



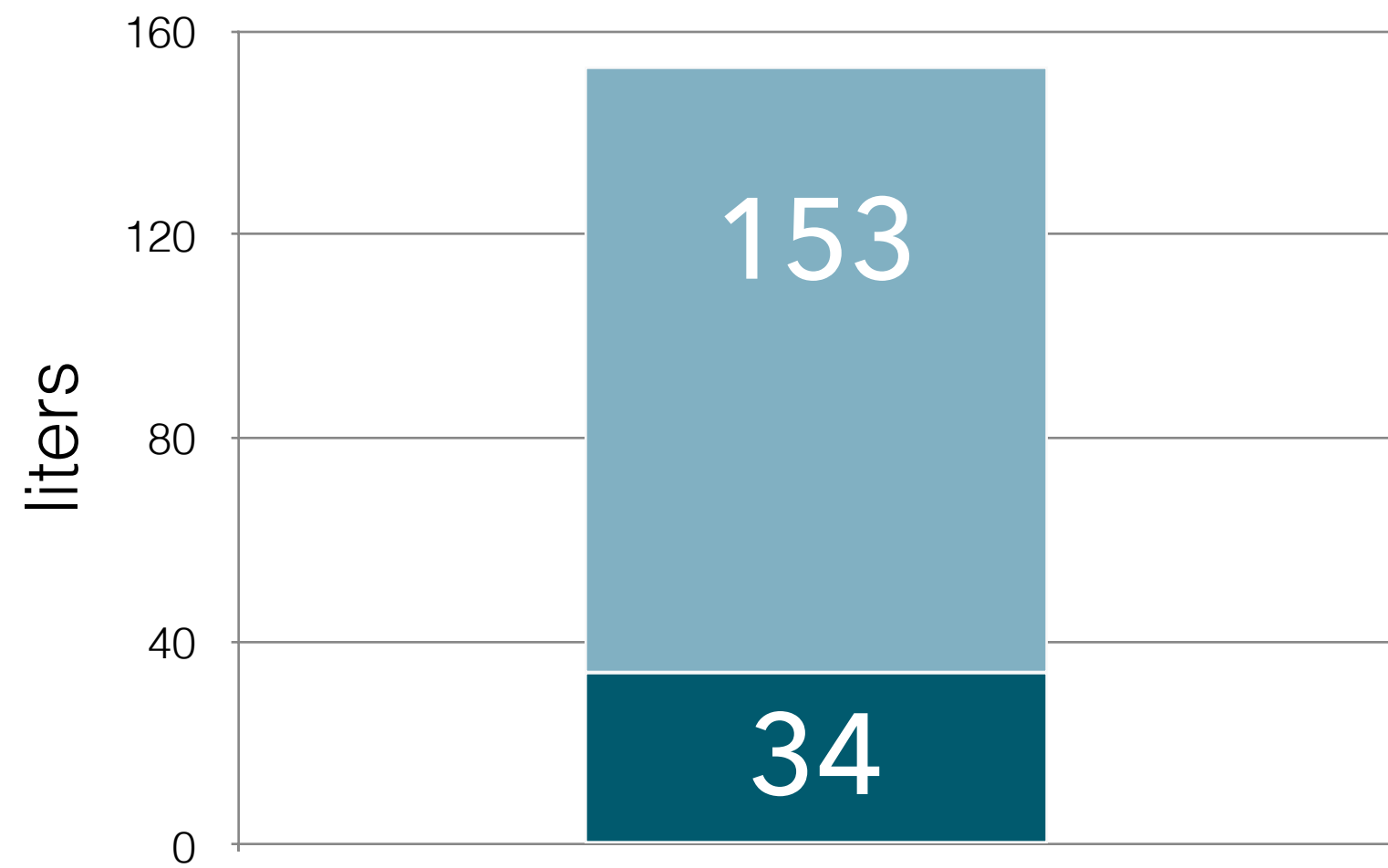
**The
Fifth
Element**

Technical Platform

5th Element | vs Conventional **Water** Consumption

■ Poshtel ■ Conventional

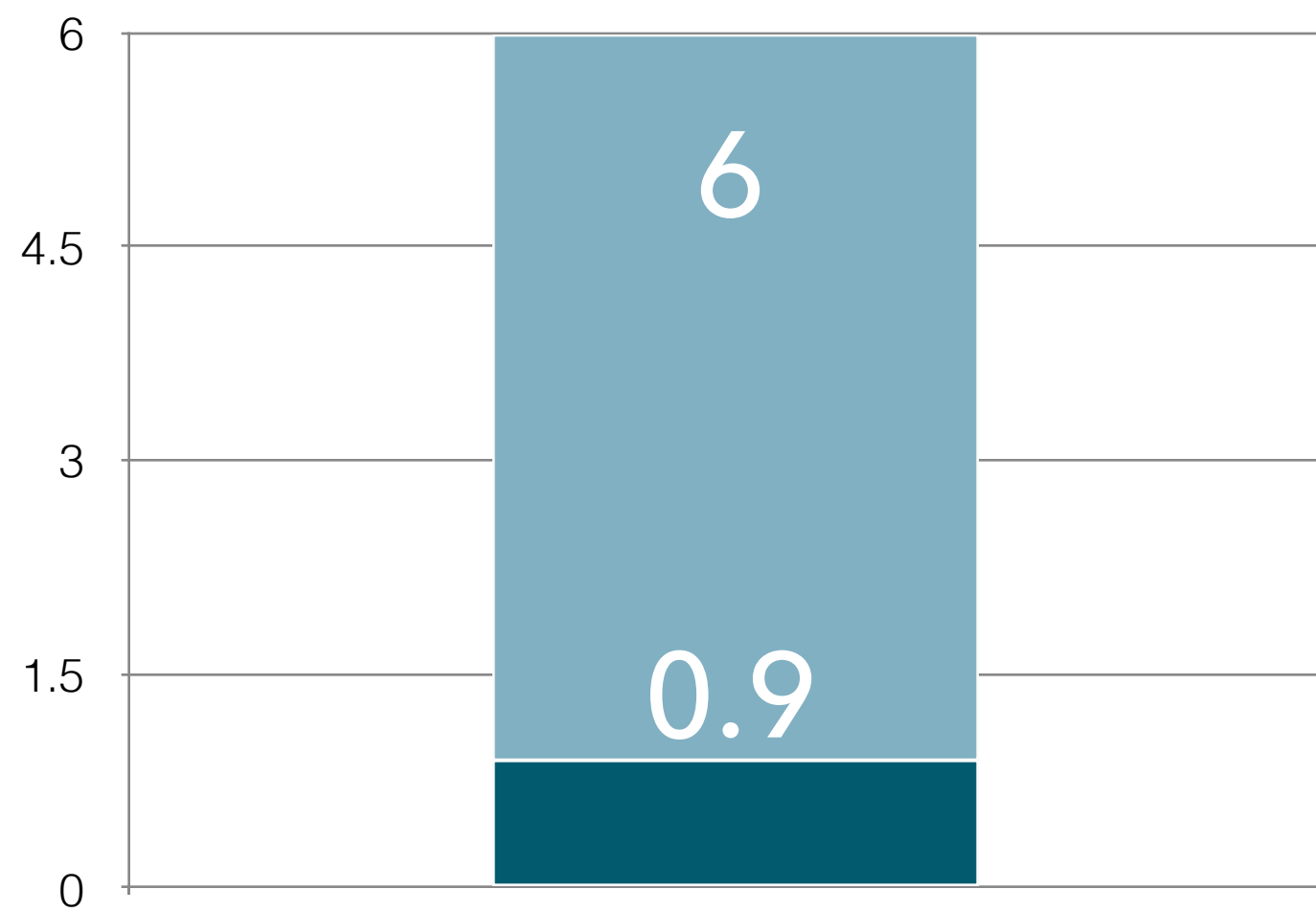
Fresh Water Consumption



x4

times more efficient

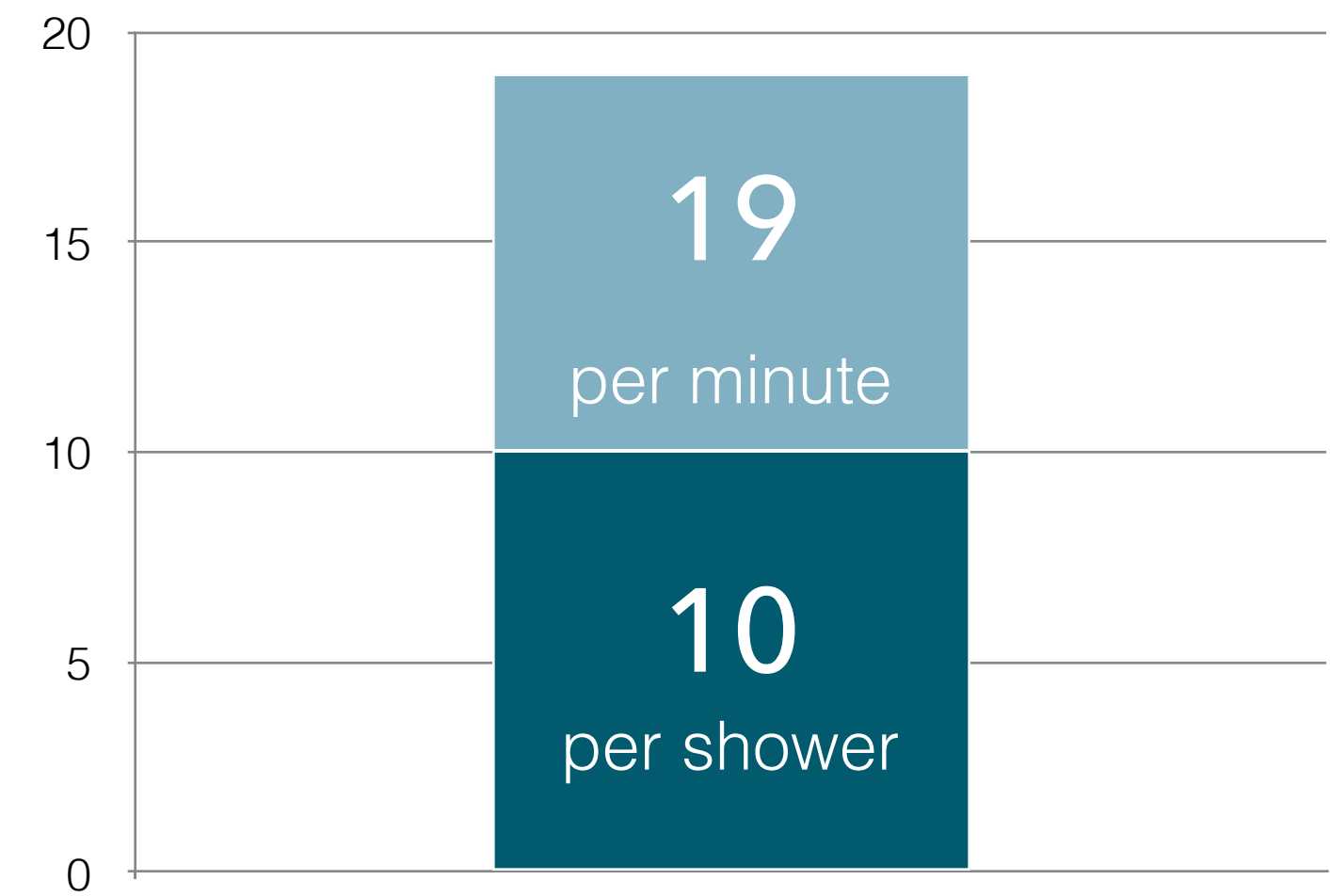
Black Water (per flush)



