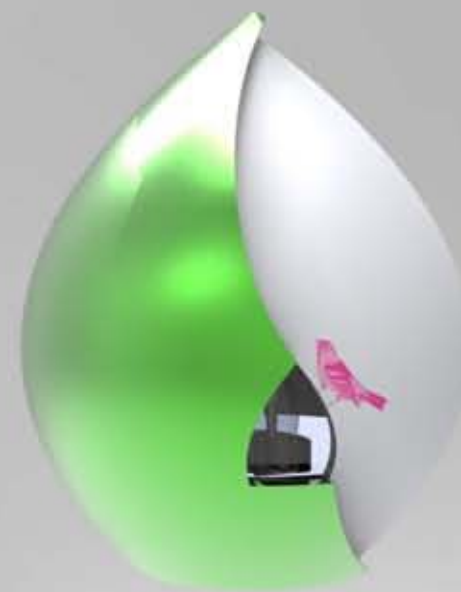


**Chris Doyle**  
design proposals

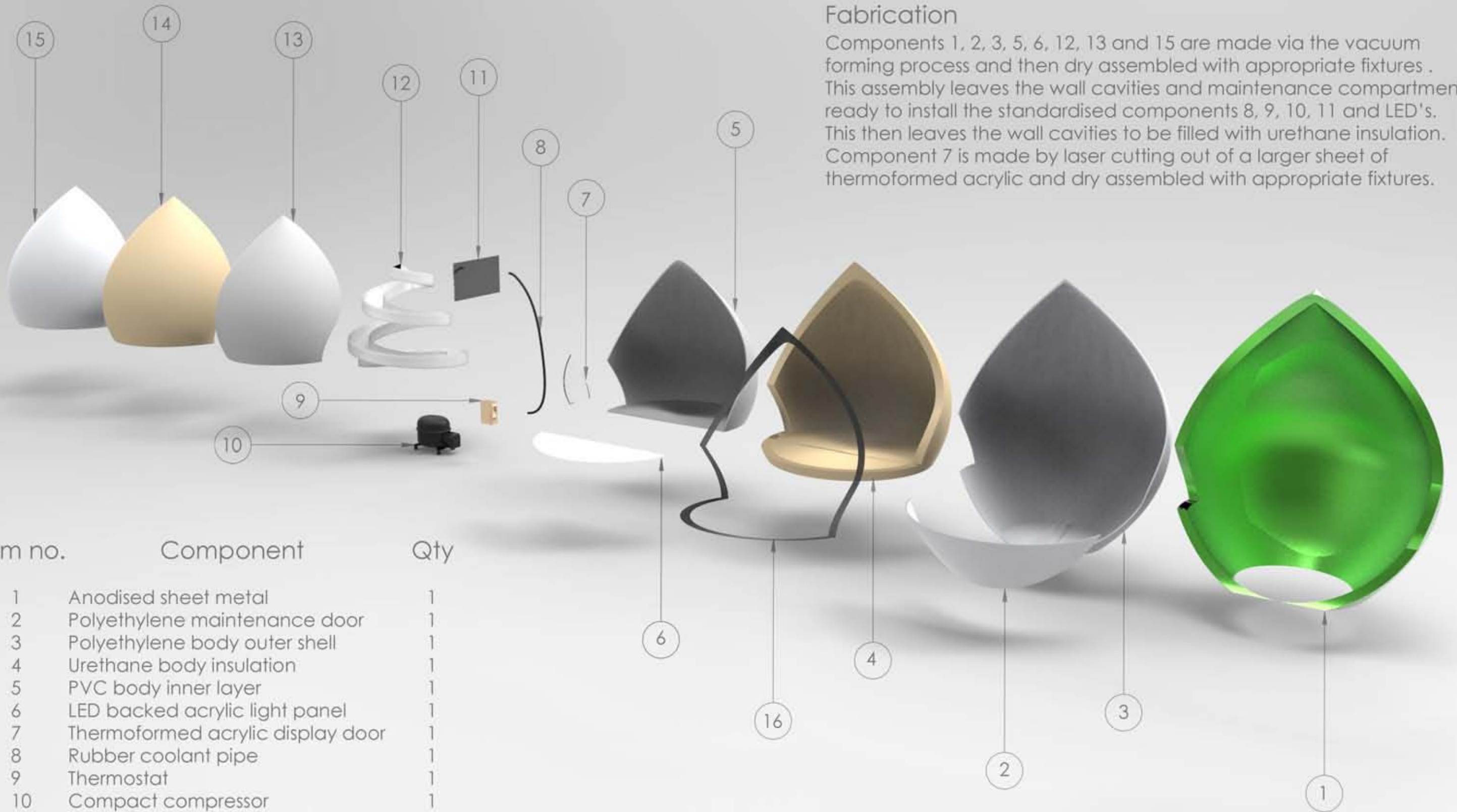


DROPLET cooler



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# Droplet cooler - Exploded view

