

## SPECIAL REPORT

### DART VALLEY SYSTEMS

BAA has set high standards for the washrooms at all their airports. Add to this the expectations of the UK's most prestigious building project, the design team for Heathrow Terminal 5 washrooms were tasked with achieving the optimum in sustainability, serviceability and aesthetics.

Whilst DVS products have been used extensively throughout BAA airports for 15 years, the Terminal 5 design team wanted to ensure the products selected met all the criteria for the project and carefully investigated all options.

After a thorough review of washroom products from leading suppliers the washroom design team nominated DVS as the preferred supplier. There was a high level of confidence in the reliability of DVS products and the service support, which had been experienced over the past 15 years. This was firmly confirmed by Kelly Stone, the BAA Engineering Leader on the team. DVS has built a reputation for flexibility and responding to customer requirements, and were ready to meet the expectations of the BAA design team who had a clear vision of what they wanted to achieve.

The results achieved through close collaboration between DVS and the BAA washroom design team has provided both parties with significant benefits.

BAA obtained the exact specifications they required and for DVS the process not only secured the valued business but provided some of their next generation products. With an anticipated 35 million passengers a year passing through the terminal the products have to be of robust design, and marginal savings per operation become significant with such high usage.

# Dart Valley Systems meet BAA Terminal 5 washroom challenge

The WC Flushvalve is unchallenged and DVS proudly claim it to be the best WC Flushvalve in the world, a statement BAA would not argue with. The product comprises of an electronically operated flushvalve, requiring the user to simply wave their hand within 50mm of the sensor to flush the toilet. The valve open time is adjustable to enable optimum flushing to be achieved. When introduced to Heathrow as a retro-fit product it reduced water consumption by 210,000 M3 per annum, and related maintenance costs by 85%. Additionally all the other benefits became clear, hygienic no-touch operation, ease of use for less abled and young children, robust and vandal proof, and nice aesthetics

The sustained outstanding performance over the many years of service at BAA airports ensured its use at Terminal 5. The only fine tuning on this product was to provide a brushed stainless steel bezel to match the proposed washroom aesthetics. The exact detail was fine tuned with Kay Greetham, one of BAA's design managers assigned to the Terminal 5 project. With significant experience in interior design Kay influenced the design detail of all the products provided by DVS.

All products, including WC suites were required to be WRAS approved, and once BAA had selected the WC pans, DVS were tasked with obtaining approvals for the suites including the WC pans, Flushvalves and cisterns. There were a number of different WC pans selected to meet the criteria of different parts of the airport but the main ones for customer washrooms were the Vitra Matrix and Matrix Extended DDA compliant WC Pans. DVS set up test rigs with the exact arrangement being installed at Terminal 5 and arranged for the WRAS approvals through WRC. Having searched Europe for a service duct cistern without finding an ideal product, DVS decided to design one to meet all the criteria to achieve an optimum cistern for the application. The design criteria included having a good head of water to provide a good flush rate, robust and easy to install. The new cistern has been added to DVS current

product catalogue and proven to be a popular addition. As well as being able to achieve good flush rates the slim robust cistern makes it ideal to fit into those service duct areas with restricted space.

The flexibility and willingness of Vitra to offer bespoke designs was also an important factor for Vitra being selected for the Terminal 5 project. One of the products designed for Terminal 5 was the Matrix DDA compliant WC pan. The customary approach by sanitary suppliers has been to provide spacer boxes to achieve the DDA required positioning of the WC Pan. In response to Kay Greetham's uncompromising desire to achieve clean lines, modern appearance and minimum clutter, Vitra responded by designing and supplying a customised DDA compliant WC pan, believed to be the first such design offered by any sanitary supplier.

One of the completely new designs developed by DVS for the Terminal 5 project was the urinal control system. DVS has been supplying individual urinal controls to BAA airports for 15 years. These were innovative, market leading products that provide water efficient operation whilst keeping bowls fresh. The Vitra Urinal Bowl is provided with the facility to house the Infra Red Sensor, and Kay Greetham considered a sensor looking similar to the WC wave-on sensor would meet the design aesthetics. DVS also wanted to find a cost effective solution for what would become their next generation of individual control urinal sensors.

With over 20 years experience in designing and manufacturing water efficient washroom products, DVS design team set about designing the individual controls for the Terminal 5 project that would become their new standard product. The decision was to use a control box with two channels, to enable the control of one or two urinal bowls. This solution meant that for many applications the costs could be substantially reduced.

Unlike PIR systems the individual control system only flushes the bowls actually used.



On this application the sensor was mounted as an integral part of the VitroA urinal bowl and detects the user. A small amount of water is enough to wash the bowl and clear the trap is dispensed after each use, thus providing the optimum in water efficiency and freshness of the urinal bowl. Water for toilet flushing at Terminal 5 is on a separate supply to potable water which meant direct flushing could be achieved on the plumbing without the need for air breaks.

The automatic taps is another product used throughout BAA airports. Historically deck mounted taps had been used but the design criteria for Terminal 5 was wall mounted, No-touch automated taps. With TMV3 thermostatic pre-mixed water the no-touch automatic taps provide the most water efficient, safe, hygienic solution for hand washing. DVS have a standard range of 316 stainless steel wall mount taps, in brushed or polished finish and of various lengths. The technology used is the same as the deck mount taps well known to BAA, and the brushed stainless steel met the basic functional and aesthetic criteria. The flow rates and run-on time were agreed, leaving the subtle aesthetic design changes to meet Kay Greetham's exact requirements. The length of the tap was established with the assistance of mock-ups at the DVS factory at Paignton. Another detail required by Kay related to the end of the tap which was changed from 3mm rad to minimum, now standard on DVS Aquarius tap range.

With the WC Flushing, Urinal Controls and Automatic taps sorted, that covered the normal products supplied by DVS to BAA. The Terminal 5 team however had one more concept to look at to fine tune their sustainability objectives. With around 700 WC's, that is a lot of units to keep an eye on. One possible problem that can occasionally occur is with WC inlet valves that may scale up or for some other reason malfunction and continue filling causing overflow to waste. BAA decided to install a monitoring system to provide early warning of any potential WC overflow. After considering the number of cubicles in various washrooms, it was decided to have a control station which could monitor up to 20 WC's. A float switch is mounted in each cistern and should the water level rise a signal is passed back to control box and a warning light is illuminated. When an attendant sees the warning light they can advise maintenance. The control box digital readout identifies the cubicle requiring attention.

*The working relationship between BAA and DVS, sharing experiences and ideas that influence product improvements has resulted in the development of optimum water saving products now available as part of DVS standard range.*



**BAA and Dart Valley Systems Limited** have demonstrated over many years experience that the highest levels of hygiene and washroom freshness can be obtained whilst achieving the most water efficient, environmental and sustainable operation.