x6

times more efficient

Grey Water (shower)



x2

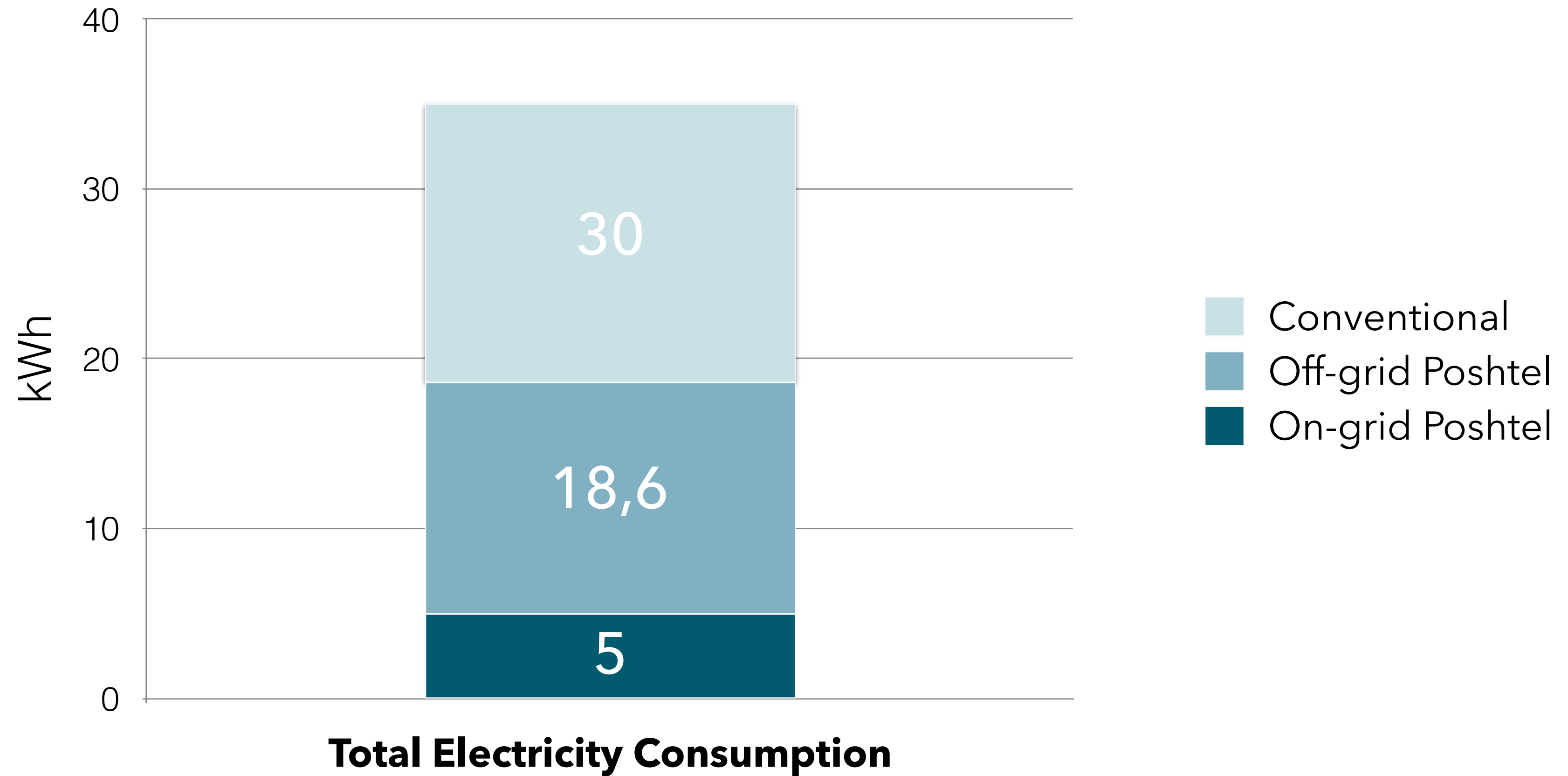
times more efficient

*source: water.usgs.gov/ (based on a daily consumption from a unit/household of two people excluding washing machine consumption on unit & household)

5th Element | vs Conventional **Power** Consumption

x2
more efficient

even when
producing water
with AWG system
in off-grid scenario



*source: eia.gov/

*A Poshtel can sustain itself without any solar source for 5 days

Poshtel POPUP | EARTH FRIENDLY ON GRID

DAILY CAPACITY

for 10 Poshtels
(each Poshtel 2 people)

when off-grid
WATER
1340 liters of fresh water of total

60 liters allocated of **black** water tanks
1280 liters allocated for **grey** water tanks or infiltration

when on:
grid
solar or
batteries
ELECTRICITY
54 kWh/day

50 kWh supply to 10 Poshtel/day

Charging phones/ tablets
Water heater
Heating/cooling (AC)
Lights
Pumps and toilet

0,6 kWh for vacuum pump
(60 flushes at 10Wh/flush)

1,5 kWh Water pressure pump

2 kWh miscellaneous

Controll units
Computers
Lights and others







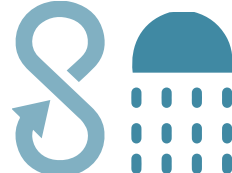
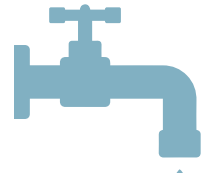


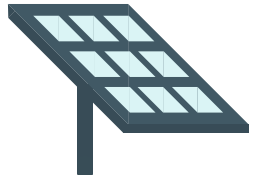

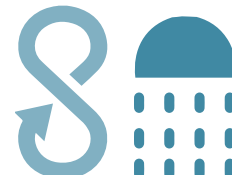


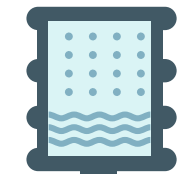
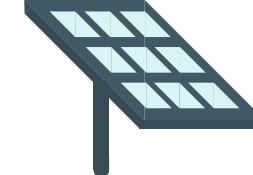
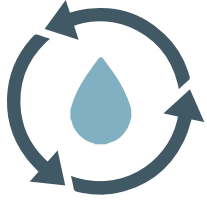


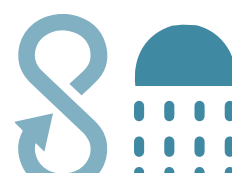


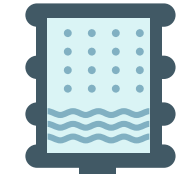
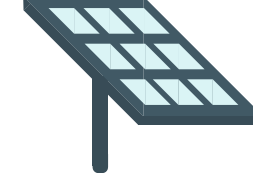
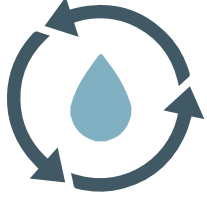

* This calculation is based on average, some changes may apply depending on location







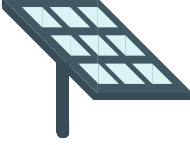

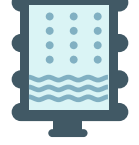
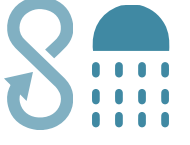



The Fifth Element

Scenarios

5th Element | Site Setup

										Cost of Components	Power Use	Cost per night*
S	 PumpSys	 OrbSys	 On grid water	 On grid power	 On grid sewage					€31.200	54 kWh	€10
M	 PumpSys	 OrbSys	 On grid water	 On grid power	 On grid sewage	 Solar Power				€106.700	54 kWh	€21
L	 PumpSys	 OrbSys	 Off grid sewage	 On grid power	 Off grid Water	 Solar Power	 BDT Filter	 Composting		€160.400	190 kWh	€30
XL	 PumpSys	 OrbSys	 Off grid sewage	 Battery	 Off grid Water	 Solar Power	 BDT Filter	 Composting		€256.700	190 kWh	€41

The Toolbox

 On grid water
  On grid power
  On grid sewage
  Battery
  Solar Power
  Off grid sewage
  Off grid Water
  OrbSys
  BDT Filter
  Composting
  PumpSys

*Based on occupancy rate of 60% of a Poshtel Unit and 60% financing of 5th Element Unit