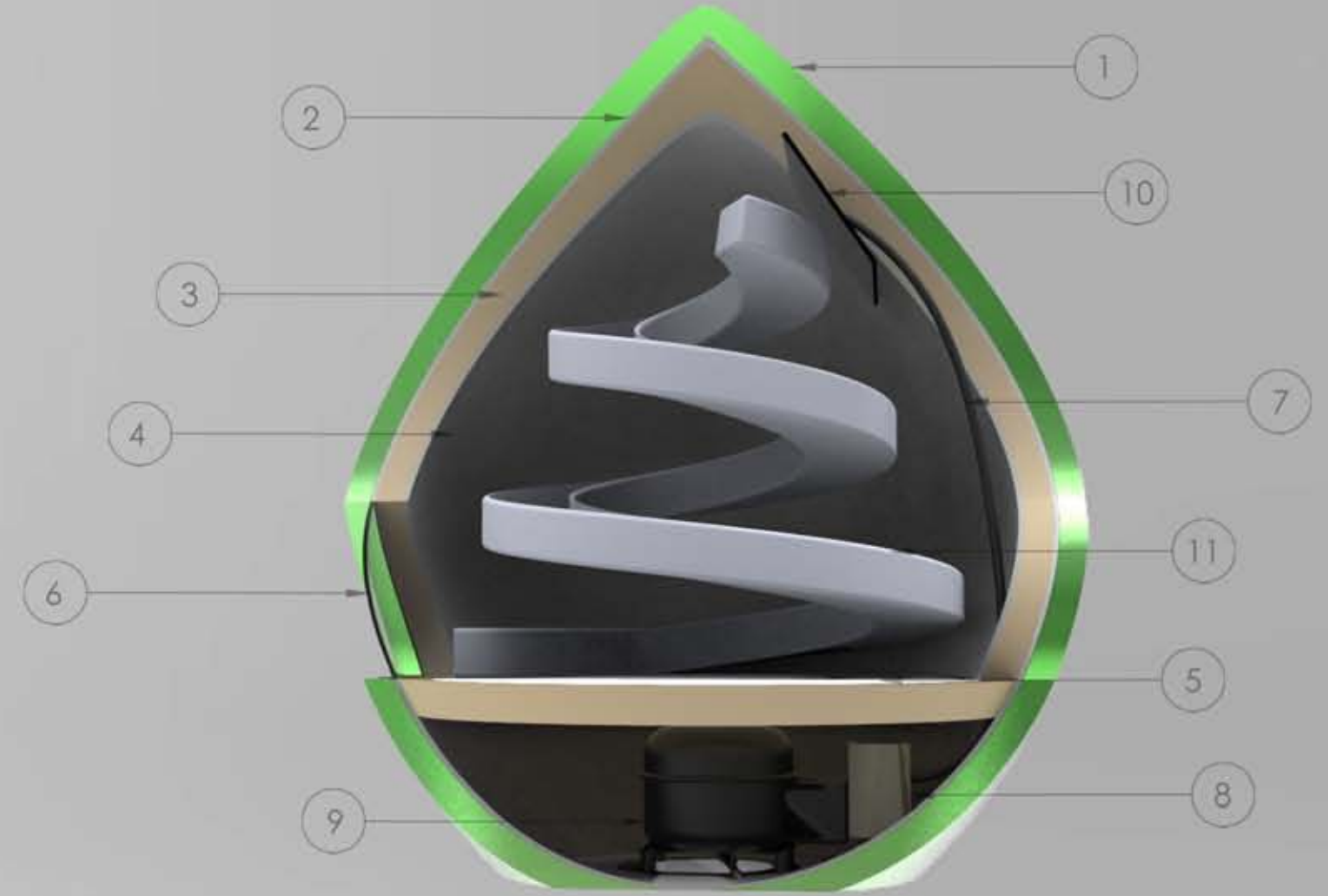
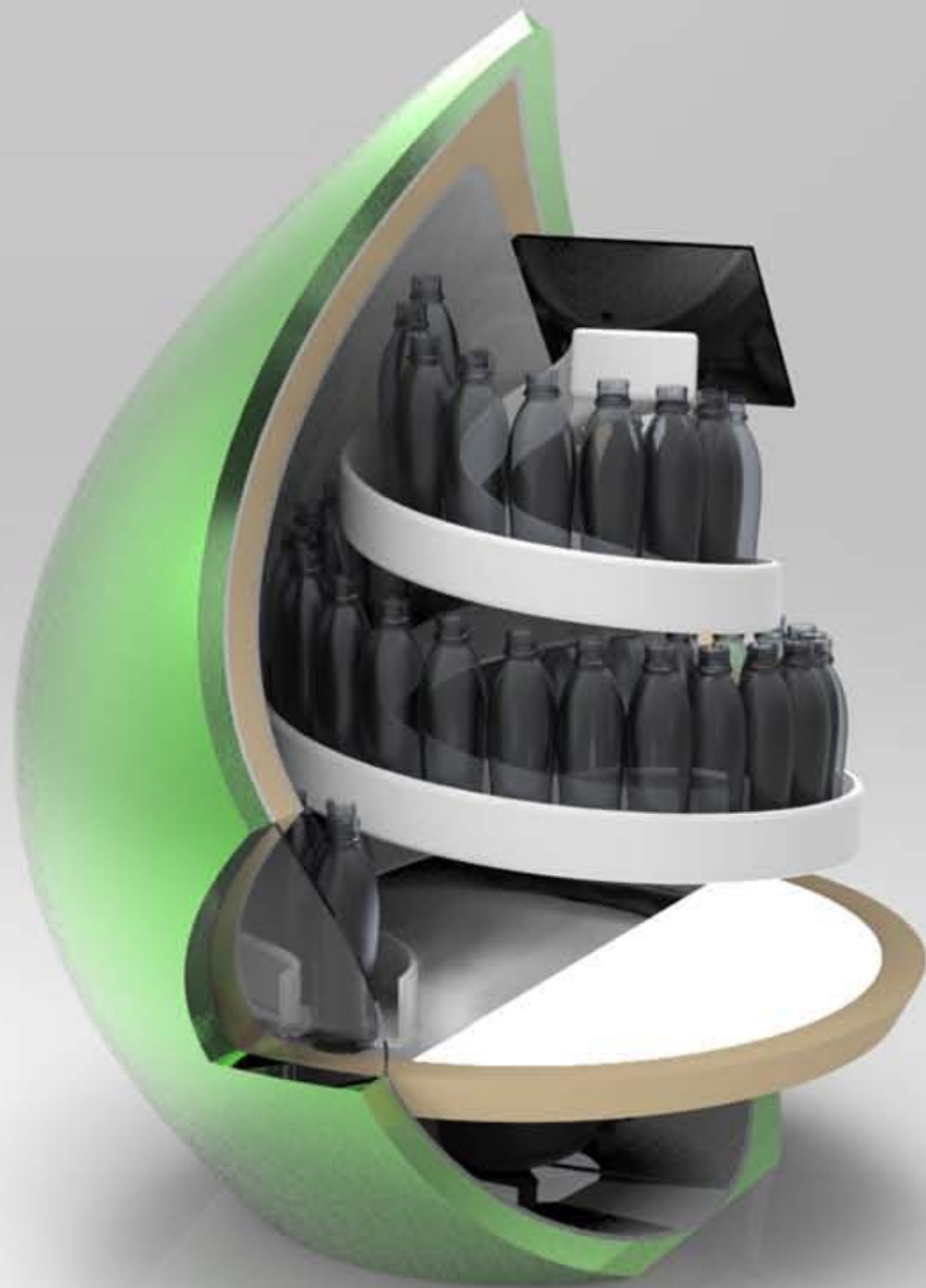


## Fabrication

Components 1, 2, 3, 5, 6, 12, 13 and 15 are made via the vacuum forming process and then dry assembled with appropriate fixtures. This assembly leaves the wall cavities and maintenance compartments ready to install the standardised components 8, 9, 10, 11 and LED's. This then leaves the wall cavities to be filled with urethane insulation. Component 7 is made by laser cutting out of a larger sheet of thermoformed acrylic and dry assembled with appropriate fixtures.

