



Making

Hampshire Fire and Rescue Service in the south of England organised Specialist Response Week in September 2009, which responders from the UK and Europe attended to take advantage of a multitude of practical workshops in different disciplines.

Ann-Marie Knecht visited Fawley Power Station, where she found out how various fire services were using high volume pumping units that had been provided under a national programme.

The results clearly demonstrated that HVPs have come of age.

Practical demonstrations were the theme of the day when Hampshire Fire and Rescue Service organised Specialist Response Week last year. The event was aimed at bringing firefighters together, and demonstrated new technology and practice in different disciplines of response. The demonstration days ranged from top-level incident command and specialised areas of technical rescue, to operational firefighting techniques – and all promoted the exchange of new ideas and examples of Best Practice.

Fire and Rescue attended the High Volume Pump Demonstration at Fawley Power Station, organised by Watch Manager Chas McGill and Station Manager Alan Blatchford.

McGill explained that Fawley Powerstation and Hampshire FRS have a relationship that goes back years, and the power station proved an ideal location for this type of exercise, due to its excellent conference facilities, ample space, and its location with high quays on the Solent.

The event attracted much attention from firefighters all over the UK and Ireland. Even personnel from Technisches Hilfswerk – the German Disaster Management Agency – attended to see the many ways in which the Hydrosub150, provided to the UK Fire Service under the New Dimension Programme, could be utilised.

The Hydrosubs are a range of high volume submersible pumps (HVP) with different capacities, and are currently one of the best assets on the market from moving large volumes of water over uneven terrain. The Dutch manufacturer Hytrans Systems is currently dealing with extremely high demand for its product from all over the globe, including the US and Malaysia.

The day started off with a set of presentations. Dave Lavender from the UK National Resilience Assurance Team explained how the HVPs are used on a national scale in the UK. The National Assurance Team has been working hard to ensure that all fire and rescue services in the UK engage at a regional level, and that each region is represented at a national level. He added that international exercises such as FloodEx – held in Holland in September 09 – had been carried out with great results, and Key Performance Indicators had been met. In short, the UK FRSs have been utilising the HVP units to great effect, and they are seen as an important asset in the response arsenal.

Charles Fairfull, Group Manager West Area from Surrey Fire and Rescue Service, presented a case study on Exercise Bracken, organised in conjunction with Hampshire FRS, in which the national assets were used in a wildfire situation. The aim of this joint exercise was to promote partnership working, to expose staff to alternative equipment and procedures, and to identify best practice. During this exercise the actual HVP units themselves were not used, and instead the HVP hoses were attached to Surrey's conventional vehicle pumps (due to their faster deployment time), in order to establish a reliable water supply over long distance and rough terrain. This exercise was deemed a great success and it attracted much interest from other FRSs in the region.

Richard Hall from Leicestershire FRS explained that Leicestershire chose a smaller HVP due to budget restraints. It opted for a specially designed unit called the Hydrosub 60, which has a smaller water capacity than the HS150 – 4,500 lpm

The Firefighting Team from Grangemouth refinery in North Scotland demonstrated the enormous capacity of its HS450 by connecting it to a Williams Six Gun, delivering 11,000 lpm in total.

the best of HVP assets

opposed to 8,000 lpm for the HS150. This meant the unit on which the pump is carried had to be designed in a different way from the national assets. However, the smaller sized HVP did have several advantages, such as faster deployment, and easier positioning.

Johan Kramer from Hytrans Systems, the Dutch manufacturer of the High Volume Pumps (worldwide also known as the Hytrans Fire System HFS) explained how it had recently delivered to countries such as Qatar, Saudi Arabia and Malaysia, due to the high number of industrial installations present there. Kramer further explained the technical aspects of the HVPs.

One HVP unit consists of one Hydrosub150, two DuoContainers (including a hose recovery unit – HRU), three hose containers, and a three km, six-inch hose. Two trucks with hookarm lift off system are required per unit, as each DuoContainer requires transportation by truck.

The HS150 is powered by a 150 KW diesel engine, which powers the hydraulic system for the submersible pump. The hydraulic hoses are 60 metres long, meaning that the unit itself can be placed 60 metres away from the water source.

The HVPs are not suction pumps, and therefore experience no loss of draft, said Kramer. "The pumps push the water into the hose, so no pressure is lost. The great advantage of this method is that the submersible unit can pump water straight up from 55 metres deep.

"We decided to develop such a system based on conversations with our customers, who required to pump water at a depth of eight or nine metres. Conventional units can only reach down eight metres, and this with capacity losses of up to 75%." This means that when a conventional pump works at a capacity of 1,000 lpm, the end result will be a rate of 250 lpm, as the rest of the capacity is lost in suction.

