



### Case Study

The QUESTOR Centre carried out work on behalf of Pulse Eco Shower comparing their product, to shower heads that delivered the water jet through multiple small holes. These shower heads are referred to in this summary as Shower Head B.

Prior to delivery to the QUESTOR Centre, 2 of each of the shower heads had been trialed over an eight week period in homes in a hard water area in County Laois in which at least two adults reside. Following the trial, one of each of the shower heads was analysed for build-up of limescale, whilst samples of the of the other were obtained and examined using a Scanning Electron Microscope (SEM). These samples were compared with the clean shower head samples.

### Limescale

Limescale analysis was carried out by ICP analysis of a known volume of extract water which was passed through each of the shower heads. This analysis determined the Calcium concentrations of the extract water (a key indicator of limescale build-up). The extracts from the Pure Pulse shower showed a small increase in Calcium content to **0.6** milligrams/kg.

Shower Head B showed a large increase in Calcium content to a figure of **143** milligrams/kg. The increase in concentration with Shower Head B was approximately **238** times higher than that observed with the Pure Pulse Shower.

### Bacteria

SEM microscopy gave an indication of the degree to which the shower heads became colonised by micro-organisms. At magnification of 10000x, **2** bacterial cells were observed with the sample taken from a Pulse Eco Shower and **27** cells were observed in the sample taken from Shower Head B, ie **13.5** times more bacteria in Shower head B than the Pure Pulse Shower head. This result implies that bacteria are significantly less likely to colonise a Pure Pulse Shower than their competitors.



### Bournemouth & West Hampshire Water

#### Water Strategy Report to OFWAT 2010

We believe that providing customers with high quality products and targeted advice will go further towards achieving overall objectives than providing cheap products en mass. We have reviewed a number of water efficient devices and have concluded that the Pulse Eco Shower represents the best balance between water saving and performance. Users of these devices are more likely to continue utilising the product if it provides a good experience. We are wary that with cheaper options that merely limit flow, people will tend to go back to using their old shower head or take longer in the shower to compensate for the diminished performance.



### Portsmouth Water Company

#### Water Strategy Report to OFWAT 2010

Multi-shower provided the largest reduction in flow, from 9.5 l/m to 6.0 l/m, and achieved the highest customer satisfaction score. This shower head uses a patented "pulsated" flow and is not strictly aerated in the same way as the other shower heads.



**PURE PULSE**  
ENJOY A SENSATIONAL SHOWER



# Pulse Eco Shower™

## PURE PULSE

### Award-Winning delivery system

#### The benefits of Pure Pulse:

- **No limescale**  
Pure Pulse offers a revolutionary lifetime guarantee against limescale clogging.
- **Award-Winning Design.**  
"Most innovative Water Saving Product" 2010/ 2011 (Green Hospitality).
- **A healthier, more hygienic shower**  
An independent Case Study by the Questor Research Centre in January 2012 found competing eco shower heads had 238 times more limescale and 13.5 times more bacteria compared to Pure Pulse after only an 8 week trial in a hardwater area.  
(See Case study conclusion on back page).
- **Save water and energy**  
Pure Pulse achieves the temperature and powerful flow of traditional shower heads with only 40-60% of the water by simply creating tiny gaps between droplets.
- **Two years Manufacturer's Warranty.**

#### How does it work ?

Pure Pulse emits an undetectable pulse from one central chamber, maximising the pleasurable effect of showering while reducing water consumption by 40-60%.

Pure Pulse provides a choice of soft large drops, rainfall, an invigorating sport jet or a soothing massage.

#### Suitability

Suitable for all shower systems including most electric showers. (Only systems with very low pressure are unlikely to reach the required level of 0.5bar.)



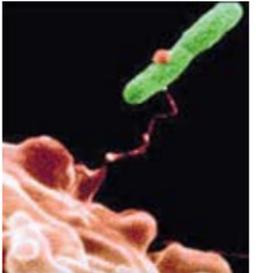
## Unique Qualities of Pulse Eco Shower

### • No Spray Plate

For a bacterial culture to establish, it needs to anchor to a suitable surface. On traditional shower heads, ideal conditions for bacterial growth are created by: layers of deposited materials (biofilm) which remain as water cools on the surface; the rubber nipples of anti-limescale heads; or recesses created by multi-layered designs. In Pure Pulse shower heads, the spray plate has been removed, dramatically reducing the contact surface area to a single point. As the material at this point is metal, the conditions are unfavourable to the establishment of bacterial cultures.

### • No Bacterial Nutrition

Limescale contains nutrients, such as calcium, manganese and iron, which settle on areas of the shower head when the water cools and evaporates. The build-up of these minerals, known as biofilm, is exacerbated in areas of the shower head where water pools, such as the recesses of the spray plate. Through repetition of this cooling and evaporation process, these layers of biofilm deepen, embedding bacteria within the shower head and creating ideal conditions for further growth and spore formation. The most common cause of clinical infection is aerobic bacteria and, therefore, shower heads that provide access to air and nutrition are potentially hazardous. However, Pure Pulse shower heads remove these problem areas, dramatically reducing the build-up of biofilm.



### • Less Residual Moisture

All organisms require water for survival and growth. Excessive residual moisture that remains in the shower head after use encourages bacterial development. Water can collect in the recesses of a spray plate and remain undisturbed until the shower is used again or evaporation eventually occurs. This tepid, aerated pool provides an ideal environment and temperature for microbial growth. Shower heads with an integrated design to avoid excessive residual moisture can help to prevent the spread of bacteria.

### • Laminar rather than Aerated Flow

While most clinical infections are caused by aerobic bacteria, the most common problem bacterium associated with water systems is legionella. As this must be inhaled into the lungs to have effect, aerated shower heads provide the ideal conditions for transfer by inhalation. Pure Pulse uses a laminar flow, rather than an aerated system. As this does not draw air from the room into the water stream, it dramatically reduces the volume of airborne bacteria.

In summary, Pulse Eco Showers offer a unique design and mode of delivery that dramatically reduces the risk of bacterial growth and the spread of infection. Replacing the spray plate with a metal contact area prevents the build-up of biofilm and excessive residual moisture. As scientific testing has demonstrated, the result is a healthier and more hygienic shower, ideally suited to hospitals, clinics and other public facilities.