Item no.	Component	Qty
1	Anodised sheet metal	1
2	Polyethylene maintenance door	1
3	Polyethylene body outer shell	1
4	Urethane body insulation	1
5	PVC body inner layer	1
6	LED backed acrylic light panel	1
7	Thermoformed acrylic display door	1
8	Rubber coolant pipe	1
9	Thermostat	1
10	Compact compressor	1
11	Side mounted aluminium cool plate	1
12	Acrylic gravity fed bottle guide rail	1
13	PVC door inner layer	1
14	Urethane door insulation	1
15	Polyethylene door outer shell	1
16	Rubber door seal	1

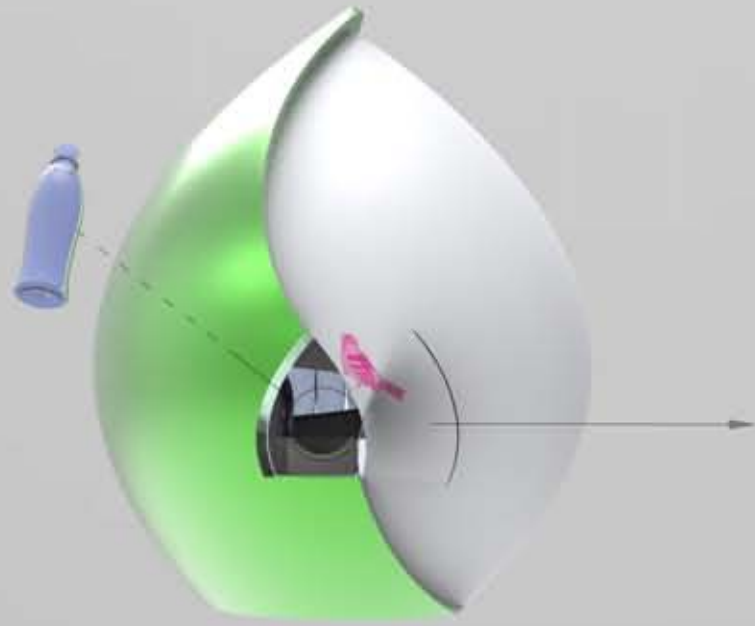
# Droplet cooler - Section view



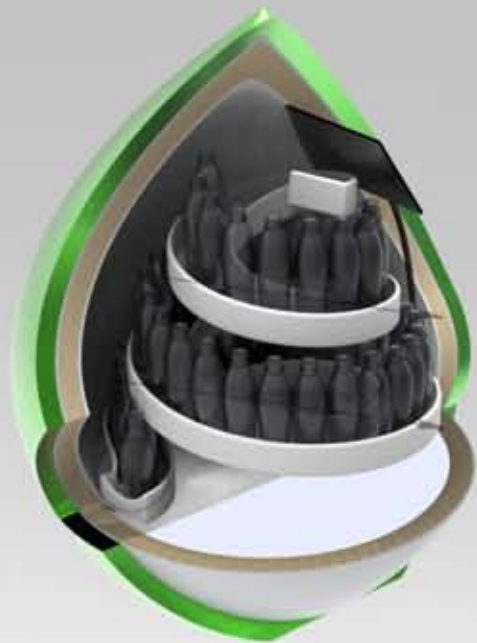
- 1 Anodised sheet metal
- 2 Polyethylene outer shell.
- 3 Urethane insulation.
- 4 PVC inner layer.
- 5 LED backed acrylic light panel.
- 6 Thermoformed acrylic display window/door.
- 7 Rubber coolant pipe.
- 8 Thermostat.
- 9 Compact compressor.
- 10 Side mounted aluminium cool plate.
- 11 Acrylic gravity fed bottle guide rail.

# Droplet cooler - User experience

## Dispensing

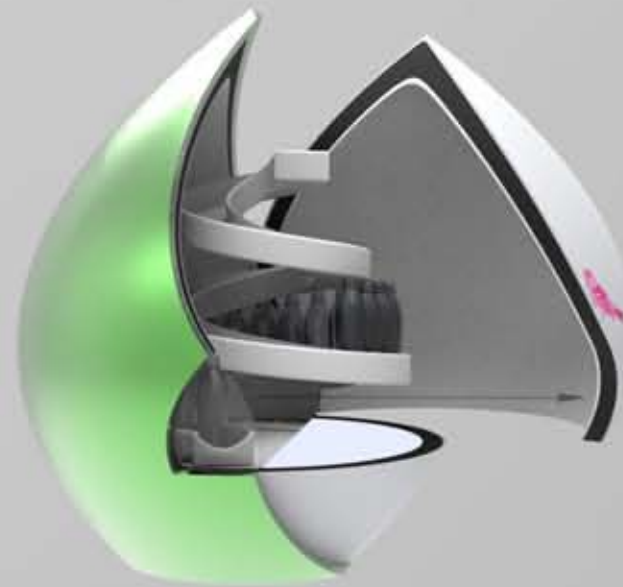


- Open the display door to the right and retrieve water bottle on display.



- Gravity will move the bottles down the rails and replace the taken water bottle.

## Loading



- Open the right hand shell, this part is a self sealing door with appropriate sealing.

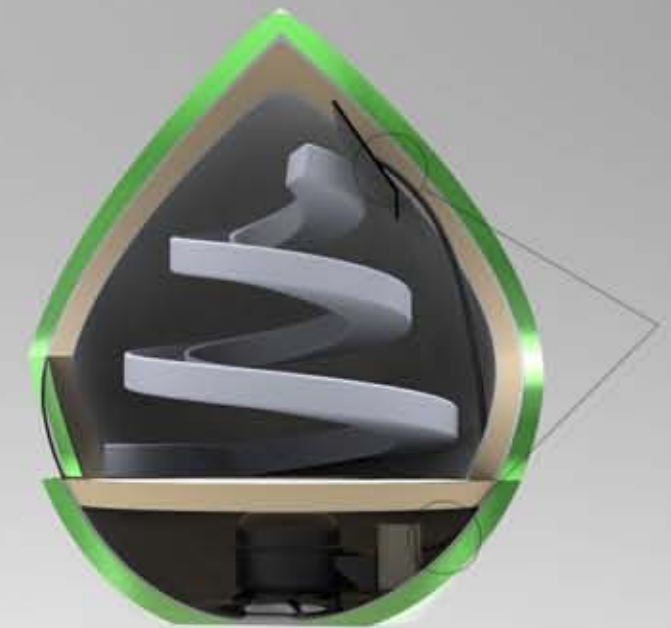


- Place bottles inside the guide rail until completely full then shut the right shell.

## Maintenance



- The bottom right of the shell is removable allowing access to all cooling technologies.



- At both ends of the coolant tube there are stop valves to make removal of the coolant tube possible.

# Droplet cooler - Size and cost variations

High cost and low cost.



## Changes

- The high cost design is made of components and materials listed in the exploded view.

The low cost design Changes:

