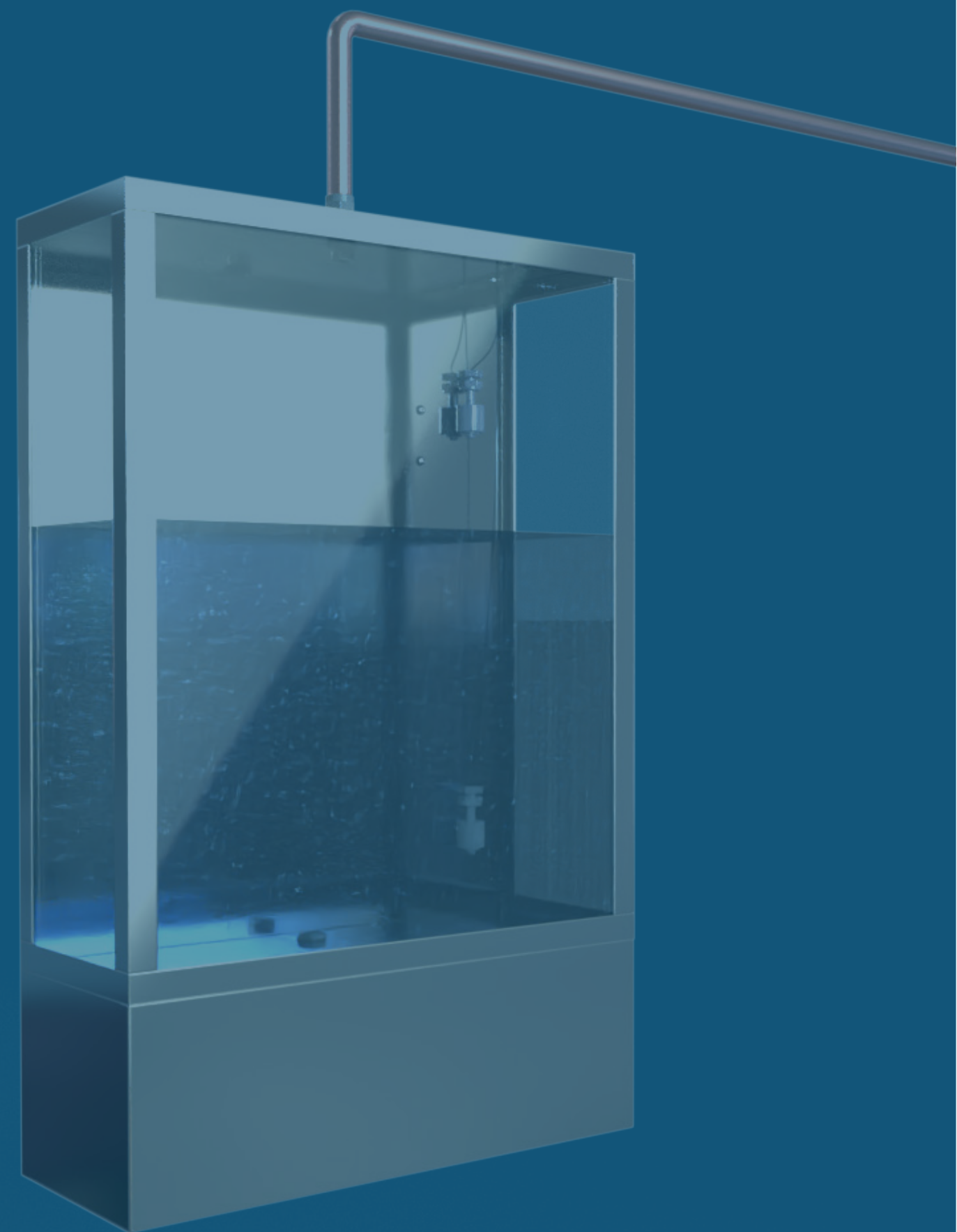


Temperature sensor



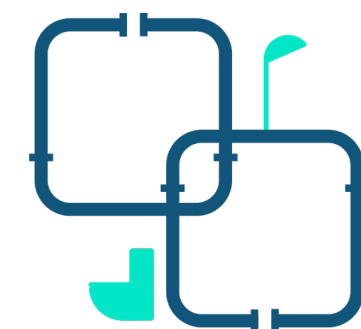
3.2

Storage tank.



Float-level sensors

Solenoid valves



4.

Specs.