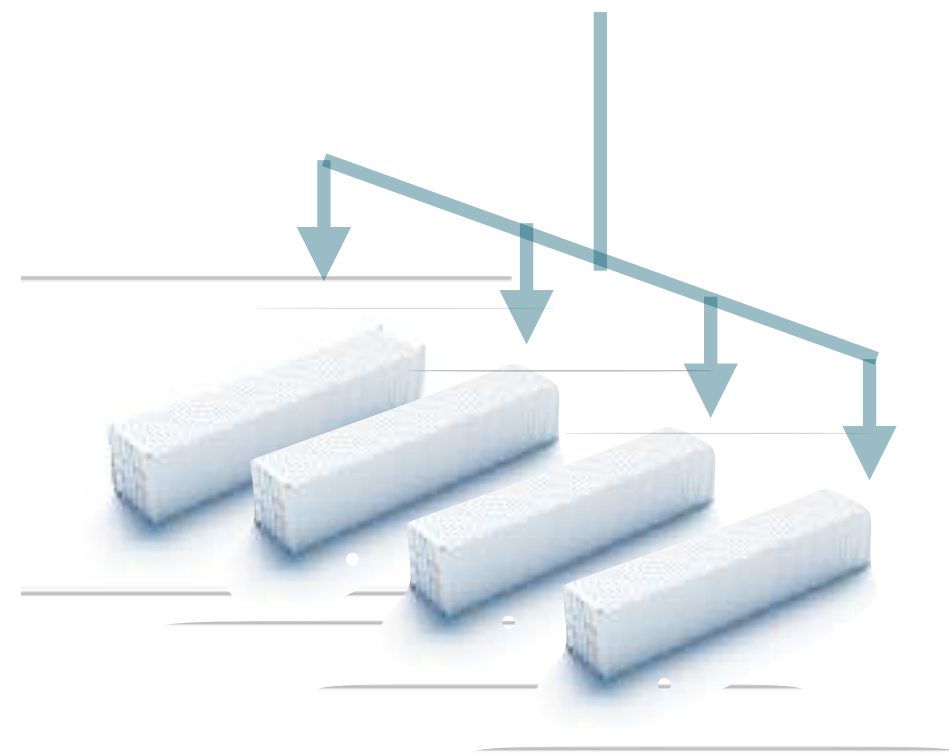




The Fifth Element

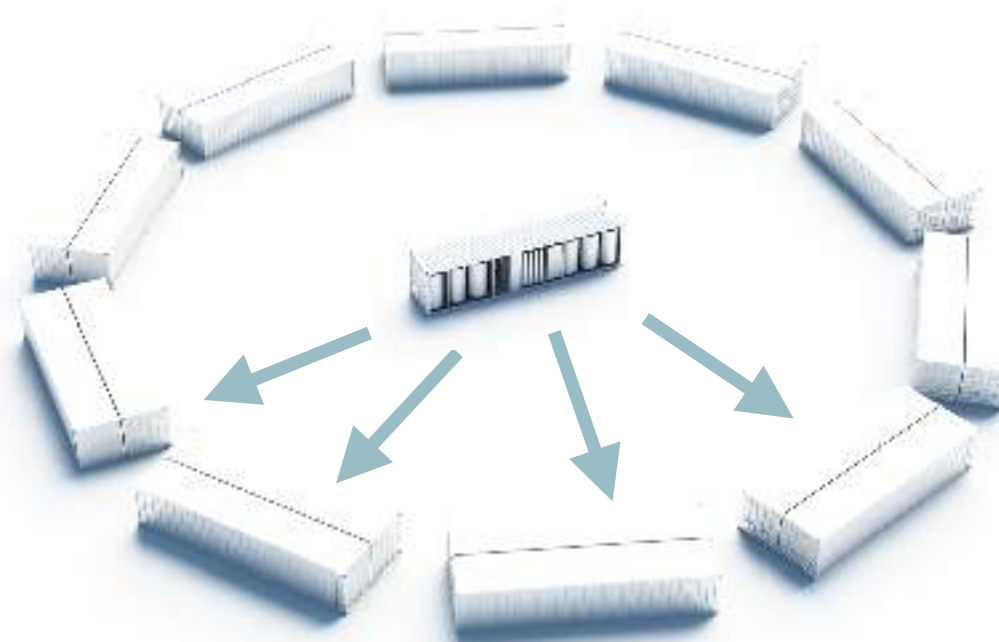
The Toolbox

5th Element | Black Water Sewage System



Grid connection

up to **150 meters**.



Off grid (collection tanks)

up to **40 meters**
from 5th Element

1. Using a state of the art vacuum toilet system we simplify the connection process on site.
3. The setup of a synchronised dual vacuum pump system ensure zero down time and reliability.
5. The toilet uses only **0,7-0,9 liter** of water per flush, saving up to 30 liters of water per day (considering 6 flushes per day).
7. Connecting a minimum of **10 Poshtels** to the system lower the cost for connecting to the grid (if existing) with up to **90%**.
9. If there is no existing sewage grid, we simply collect the black water in tanks.
11. Collected black water either gets emptied by a sewage truck, or is processed for **composting**

5th Element | Black Water Sewage System

Dual vacuum motor unit for:

- Added redundancy
- Greater vacuum generating capacity
- Operational reliability
- Automated vacuum level monitoring and control

Air capacity: min 24.000 litres/hour

Liquid capacity: min 8.000 litres/hour

Flushing capacity 60Hz: 250 flushes/hour

Flushing capacity 50Hz: 200 flushes/hour

Material: Stainless steel/Bronze

Motor (x2): 2,2 kW (4,4 kW) @50 Hz - 2,55 kW (5,10 kW) @60Hz

Weight: 85 kg

Detailed specs:

External dimensions: 644 x 814 x 976 mm (W x L x H - including compensator)

Connection, inlet: 50 mm

Connection, outlet: 50 mm

Pump house material: Bronze

Rotor house material: Stainless steel

Knife material: Stainless steel

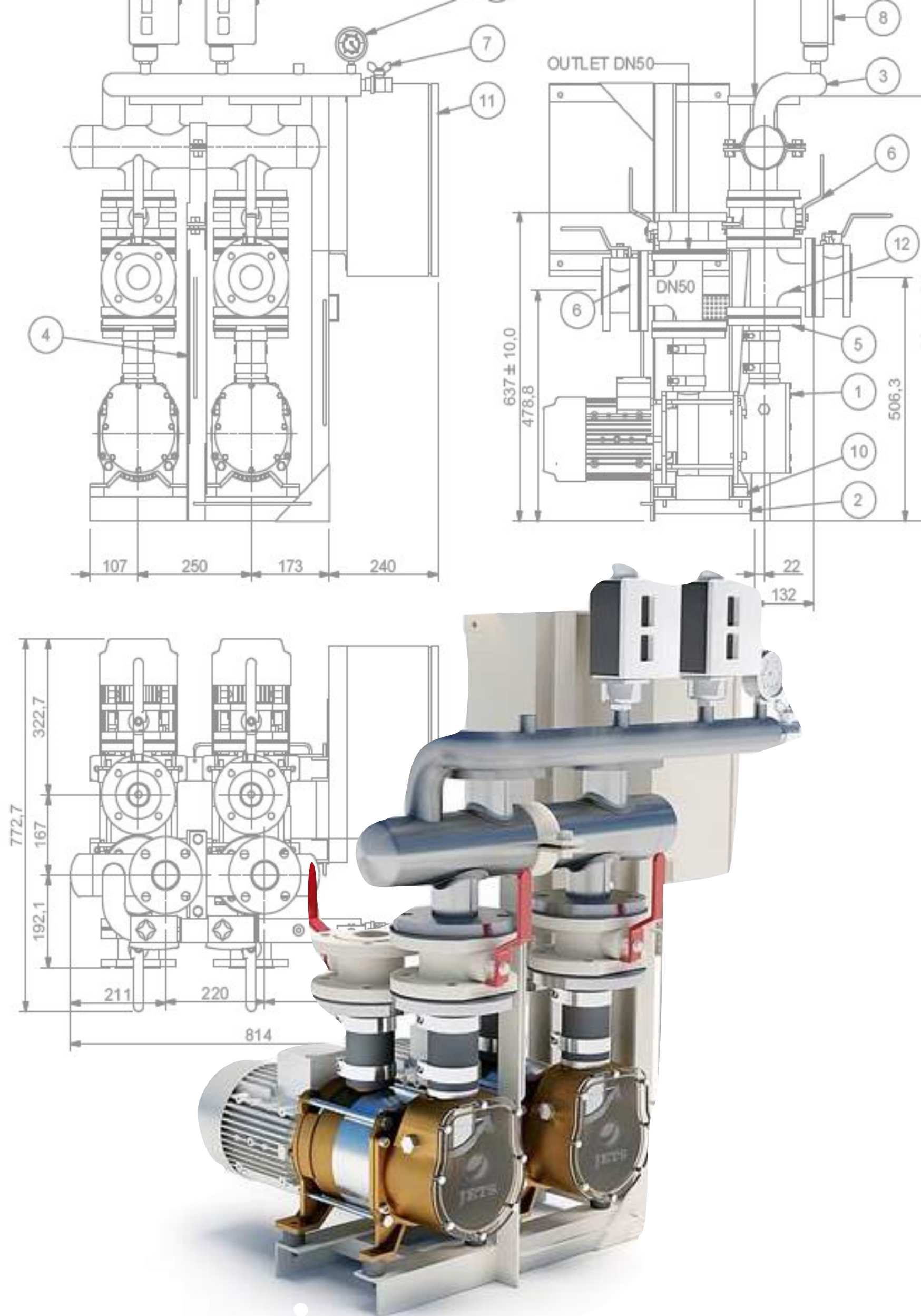
Shaft material: Stainless steel

Current consumption at 220V AC x2: 8,3A/50Hz

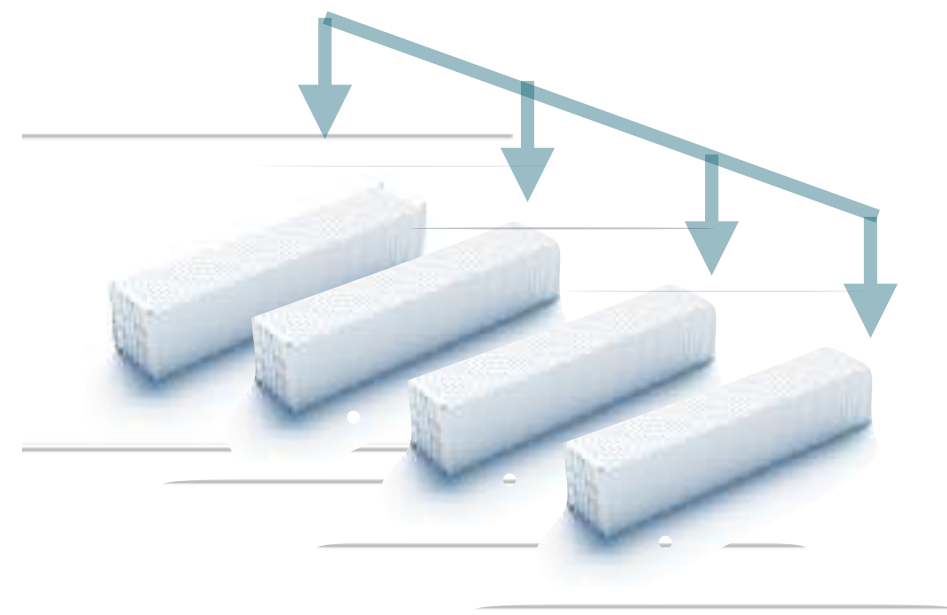
Current consumption at 255V AC x2: 8,2A/60Hz