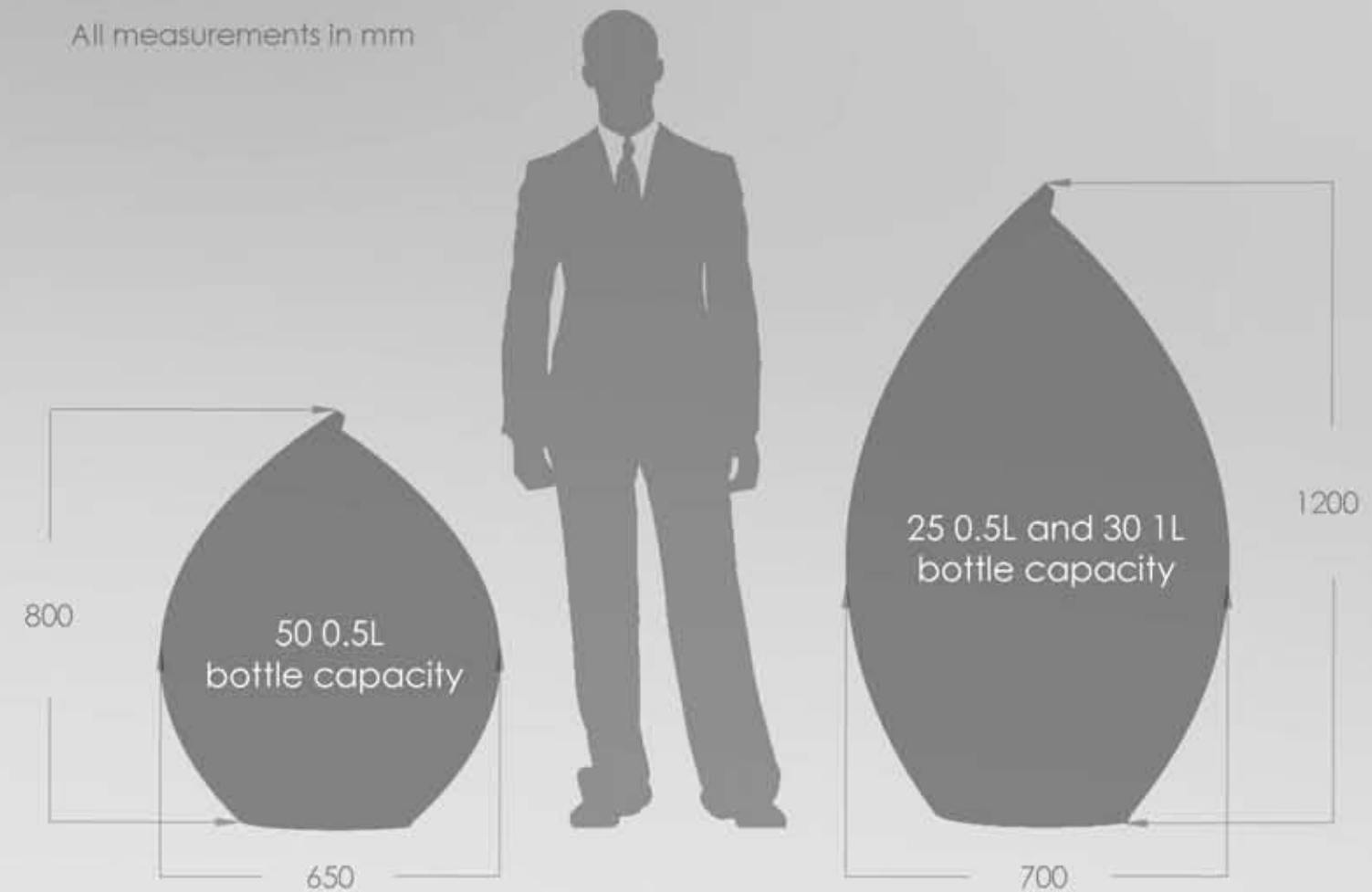
- The Anodised sheet metal (item no. 1) is changed to vacuum formed acrylic.
- All the polyethylene components (item no. 2, 3 and 15) are changed to low gloss vacuum formed acrylic.
- The internal LED lighting is removed. (item no. 6)
- The pvc inner layers (item no. 5 and 13) are changed to corrugated plastic.

## Costing

- The outline factory cost for the high cost design per unit is £350 this includes materials, labour and tooling. The total cost of this design is the sale of 17500 bottles at 2p addition charge per bottle.
- The outline factory cost for the low cost design per unit is £250 this includes materials, labour and tooling. The total cost of this design is the sale of 12500 bottles at 2p addition charge per bottle.

Compact and extended.

All measurements in mm



- The compact design is the standard design shown throughout this documentation.

The extended design:

- The overall height of this design is almost twice as high as the compact design.
- The overall diameter of this design is increased slightly.
- Internally the design is split into two compartments. One side is dedicated to the 0.5L bottles and the other to the 1L bottles. There are two guide rails in a tiered zig zag formation on each side which gravity feeds the bottles in the same manner as the compact design.
- The door is twice the width and one third higher to allow two bottles to sit on display in their dedicated guide rail.

# Droplet cooler - Aesthetic Variations

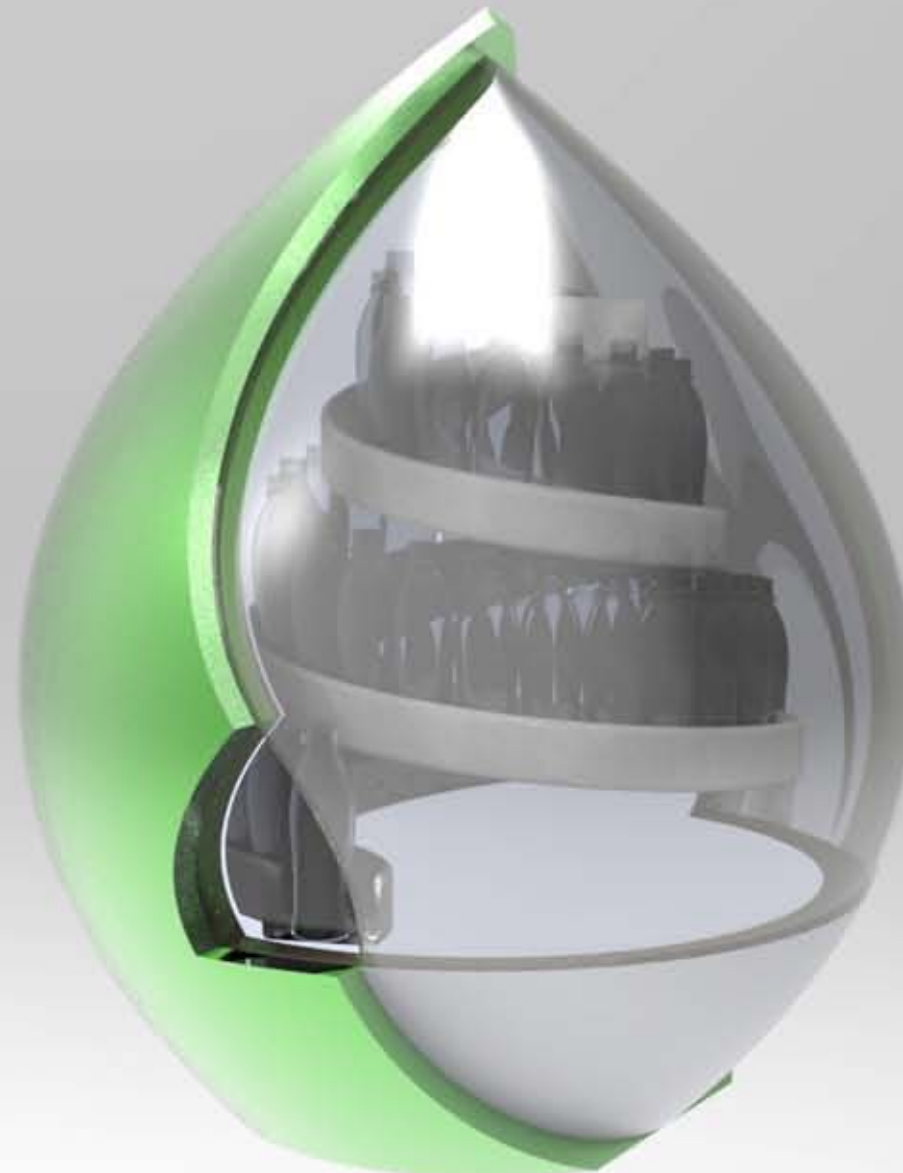
## Low cost droplet

- Replaces anodised sheet metal with vacuum formed acrylic. This particular image also illustrates alternate branding via use of the Lielbata logo.