Technical

Tank volume: 30 L
Control logic: Arduino-based
Operating voltage: 230 V AC
Power usage: 42.16 W

Functional

Temperature range: 20-35 °C

Cost

€ 1 564.35

Including

Component cost

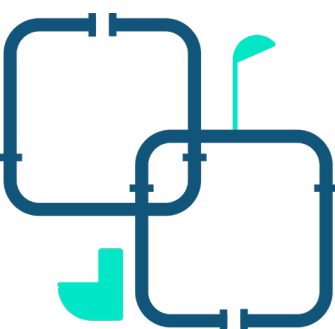
Employee wages

Shipping cost for customer

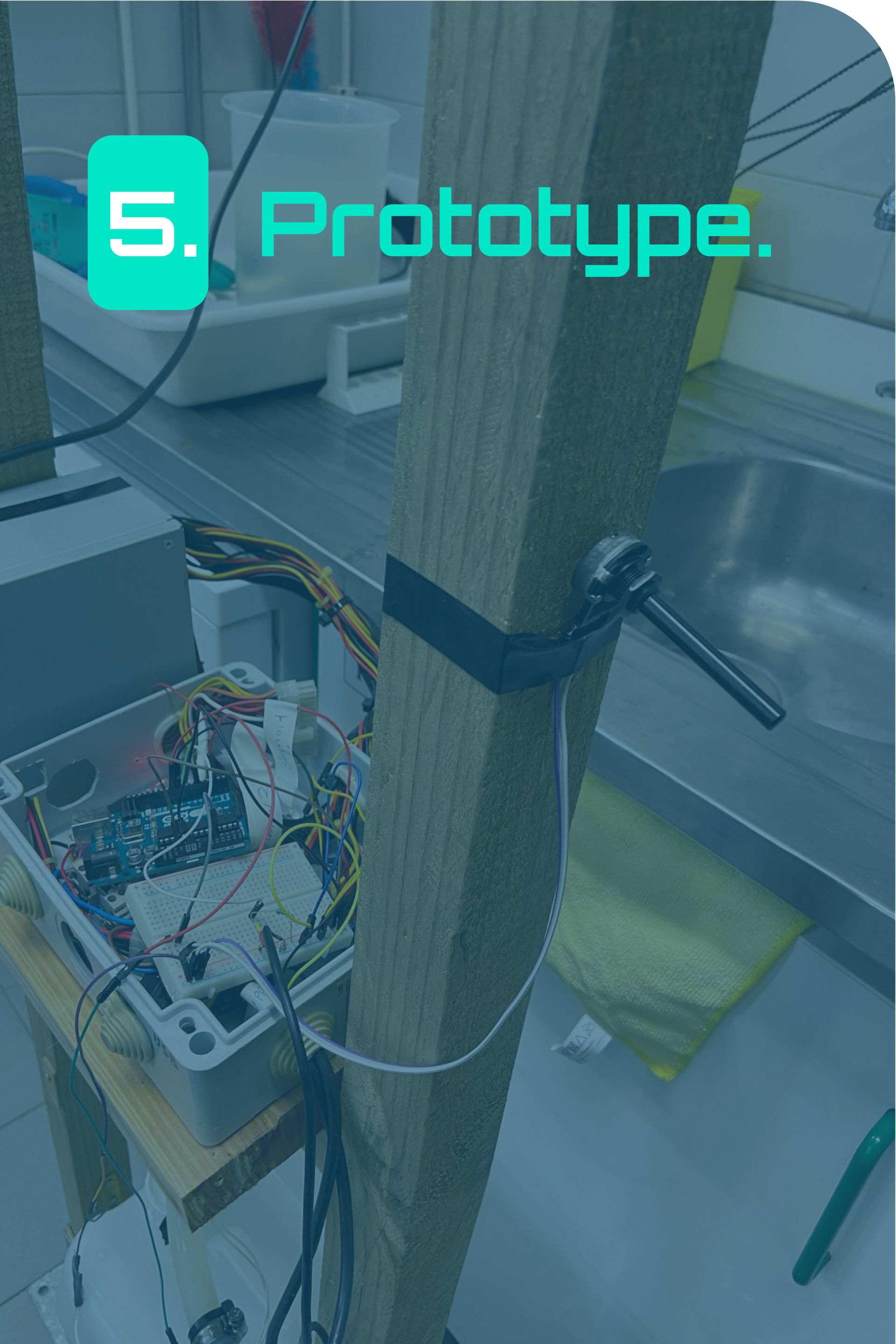
Profit

VAT

Marketing

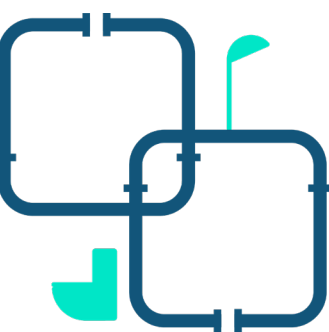


5. Prototype.



Contains

- Potentiometer