Current consumption at 380V AC x2: 4,8A/50Hz

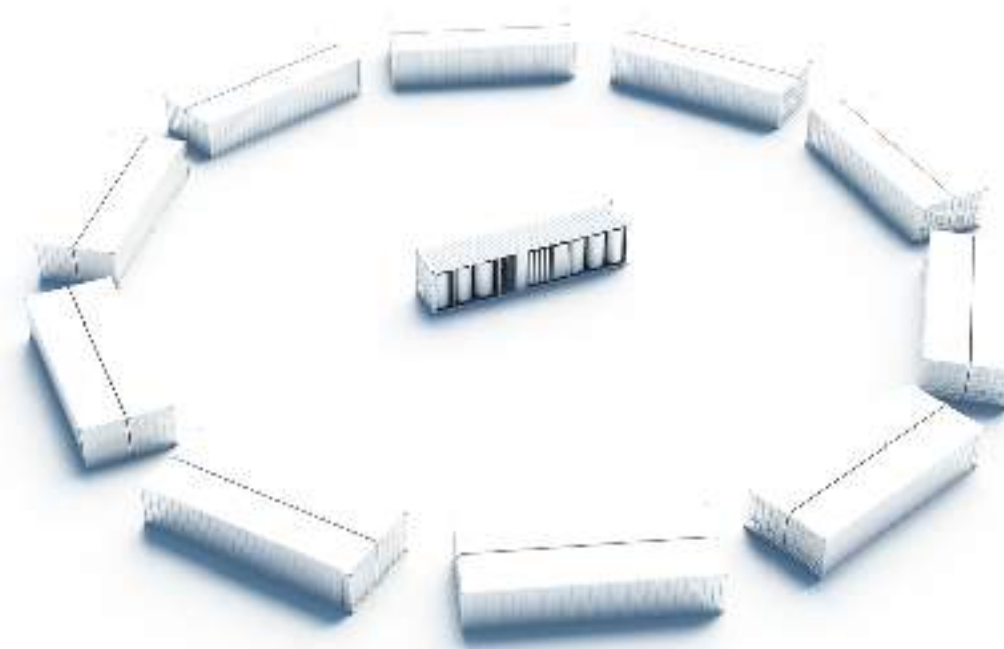
Current consumption at 440V AC x2: 4,75A/60Hz



5th Element | Grey Water System



**Grid
connection**



**Off grid
(collection tanks)**

1. A small accumulating tank collects grey water (water from sink and shower).
3. A Grundfoss pump unit, moves the grey water to collecting tanks or onto the sewage grid.
5. Collected grey water either gets emptied by a sewage truck, or is processed through a BDT-cleaning system and is let out in a ditch
7. Grey water can also be handled through the vacuum system
9. Connecting a minimum of **10 Poshtels** to the system lower the cost for connecting to the grid (if existing) with up to **90%**.
11. If there is no existing sewage grid, we simply collect the grey water in tanks.

5th Element | Grey Water System

Grundfoss Sololift2:

Lifting stations for collecting and removing wastewater from single sanitary appliances

Liquid capacity: 149 litres/min
Max lifting height: 8,5 meters
Material: White plastic
Motor : 0,62 kW, 3 A

Detailed specs:

External dimensions: 644 x 814 x 976 mm (W x L x H - including compensator)
Connection, inlet: 32 mm
Connection, outlet: 2x 40 mm

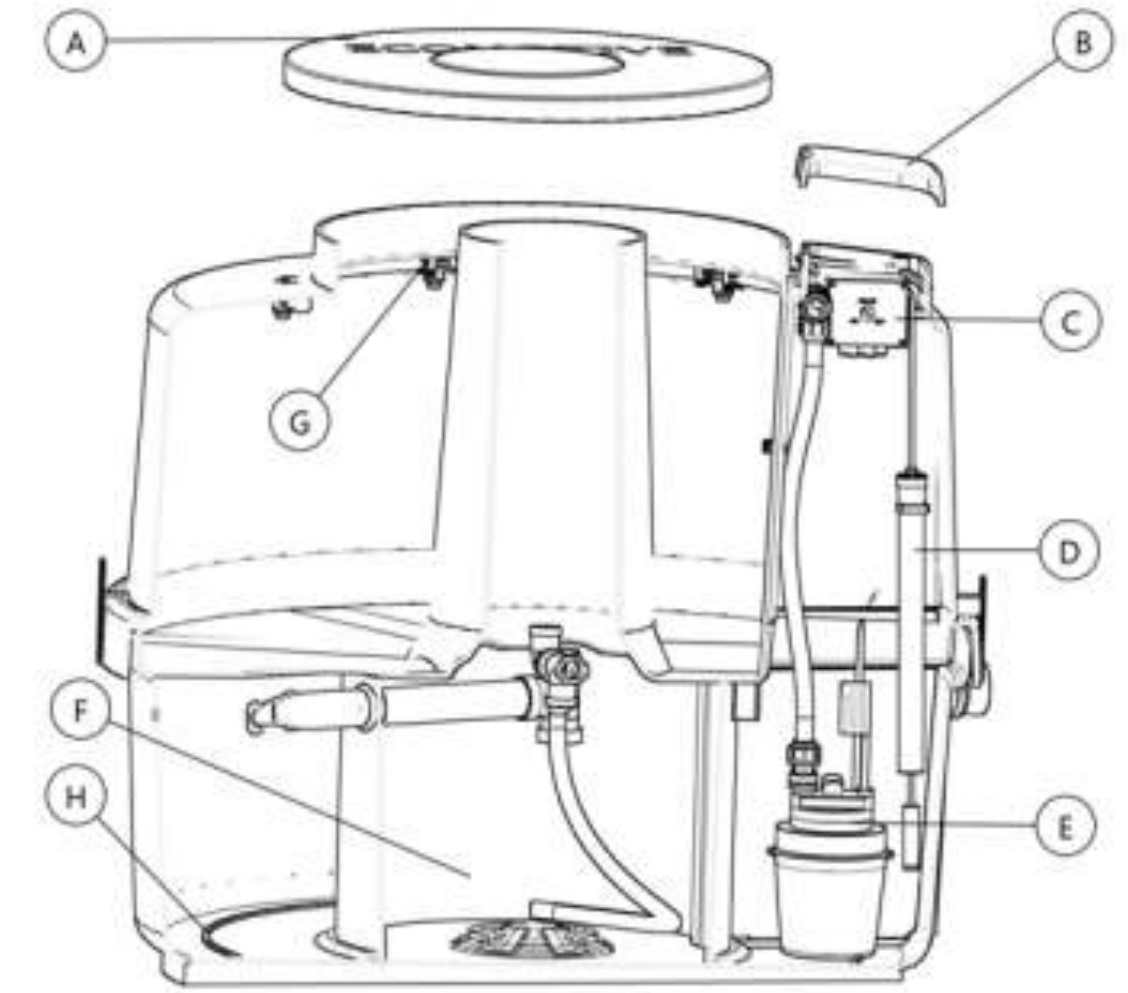


Ecomotive A02 BDT, treatment plant:

Grey water cleaning plant. Filters **600-900 liters** of grey water per day.
Processed water can be let out in a ditch
Filter material is made of hard-burned clinker and stone.
Low maintenance - unit is cleaned 1-2 times/ year.
No changing of filters.
Developed by Norwegian University of Life Science (NMBU)

Detailed specs:

Dimensions: 1,840 x 1,840 x 1,445 m (LxWxH)
Weight: 490 kg
Diameter: Ø 1.8 m
Generic material: Glass fiber
Tank capacity: max 900 l/d
Connection inlet Ø 110 mm
Connection outlet: Ø 110 mm
Electric connections: 230 V, 10 A
Filter mass: 0.83m³ NR 10-20mm



5th Element | Fresh Water System

We are currently offering four different ways of providing fresh water to the Poshtel units:

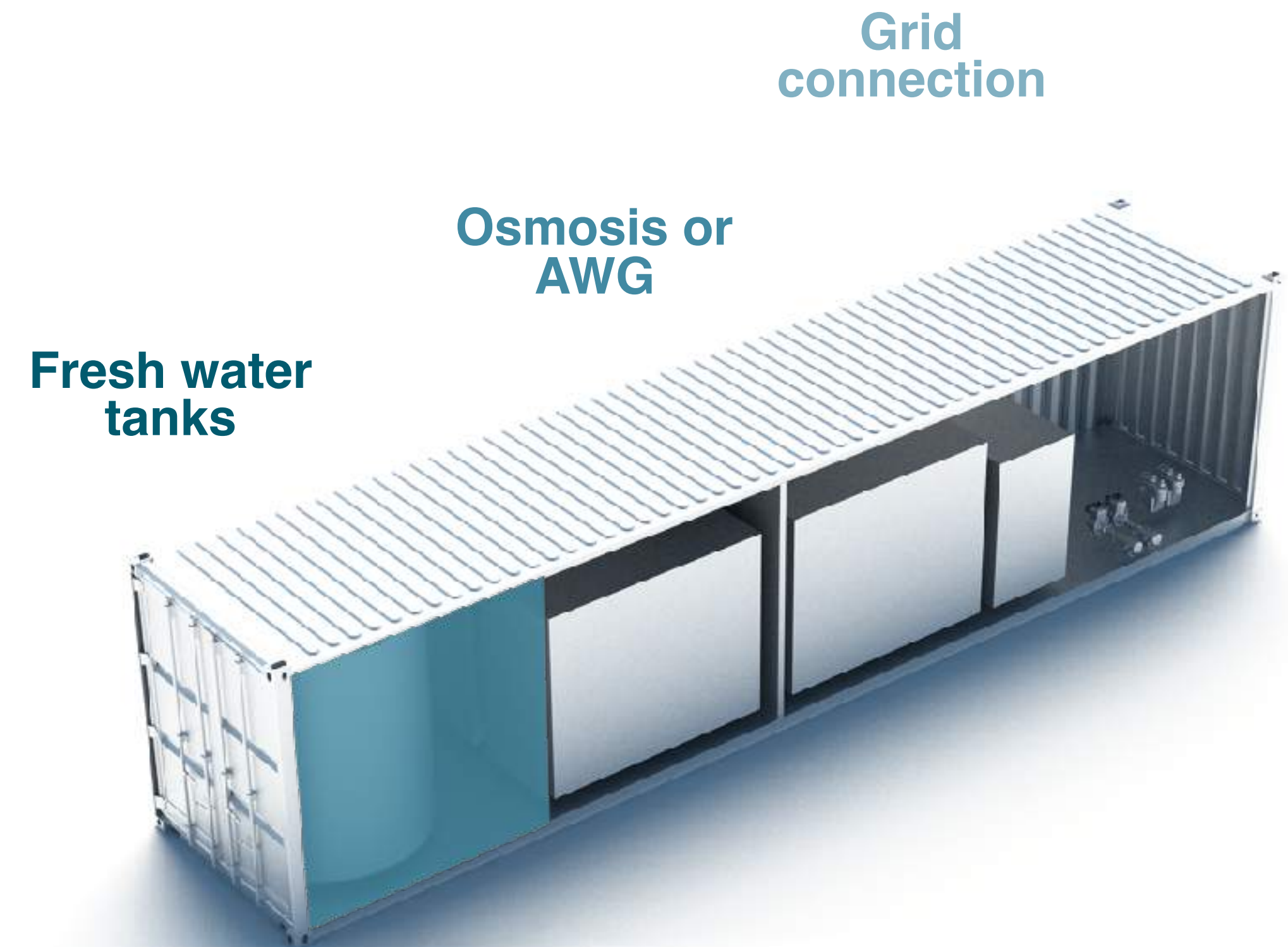
- Via existing grid water
- Via filling food grades storage tanks on site
- Via AWG - "Atmospheric Water Generators"
Only applicable at specific locations due to requirements for levels of air humidity, air temperature and electric power.
- Via Osmosis process
Only applicable at specific locations due to requirements for access to clean sea/ lake water and electric power.