## Clear droplet

- Replaces the polyethylene door with cloudy thermoformed acrylic door.



## Natural droplet

- Replaces anodised sheet metal with cedar wood. This particular image also illustrates alternate branding and vinyls that could be applied.

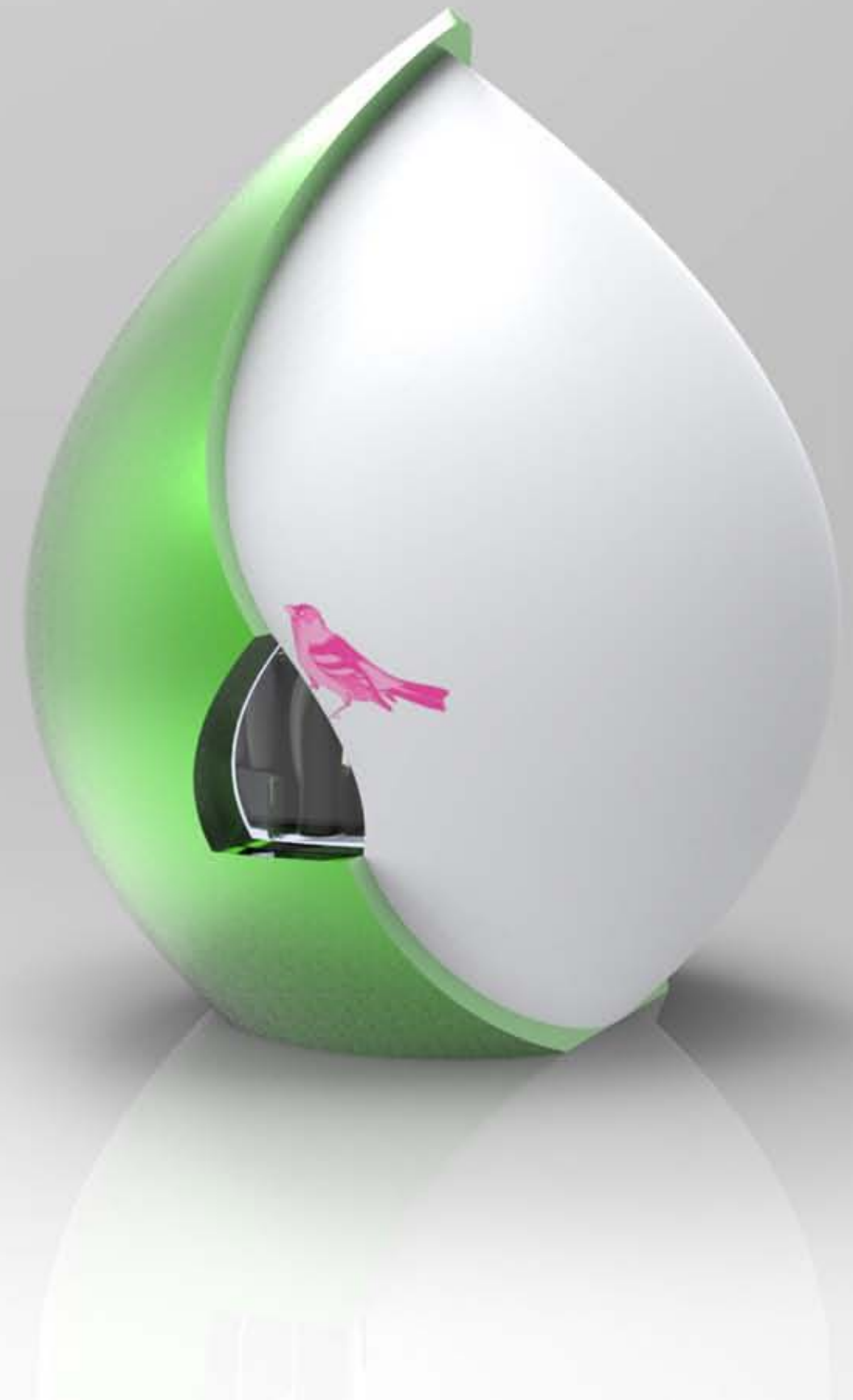


## Droplet cooler

The Droplet cooler is a combination of natural form, practical functionality and Lielbatas core values of uniqueness. The overall form inspired by a water droplet, moves away from the mundane of typical cooling units which both portray Lielbatas desire to show and maintain their natural heritage and unique product delivery. The dispensing and loading system adds a stage of performance to the user interaction with the product.

Functionally the Droplet cooler offers a set of unique features. The spiral gravity fed bottle rail offers a simple but elegant internal storage and delivery system. The coolant tube stop valves partnered with the PVC coolant tube pathway allows the coolant tube to be removed without destruction of the product. This then allows all major technical components to be removed and replaced from the main body without need for buying a whole new cooler.

The materials selection for the components can be varied to account for bottles size changes, desired quantity changes and overall aesthetic changes. This along with the variation of graphic vinyl placement possible means the aesthetic design and overall impact of the product and brand identity has unlimited possibilities.