- Micro-controller
- Temperature sensor
- 2 Solenoid valves
- 1 Float-level sensor
- Power supply
- Relay
- Water jug

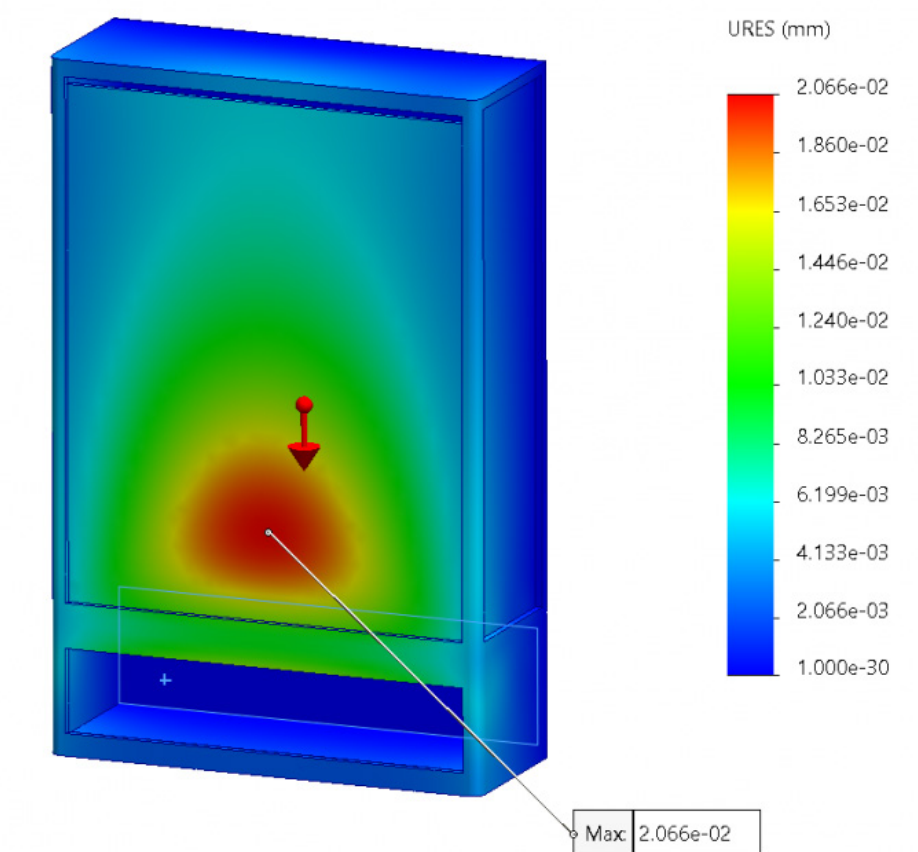


6. Testing.

Functional tests

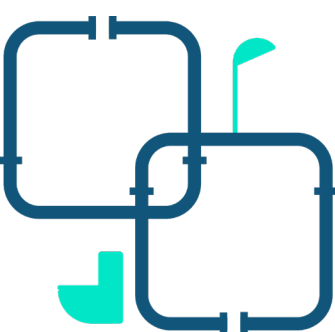
- Temperature Sensor Reading ✓
- Potentiometer Setpoint Control ✓
- Water Level Detection ✓
- System OFF Mode ✓
- Temperature-Based Routing ✓
- Tank Full Override ✓
- Valve Mutual Exclusion ✓