When connecting a minimum of **10 Poshtels** to the system, we lower the cost for connecting to the grid (if existing) with up to **90%**.

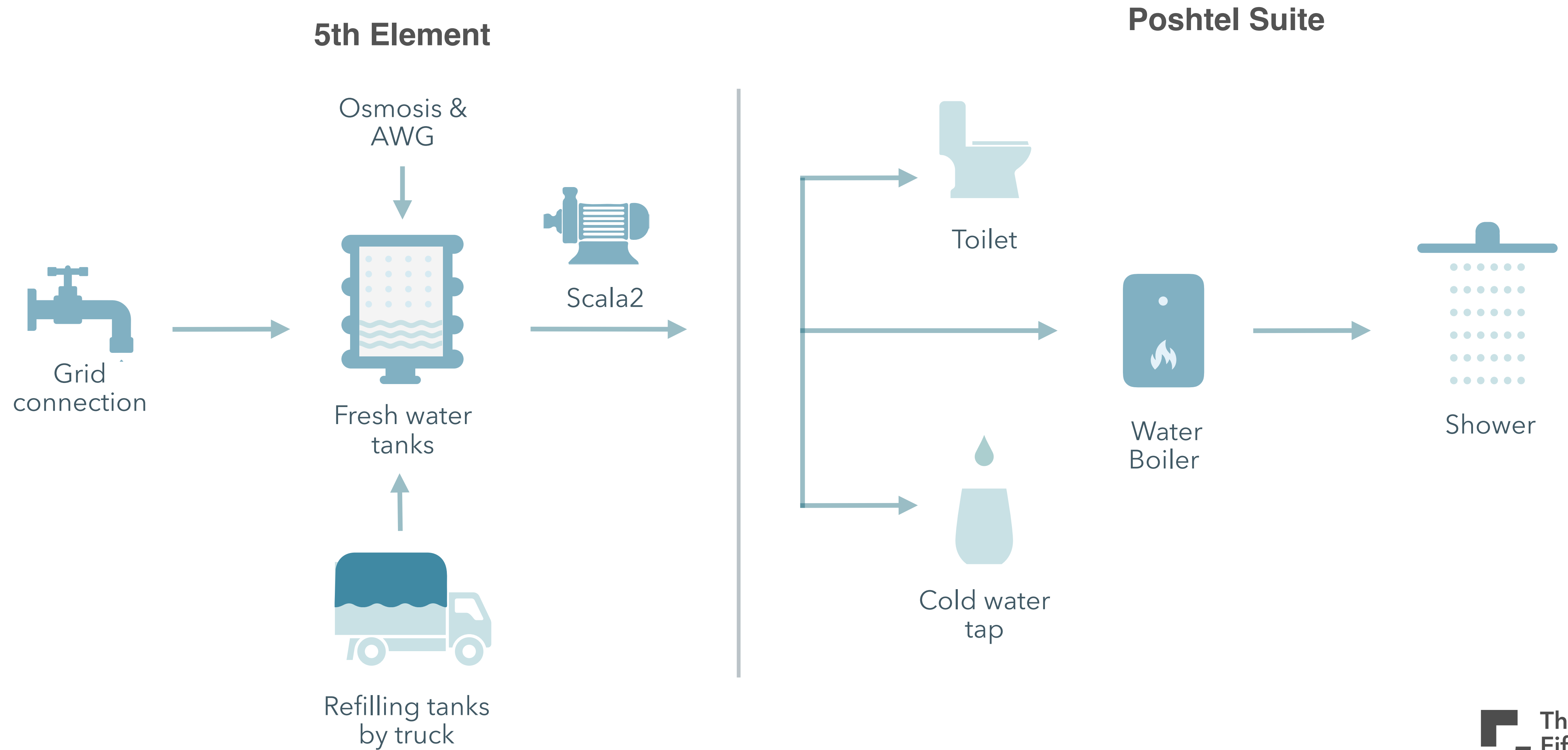
Water usage are being logged and tracked per connected unit

Hot water is provided by water boilers, one per Poshtel to reduce the risk for system failure

A dual Grundfos Scala2 booster pump setup, provides perfect water pressure to all taps and showers in the system.



5th Element | Fresh Water System



5th Element | Fresh Water System

Grundfoss Scala2:

is a fully integrated, self-priming, compact all-in-one water pump for pressure boosting in domestic applications.

Components:

- intelligent controller
- integrated speed-controlled drive
- integrated tank
- integrated sensors
- integrated non-return valve

Features:

- Adjustable constant pressure
- Low noise, < 47 dB(A) (in typical use)
- Compact
- Robust and reliable
- Easy installation and self-priming
- Dry-running protection

Specifications:

Max. ambient temperature:

113°F (45°C) 131°F (55°C) for 1 x 200-240 V, 50 Hz models.

Max. liquid temperature: 113°F (45°C)

Max. system pressure: 145 PSI (10 bar)

Max. inlet pressure: 87 PSI (6 bar)

Max. head: 148 ft (45 m)

Enclosure rating: NEMA 3

Pumped liquid: Clean, fresh water and chlorinated water < 300 ppm.

Food graded fresh water tanks:

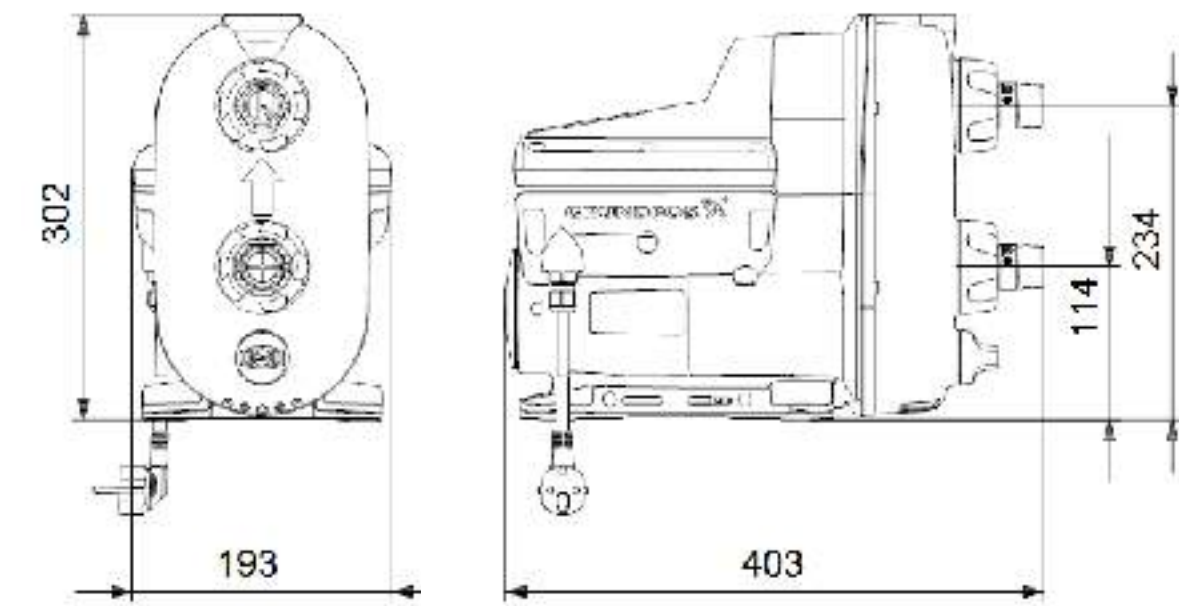
Kingspans food graded cold water tanks

Specifications:

Dimension: 2100x750x1400 mm

Capacity: 1,500 liters

- 4"lockable inspection lid (on the top of the tank)
- 16"lockable manhole opening on 3500 l up to 9000 l tanks
- 2"male threaded offset filling connection (on the top of the tank)
- Filter protected vent to prevent contamination of contents
- 1"male threaded bottom outlet
- 1½ male threaded bottom outlet
- Ball valve (supplied separately for self-assembly on the bottom outlet)



*Grundfoss Scala2



*Food & Water Tanks

5th Element | Fresh Water System

NIBE Eminent water heater - 100

Can be installed wall-mounted vertically on the bracket provided with the connections facing downwards or lying horizontally.

Is insulated with freon-free, moulded polystyrene (EPs) for excellent heat insulation and fitted with a cable and plug for easy connection to a 230 V earthed socket (produces 1 kW output). It can also be connected to 400 V 2-phase (produces 3 kW output).

It's fitted with a complete set of valve equipment, consisting of mixer valve, shut-off/non-return valve and safety valve with drain function. The thermostat is adjustable up to 80°C

Specifications:

Corrosion-resistant lining:

Copper, Enamel, Stainless steel

Height: 980 mm

Width: 467 mm

Depth: 455 mm

Net weight: 37 kg

Volume: 100 litres

Effect: 1,0 kW at 230 V 1-phase / 3,0 kW at 400 V 2-fas



Model		35	55	100	120
Volume	l	35	55	100	120
Rated Pressure	MPa/bar	1,0 / 10			
Max cut-off pressure	MPa/bar	0,9 / 9			
Voltage		230VAC + PE / 2 x 400 VAC + PE			
Enclosure class		IP24			
Output	kW	1/3			
Fuses required at 1/3 kW	A	6/10			
Heating time to 45 °C 1/3 kW*	h	1,4/0,5	2,3/0,8	4,1/1,4	4,9/16
Heating time to 80 °C 1/3 kW*	h	2,9/1,0	4,5/1,5	8,1/2,7	10,1/3,5
Hot Water capacity**	l	60	100	185	225
Net weight E/Cu/R	kg	19/21/17	25/28/22	36/40/31	- / - /34
Length sacrificial anode Eminent E	mm	165	280	435	-
Corrosion protection Eminent E		Enamel			-
Corrosion protection Eminent Cu		Copper			-
Corrosion protection Eminent R		Stainless			
RSK no. Eminent E		694 43 10	694 43 11	694 43 12	-
RSK no. Eminent Cu		694 43 13	694 43 14	694 43 15	-
RSK no. Eminent R		694 43 16	694 43 17	694 43 18	694 43 19

*For incoming cold water at 10 °C

**Applies for suspended installation and for incoming cold water temperature of 10 °C, outgoing hot water temperature of 40°C, a drain flow of 12 litres per minute and a thermostat setting of 75 °C in the case of horizontal installation, the hot water capacity is approx. 15% less.

5th Element | Fresh Water System

AWG - Atmospheric Water Generator

(EcoloBlue 600 or GEN-350)

Plug & play water generators. Both models can produce around **600 liters of fresh water per day.**

**1 Poshtel Suits will use approx 120 l/ day for 2 persons for showers, toilet and other*

Both models comes with intergraded water tanks and on-board water purification.