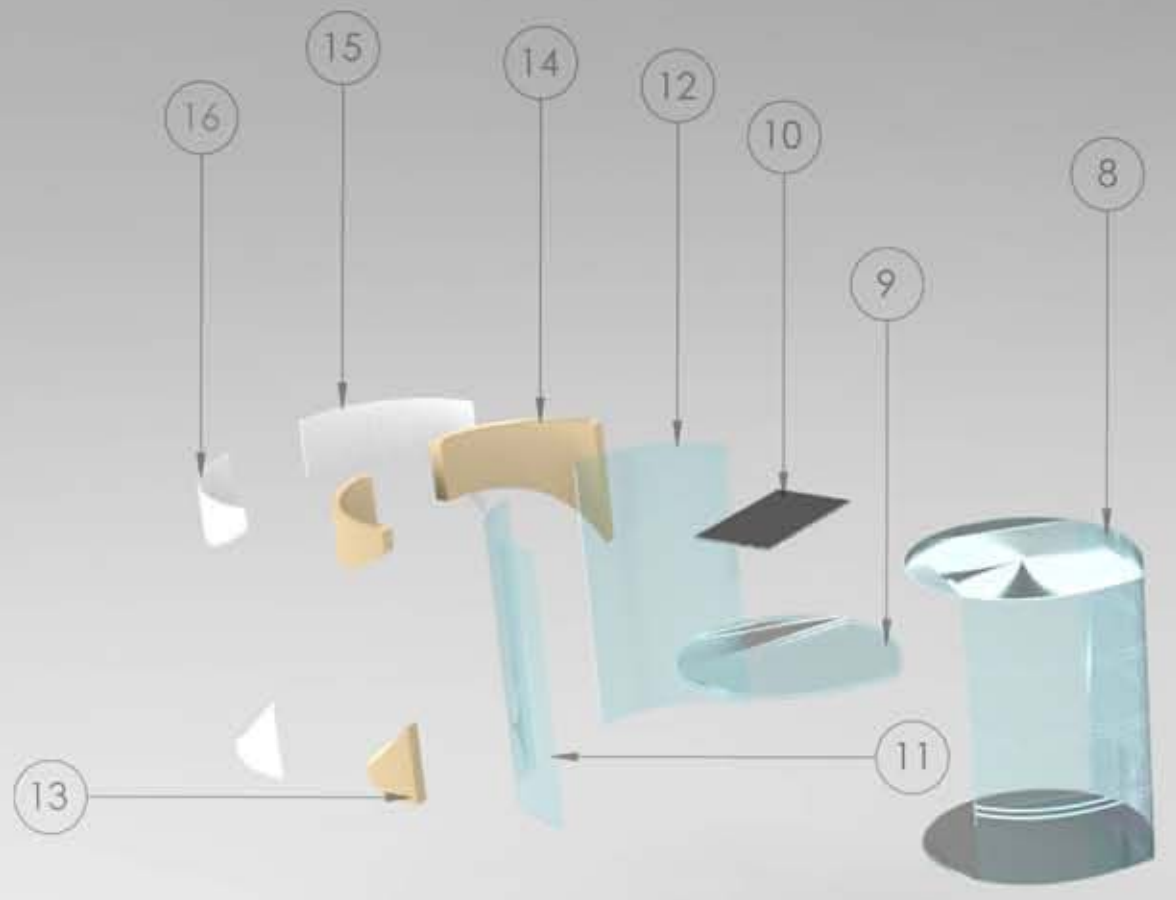




ESSENCE cooler



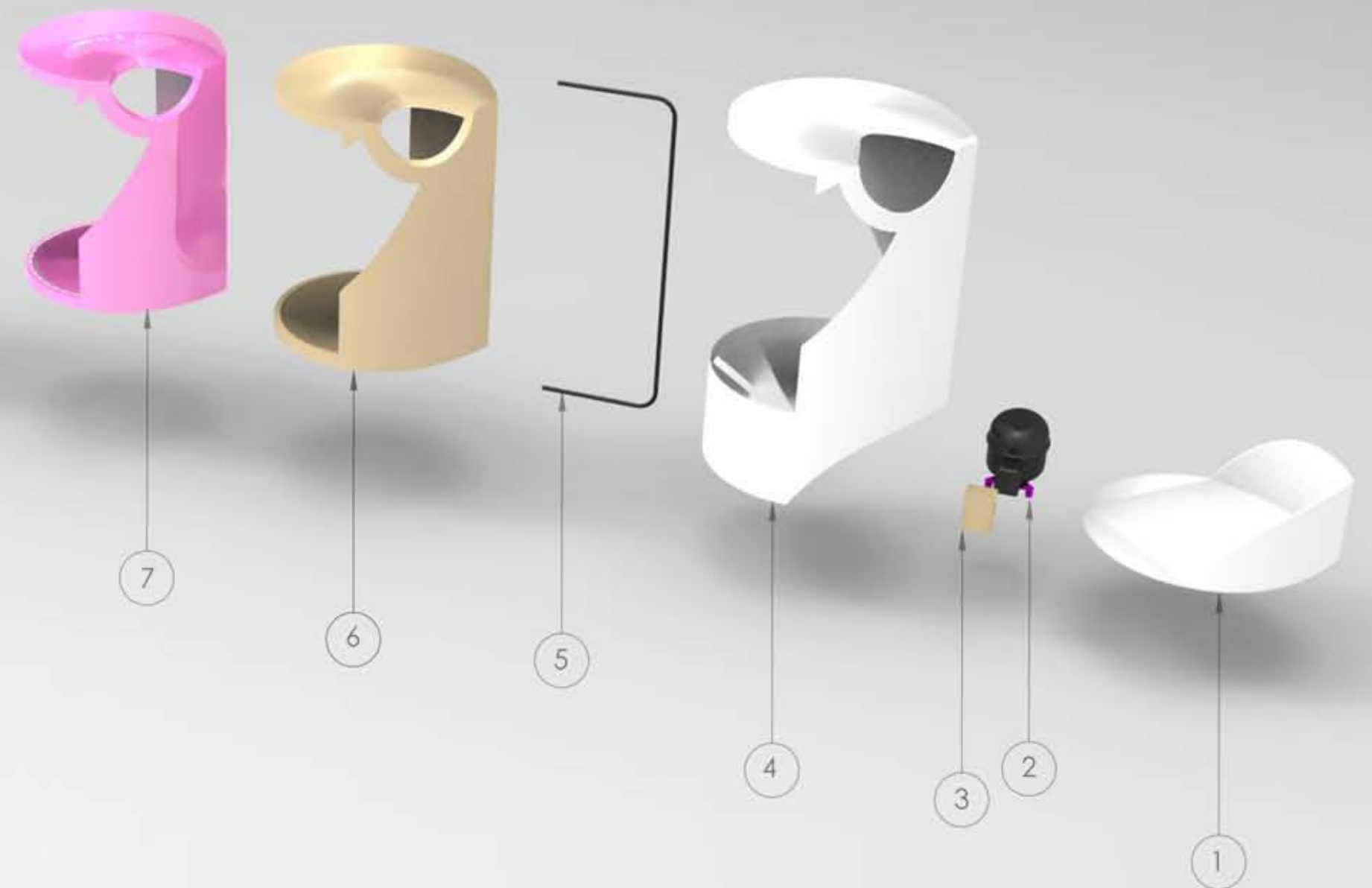
# Essence cooler - Exploded view



## Fabrication

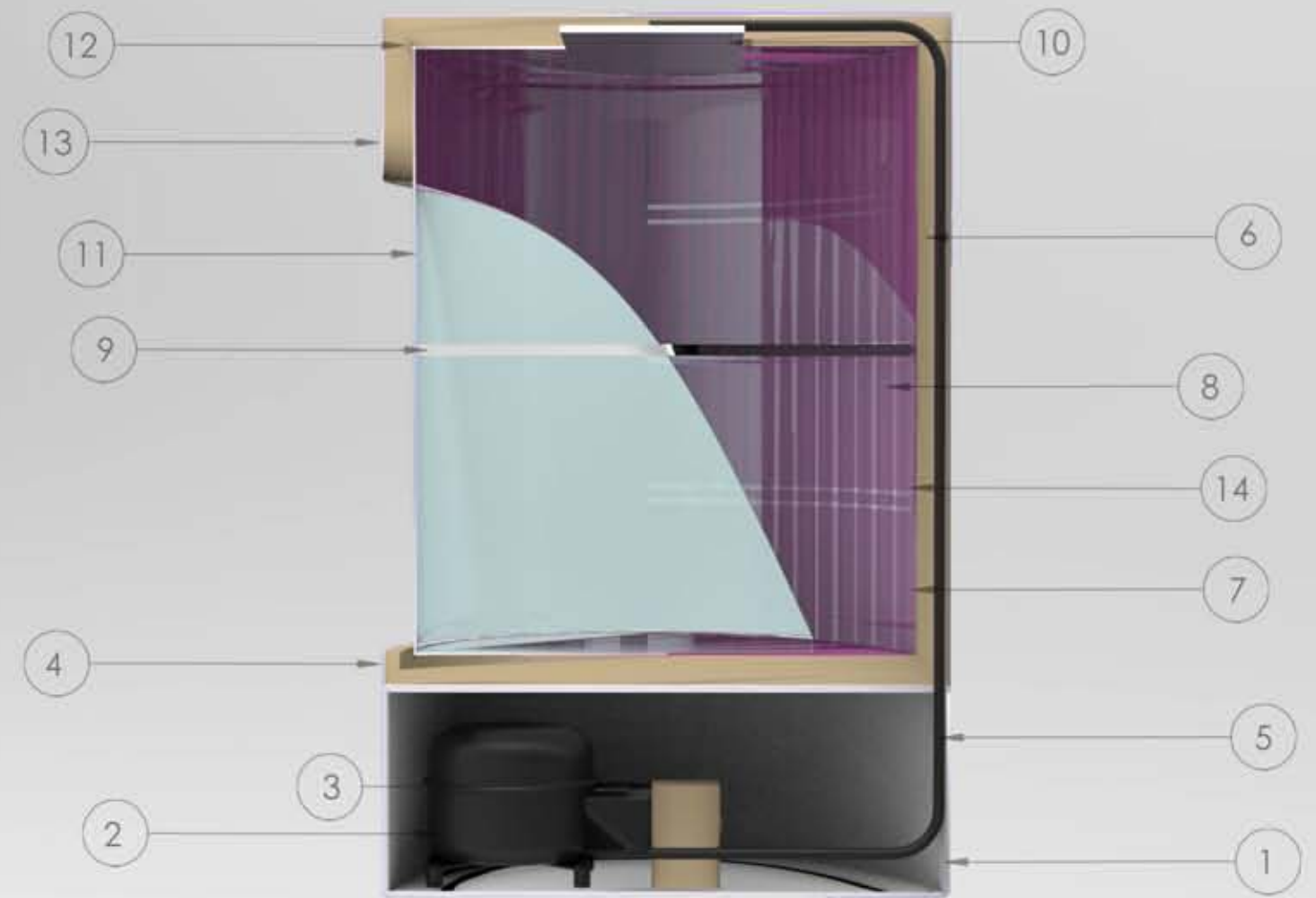
To make the main body components 1 and 4 are made via the vacuum forming process and dry assembled with appropriate fixtures. The internal layer of this is then coated in the thermochromic wrap - 7. Component 8 which is made via dry assembly of laser cut thermoformed acrylic and the fixed to the rest of the main body - this leaves a cavity for the addition of insulation - 6. The standardised components 2, 3, 5 and 10 are then fixed into place. The right door - components 12, 14 and 15 are fabricated in the same way. The left door - components 11, 13 and 16 are also made in the same way and put into place onto the body.

Item no.	Component	Qty
1	Polyethylene maintenance door	1
2	Compact compressor	1
3	Thermostat	1
4	Polyethylene outer body	1
5	Rubber coolant pipe	1
6	Urethane body insulation	1
7	Thermochromic wrap	1
8	Tinted thermoformed acrylic shelf body	1