Structural tests



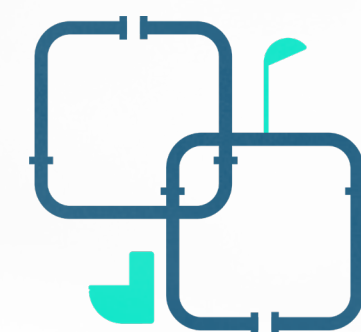
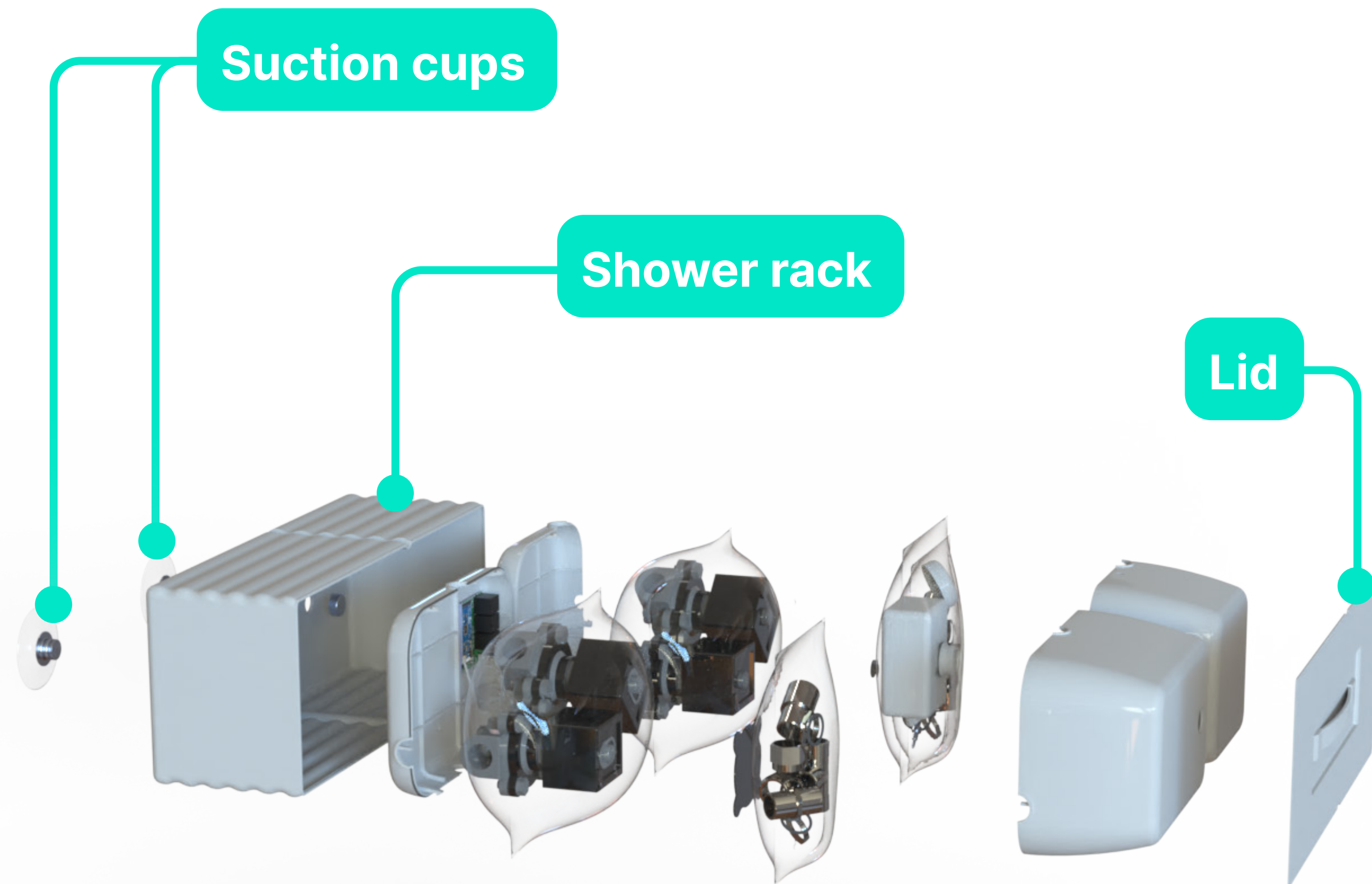
Performance test

| | T_w | T_{wp} | time |
|-------|---------|----------|-------|
| s_1 | 24,2 °C | 25 °C | 2 min |
| s_2 | 30 °C | 30,6 °C | |





Packaging.