Specifications: (EB 600/ GEN-350)

Water generation capacity: 600/650 liters/day (30°C and 60% RH)

Working conditions Temp: 0°C - 60°C

Working condition Humidity: 25%-100%

Power: 3-phase, 208/400 VAC, 60/50 Hz

Power consumption: 10.8kW/ ~5.8kW

Water purification: UV, Mineralization and Carbon filter

Average kW/ liter: 0,35 kWh/ liter

GEN-350 complies with all required standards - World Health Organization (WHO) and Environmental Protection Agency (EPA) standards.



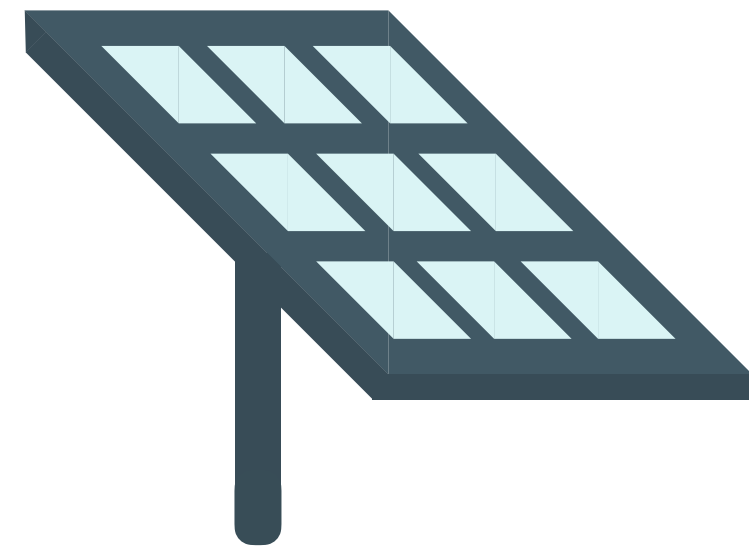
AWG - GEN-350



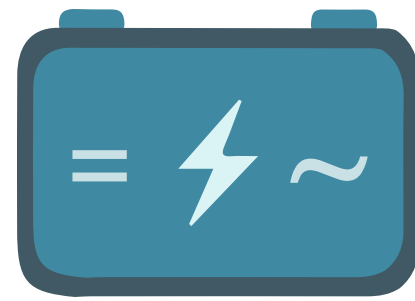
AWG - EB 600

*Disclaimer - Will only be offered when requirements for air temperature, air humidity and sufficient electric resources are available.
Supplier to be confirmed

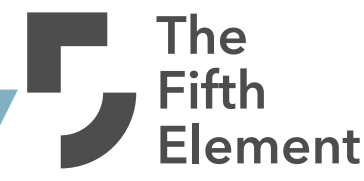
5th Element | Energy



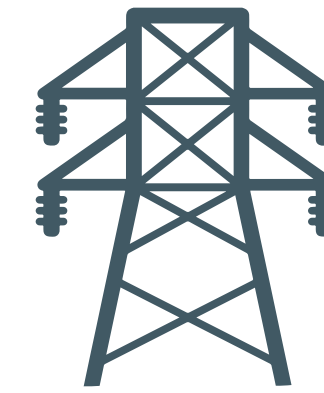
Solar



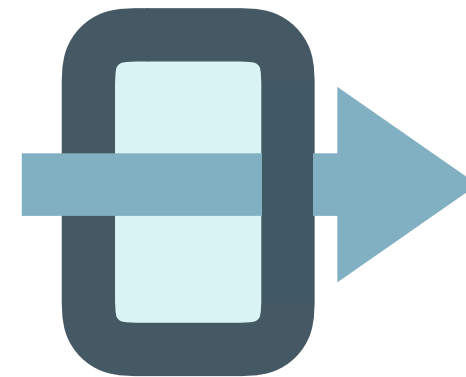
Inverter



Meter



Grid



Energy Gateway



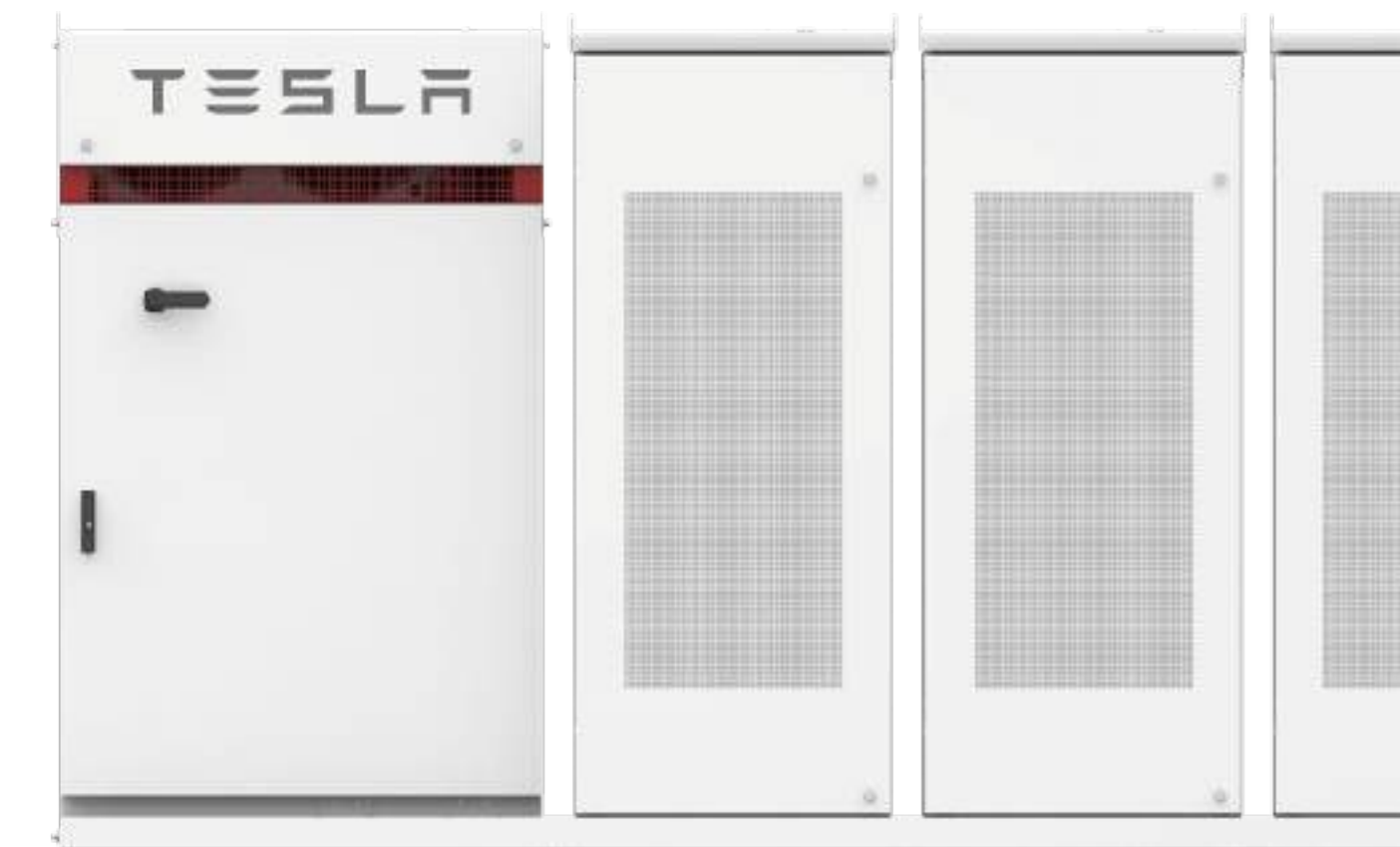
5th Element | Batteries

We are currently looking into 2 different ways of providing battery stored energy backup to the Poshtel units:

- Via existing single Poshtel onboard battery packs - Tesla Powerwall
- Via centralized battery storage - Inside 5th element or separate units - Tesla Powerpack or BYD ESS

Batteries will be charged via solar panels and possibly on grid connections

For running 10 Poshtels including 5th Element (without the production of water) the daily need is approx **54 kWh** for the whole system or **5 kWh**/ Poshtel.



5th Element | Powerwall

Specifications: Tesla Powerwall 2

Usable Capacity: 13.5 kWh

Depth of Discharge : 100%

Efficiency: 90% round-trip

Power: 7kW peak / 5kW continuous

Supported Applications: Solar self-consumption, Time of use load shifting, Backup, Off grid

Warranty: 10 years

Scalable: Up to 10 Powerwalls

Operating Temperature: -4°F to 122°F / -20°C to 50°C

Dimensions: L x W x D: 44" x 29" x 5.5"

(1150mm x 755mm x 155mm)

Weight: 276 lbs / 125 kg

Installation: Floor or wall mounted /Indoor or outdoor

Certification: North American and International Standards, Grid code compliant

Price/ kWh: 442 USD



5th Element | BYD ESS

Specifications:

Usable Capacity: 250 kWh

Nominal discharge: 250 kW

Depth of Discharge : TBC

Efficiency: 90% round-trip

Warranty: 3 years

Dimensions: 20 foot container

(1150mm x 755mm x 155mm)

Price/ kWh: 341 USD



5th Element | Powerpack

Specifications: Tesla Powerpack 2

Energy Capacity: 210 kWh (AC) per Powerpack

Peak Power: 50 kW

Depth of Discharge: 100%

Efficiency*88% round-trip (2 hour system) and 89% round-trip (4 hour system)