9	Tinted thermoformed acrylic shelf	1
10	Aluminium cooling plate	1
11	Left thermoformed acrylic door pane	1
12	Right thermoformed acrylic door pane	1
13	Left urethane door insulation	1
14	Right urethane door insulation	1
15	Polyethylene left door outer body	1
16	Polyethylene right door outer body	1



*Handwritten signature*

# Essence cooler - Section view



- 1 Polyethylene maintenance door
- 2 Compact compressor
- 3 Thermostat
- 4 Polyethylene outer body
- 5 Rubber coolant pipe
- 6 Urethane body insulation
- 7 Thermo-chromic wrap
- 8 Tinted thermoformed acrylic shelf body
- 9 Tinted thermoformed acrylic shelf
- 10 Aluminium cooling plate
- 11 Right thermoformed acrylic door pane
- 12 Right urethane door insulation
- 13 Polyethylene right door outer body
- 14 Shelf support grooves

# Droplet cooler - User experience

## Dispensing

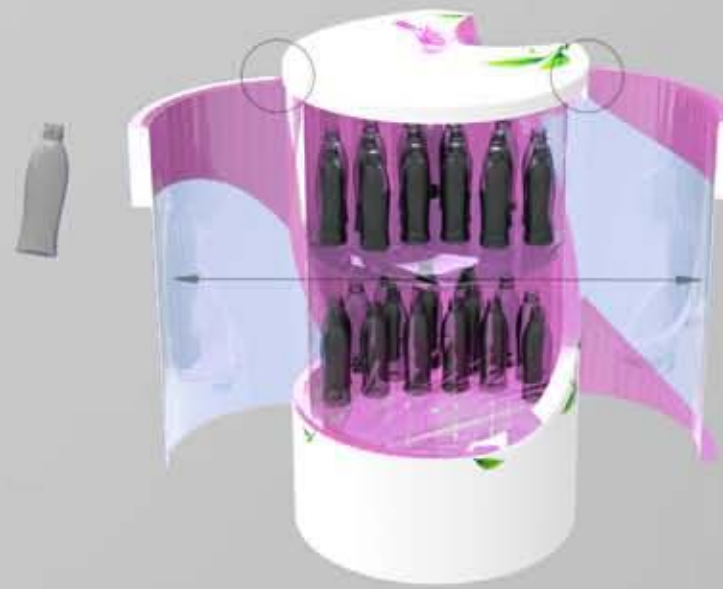


- Open the door and retrieve water bottle from either top or bottom shelf.

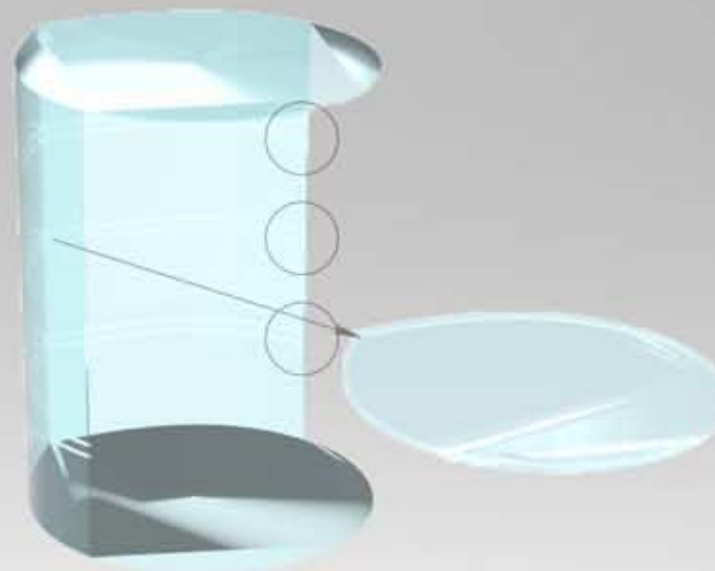


- Double doors allow access for more than one person at a time.