8. Conclusion.



Achievements

Smart water-saving
with zero effort

Comfort meets
sustainability

Future developments

App for temperature
regulation

Fully integrated system
throughout the home

Invisible design

Cost/benefit optimization

SDGs

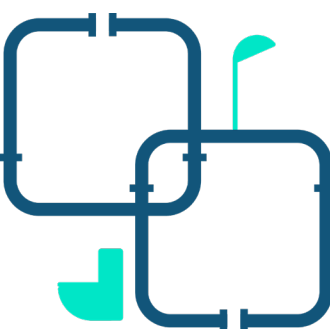
6 CLEAN WATER
AND SANITATION

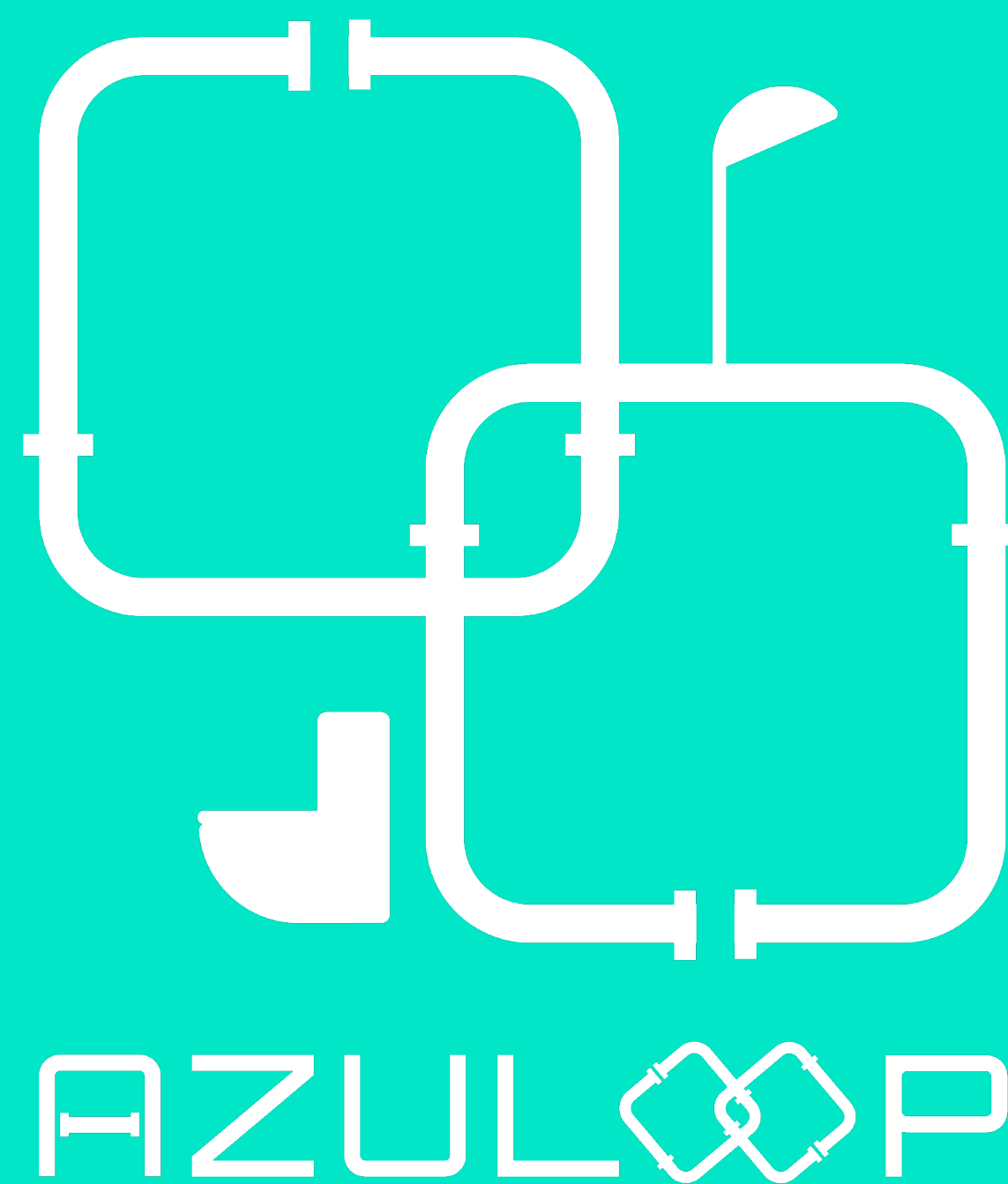


11 SUSTAINABLE CITIES
AND COMMUNITIES



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION





Where saving water meets everyday comfort.