Operating Temperature Range: -30C to 50C

Battery Chemistry: Lithium-ion

Powerpack Enclosure: IP35 - outdoor rated

Dimensions: Powerpack

LxWxH: 1,308 mm x 822 mm x 2,185 mm

Weight: 1622 kg

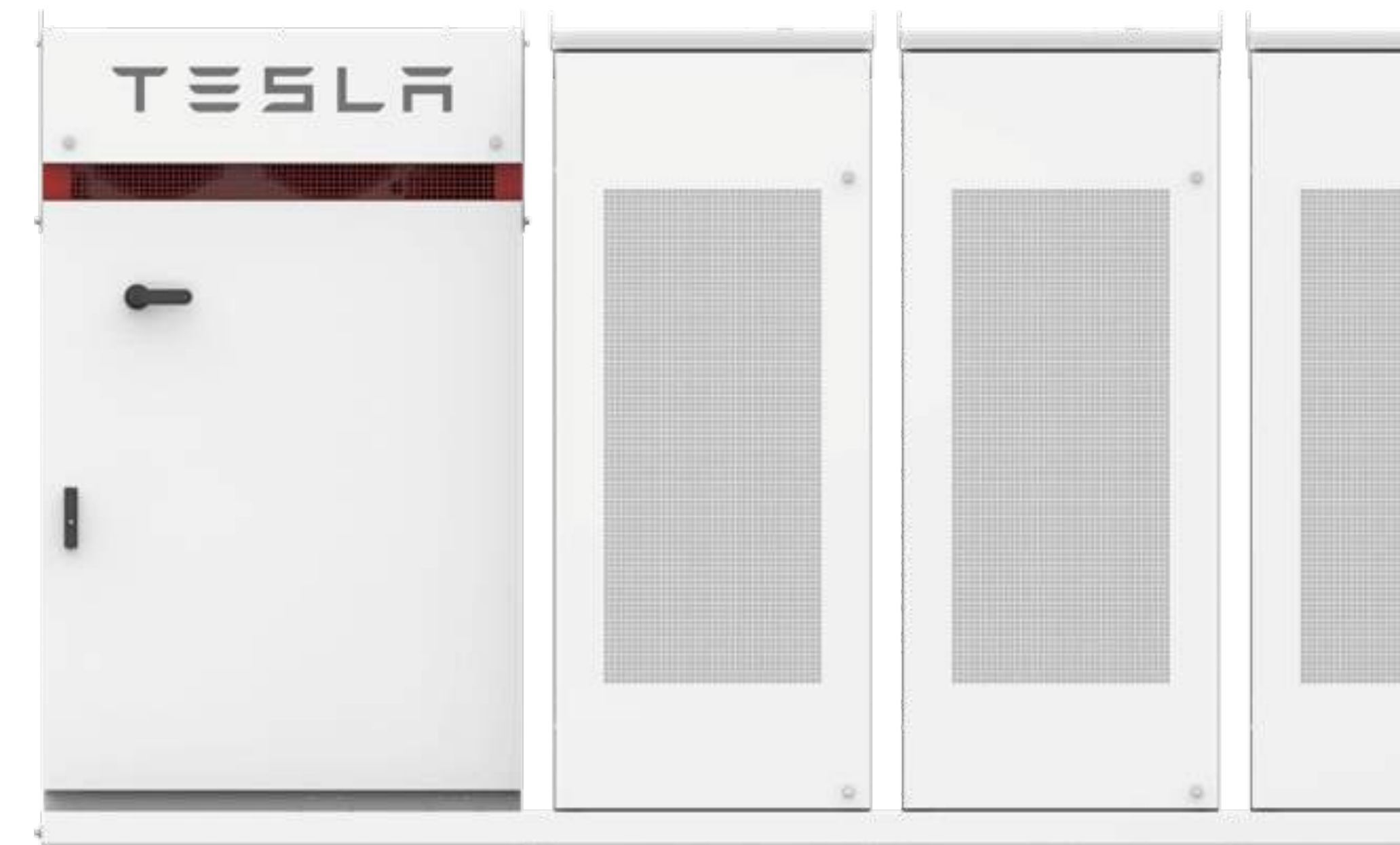
Industrial Inverter

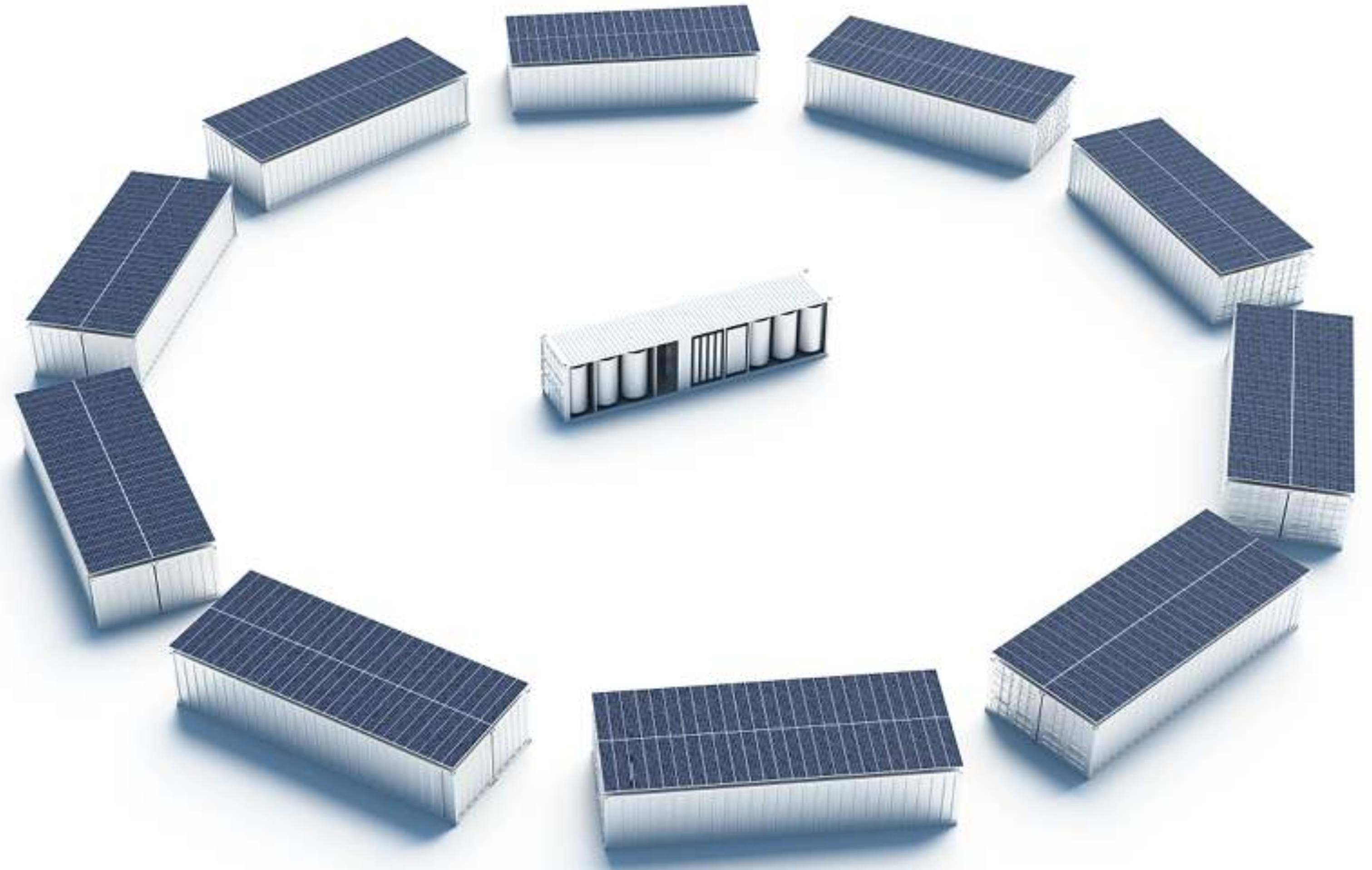
LxWxH: 1,014 mm x 1254 mm x 2192 mm

Weight: 1200 kg

Price/kWh: 398 USD (Jan 2017)

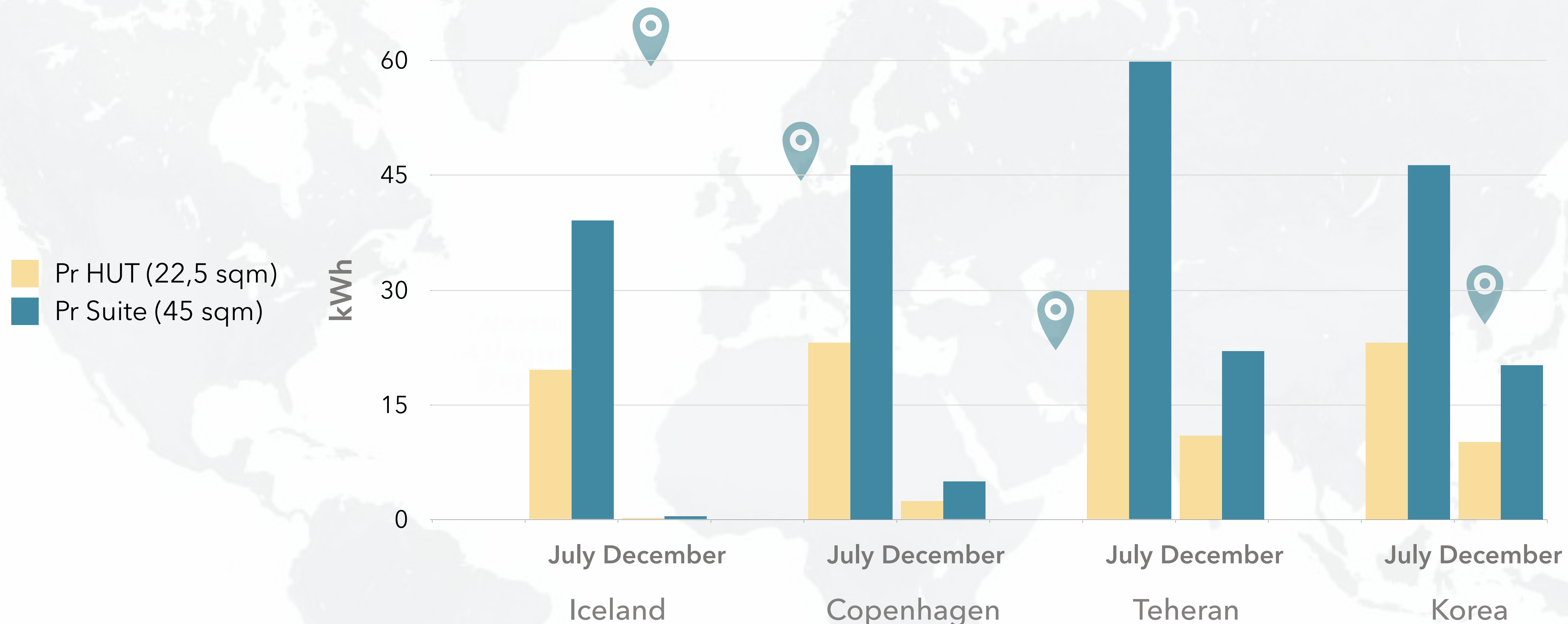
Price inverter: 52 200 USD (Jan 2017)





5th Element | Solar panels

Power production per location and month



*Power consumption Poshtel - **5 kWh/** daily. + Production of water 135 l/ daily at **0.4 kWh/l** - **54 kWh** (AWG tech)



5th Element | HydroGen

PowerCell PS-5 is a fuel cell system based on the robust PowerCell S2 stack. The system is designed to meet the need for ecofriendly, silent and reliable electricity generation and back-up systems for buildings, households, telecommunications and traffic systems. The system facilitates increased use of renewable energy, if it is integrated with e.g. photovoltaics.