## Loading



- Both doors rest at their maximum rotation leaving the cooler open to stock the shelves.



- The internal layer has grooves for shelves to slot into place.

## Maintenance



- The bottom panel slides out with all cooling technologies attached.



- At both ends of the coolant tube there are stop valves to make removal of the coolant tube possible.

A handwritten signature in the bottom right corner of the page.

# Essence cooler - Size and cost variations

High cost and low cost.



## Changes

- The high cost design is made of components and materials listed in the exploded view.

The low cost design Changes:

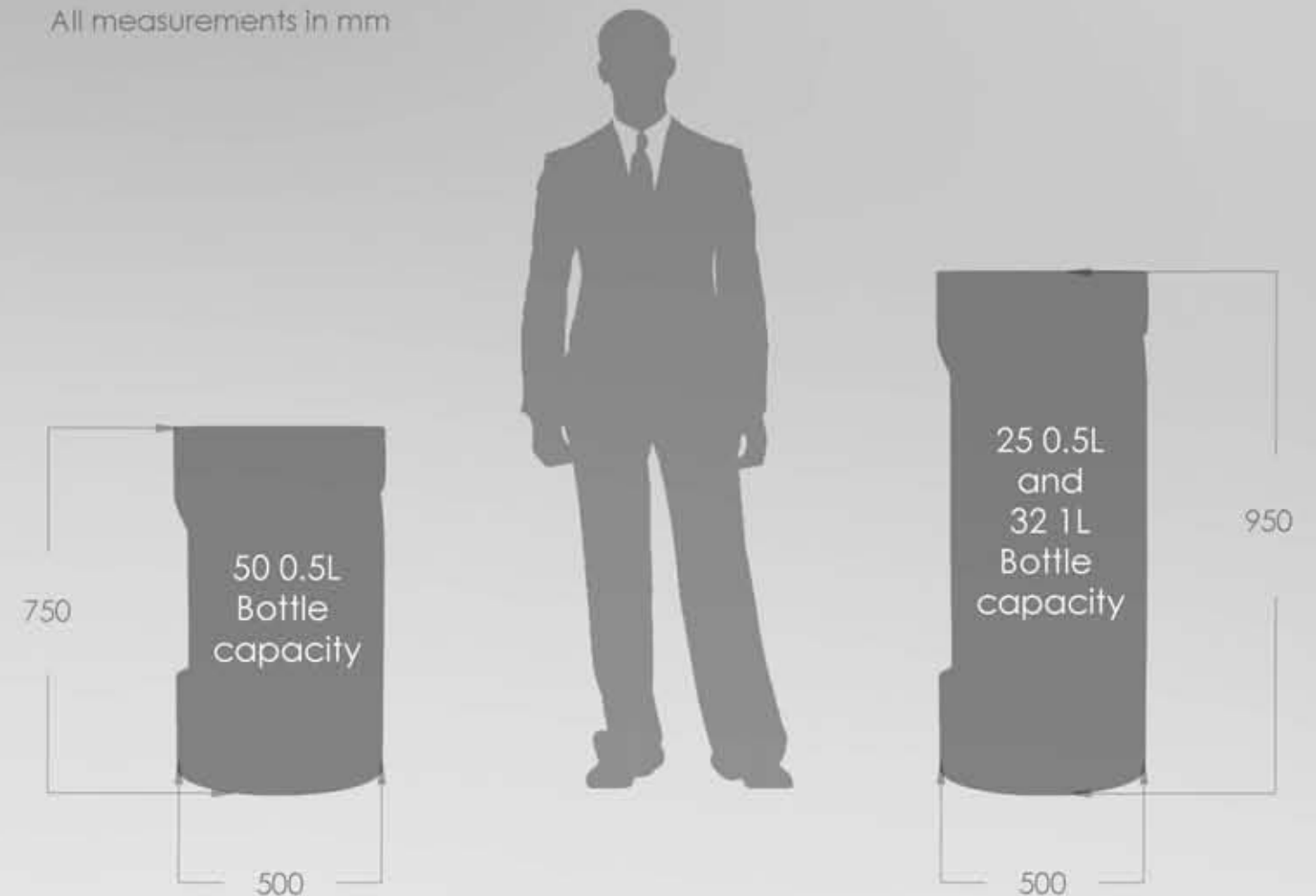
- The ThermoChromic wrap has been replaced with adhesive vinyl.
- The tinted thermoformed acrylic has been replaced with regular thermoformed acrylic.
- The thermoformed acrylic shelf has been replaced with acrylic.
- The polyethylene outer layer has been replaced with a low gloss acrylic.
- The LED lighting has been removed.

## Costing

- The outline factory cost for the high cost design per unit is £350 this includes materials, labour and tooling. The total cost of this design is the sale of 17500 bottles at 2p addition charge per bottle.
- The outline factory cost for the low cost design unit is £250 this includes materials, labour and tooling. The total cost of this design is the sale of 12500 bottles at 2p addition charge per bottle.

Compact and extended.

All measurements in mm



- The compact design is the standard design shown throughout this documentation.

The extended design:

- The overall height of this design is a third higher than the compact design.
- The height alteration changed the size of the doors but maintains the shape and style of the curved design.

# Essence cooler - Aesthetic Variations

## Simple essence

- Replaces thermochromic wrap with a high gloss light blue acrylic and replaces a number of decals with just the lielbata logo.



## Earth essence

- Replaces the thermochromic wrap with a deep turquoise acrylic. And replaces the outer shell with a smooth speckled earth colour. This design illustrates decal variation.



## Rough essence

- The polyethylene outer layer has a rougher texture and dark speckled finish. Also the thermochromic wrap is replaced with textured light blue acrylic.



## Essence cooler

The Essence cooler is a combination of practicality, functionality and spatial interaction. The flowing display/access window with partnering edge display window are inspired by the Lielbata spring rock and stream flow which portrays Lielbata's natural intentions directly but also carries the brand identity in a familiar but provocative way.

Functionally the Essence cooler offers a set of unique features. The coolant tube stop valves partnered with the PVC coolant tube pathway allows the coolant tube to be removed without destruction of the product. This then allows all major technical components to be removed and replaced from the main body without need for buying a whole new cooler. Also the removable shelves account for bottles size changes, desired quantity changes and overall aesthetic changes.

The materials selection for the components can be varied to account for bottles size changes, desired quantity changes and overall aesthetic changes. This along with the variation of graphic vinyl placement possible means the aesthetic design and overall impact of the product and brand identity has unlimited possibilities.