Reliable and Safe

- PEM technology with fast start up time
- Safety system including hydrogen sensor and cell voltage monitoring
- Fully automated control system with fault detection
- CE marked

Flexible and Easy to Integrate

- Modular and scalable
 - ▶ 1,6 / 3,3 / 5.0 kW
 - ▶ 24 / 48 VDC
- Parallel installation possible
- Liquid or air cooled
- Wide operation conditions
- Long service intervals
- Designed for standard 19" rack





The Fifth Element

Fully off grid

Poshtel POPUP | EARTH FRIENDLY

When we offer a complete off grid solution we change the Poshtel technical setup. Adding a closed loop shower system minimizes our need for water.

Reducing the need for water from 134 litres/ day to **34 litres/ day**

Determined main energy consumer, is on site production of water, at **54 kWh/day**. Solar chart show that we can provide enough solar energy at most places, if we lower our energy need.



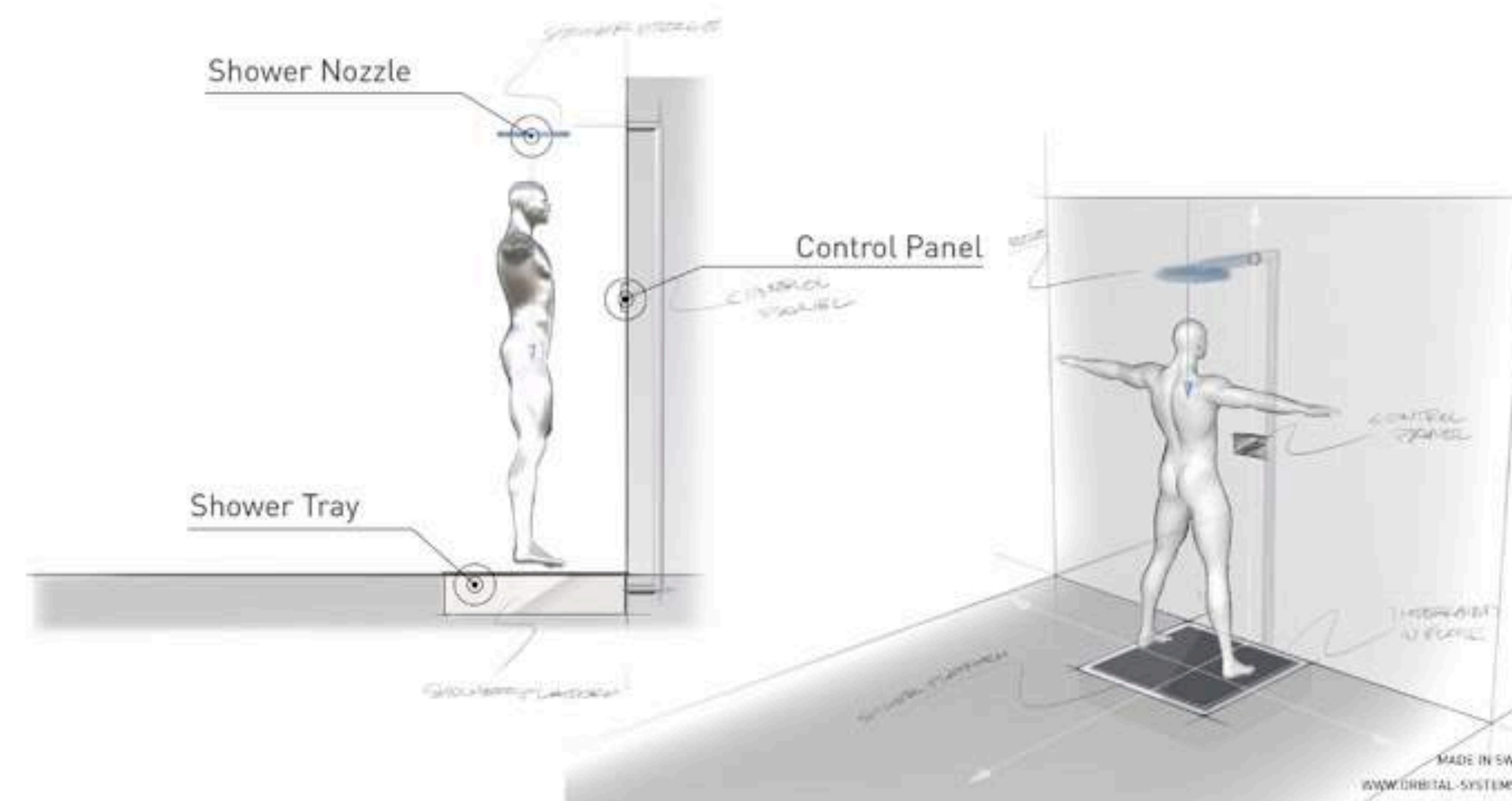
ORBITAL SYSTEMS



* 1350 litres at 0.4 kWh/

Poshtel POPUP | EARTH FRIENDLY

OAS uses closed loop re-purification technology to recirculate **5-10 litres** of clean hot water at the ideal temperature, pressure and flow rate. Use all the water you want. Without wasting a drop. OAS will continuously purify and comfort-correct the few litres you start with, **for as long as you shower**



ORBITAL SYSTEMS

Poshtel POPUP | EARTH FRIENDLY OFF GRID

DAILY CAPACITY

for 10 Poshtels
(each Poshtel 2 people)

when off-grid
WATER
1340 liters of fresh water of total

60 liters allocated of **black** water tanks
1280 liters allocated for **grey** water tanks or infiltration

when off-grid
ELECTRICITY
190 kWh/day or 17,5 kWh/ unit

50 kWh supply to 10 Poshtel/day
0,6 kWh for vacuum pump
(60 flushes at 10Wh/flush)

Charging phones/ tablets
Water heater
Heating/cooling (AC)
Lights
Pumps and toilet

1,5 kWh Water pressure pump

2 kWh miscellaneous

Controll units
Computers
Lights and others

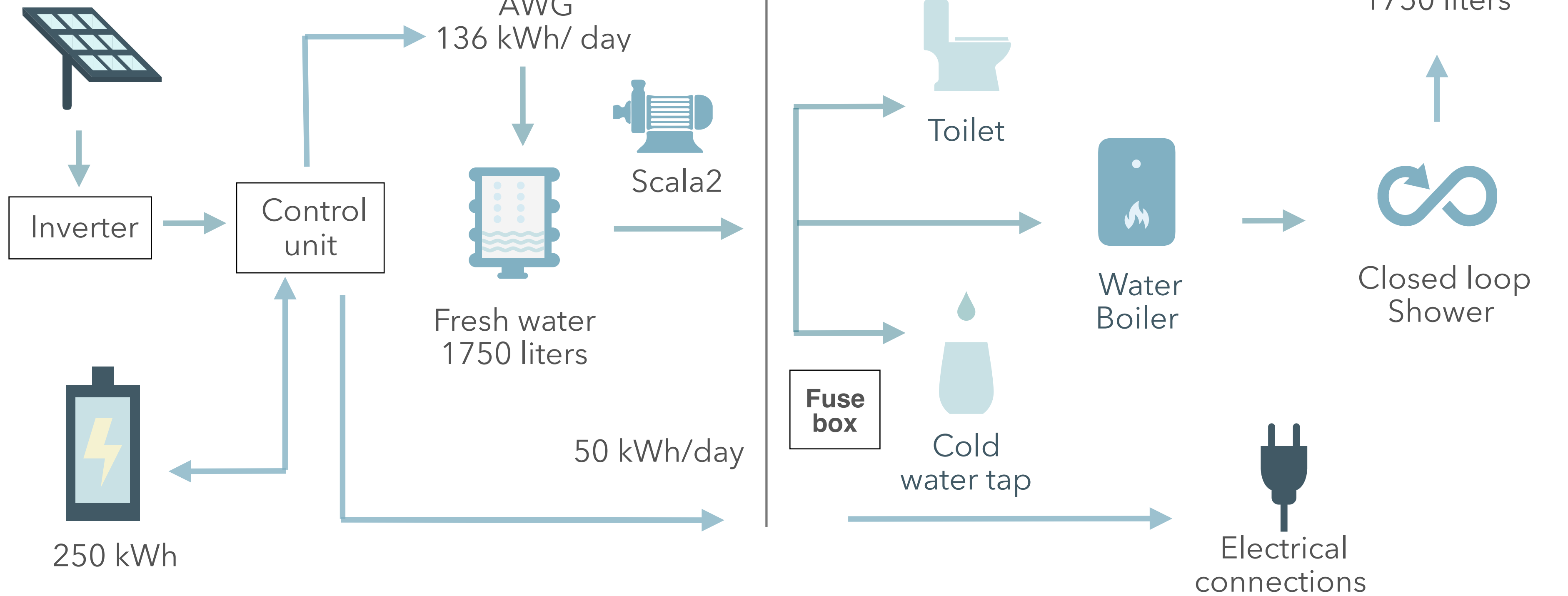
136 kWh for AWG

* This calculation is based on average, some changes may apply depending on location

5th Element | OFF GRID SYSTEM

***Overview - 5 days off grid - 10 Poshtel Suites in Korea**

July - 460 kWh/ day
Dec - 200 kWh/ day



*Batteries will be in use when no solar power is available. AWG production will be discontinued when on battery power. Relying on tanks that will last for 5 days

The Fifth Element

Cost break-down

Type	Pcs	Price/Pcs	Total Cost
40" Container	1	1,800	1,800
Paint/ Misc	1	1,000	1,000
Freight	1	1,000	1,000
Toilet + Standard equipment			
Jets Vaccum pump	1	4,500	4,500
Jets Vaccum Toilet	10	700	7,000
Grundfoss Hydrofor	2	700	1,400
Connections/ couplings MISC	-	1,500	1,500
Electric fuse box/ MAIN	1	2,500	2,500
Work/ mounting	-	2,500	2,500
Connections to 10 Poshtels	10	900	9,000
Water heater	11	400	4,000
Solar			
Solar panels (m2)	ca 600	80	48,000
MISC Brackets/ Mounting	10	500	5,000
Inverter / Controller 90kW-100kW	4	7,500	30,000
Work/ mounting system	10	1,500	15,000
Water / sewage			
Fresh water tanks 2 m3	1	1,200	1,200
Grey water tanks 2 m3	1	1,200	1,200
Black water tanks 4 m3	1	2,000	2,000
AWG - Water-Gen "Gen350"	1	28,000	28,000
Batteries / Energy			
Tesla Powerpack 2 250 kWh	250	335	83,750
Tesla Inverter	1	52,000	52,000
		Total	254,500

*All estimates are in EURO
 Based on connections to 10 Poshtels
 Solar panels is based on 260W-Poly.Approx 150W/ m2 at 0,6 USD/ W
 Inverter/ controller for 90kW is an estimate
 Battery cost estimated at 398 USD/ kWh - Tesla Powerpack Jan 2017
 Orbital System loop shower is not included at 3 200 Euro / pcs