According to Kramer the greatest advantages of the Hydrosub system are that it considerably increases the available access to water sources, as well as enabling firefighters to move great



volumes of water, making this the ideal tool for flood rescue operations, but also a great way of establishing a dependable water supply for firefighting operations.

Hytrans recently developed an add-on system called the Flood Module, specifically designed for use with the HS150. "The Flood Module increases the capacity of the HS150 up to 40,000 lpm, or equal to five HydroSub 150 units. It also means that the FRSS



Above: the great aspect of the HVP day was that all attendees actively participated in the demonstrations. Left: Hampshire FRS has implemented a special marking system which can be audited and enables the location and identification of all its New Dimension assets.

IMAGINE

THE IMPACT

ON YOUR CREW

FDIC[®]

APRIL 19 - 24, 2010
INDIANAPOLIS, IN

INDIANA CONVENTION CENTER
AND LUCAS OIL STADIUM

WWW.FDIC.COM

owned and produced by:

PennWell

flagship media sponsor:

Fire Engineering



Above and below: Surrey Fire and Rescue Service demonstrated the successful retrieval of the submersible pump from a great depth.



do not have to invest in another pump unit. Currently we are setting up demonstrations to prove that the flood modules will be a valuable addition to the New Dimension equipment designated for floods, and can increase operational efficiency."

Hytrans isn't just focussing on the UK however, said Kramer. The Swedish MSB (Civil Contingency Agency) has already acquired three of the Flood Modules. The City of Berkeley Fire

Department in California recently bought two HS900 systems – one HS900 has six times the capacity of the HS150. These systems can pump an impressive 22,000 lpm at 12 bar, feature 10 km of 12 inch hose, and are currently also extremely popular with refineries.

The reason why Berkeley FD chose the largest units available is the city's location near the San Andreas Fault, and the common occurrence of earthquakes. Earthquakes usually damage the hydrant system, as well as cause many fires. When dealing with the mountainous terrain of California the HS 900 can be used as a pump as well as a boost pump, and when one of the units is placed halfway up a hill, it can pump the same distance again, providing a huge flexibility and water capacity when all else fails.

Hytrans has also recently received an order for three HS150 units from the FDNY (Fire Department of New York). Hytrans completed some demonstrations which convinced the FDNY that although there is a fixed hydrant system in NYC, the HVPs would provide the brigade with flexibility – crucial for successful firefighting operations.

Kramer concluded by saying that although the Hydrosub was an off-the-shelf pump, the full system was in every aspect a bespoke solution, and to be able to understand its immense capabilities it is necessary to see it in action.

The demonstrations

After the morning's presentations the attendees were split into two groups under the guidance of Alan Blatchford and Chas McGill, and were shown around the outside demonstration area. After processing all the information of the morning's presentations everyone was itching to see the real deal.

While showing everyone the current HVP units of Hampshire and Dorset which were lined up and in action, Chas McGill explained that after a recent deployment to the Yorkshire floods where HVPs from all over the UK were sent, he received the wrong HVP units back. They belonged to another FRS.

"Fire Service protocol dictates that all equipment held in a fire station should be tested for safety. I concluded that these expensive assets needed marking for when they get deployed on a national scale. How do you know it belongs to your brigade? All

HIGH VOLUME PUMPS



equipment that is lost will come at the expense of the brigade, and having to answer to your superiors about the whereabouts of expensive equipment, is certainly not part of my job description."

From a manual handling point of view, it is also important to protect people from injuries and that is why Hampshire records the weight of every piece of equipment.

McGill emphasised that he is not just talking about the actual HVP units, but also about additional equipment, such as gate valves and couplings which are in quite short supply and rather expensive pieces of kit. In addition, Hampshire is one of the only FRSs in the UK that has bought a large amount of extra equipment to go with the HVPs.

For all of the reasons above, McGill decided that an equipment marking system was in order. "The equipment labelling system we have got in place now is immediately identifiable, as well as capable of being fully audited. This means that whenever I need to test a specific type of equipment, or it needs to be sent off for maintenance, there is an audit trail to its particular location at that time."

As we proceeded to the next demonstration, McGill pointed out the hose ramp supplied under the New Dimension programme. Each FRS received a single hose ramp for the two-kilometre hose provided with the New Dimension kit. Laying this out was quite a challenge when the HVPs were being deployed in an area with a lot of traffic. However, McGill was ahead of the game, and encouraged the people from the technical rescue department to make him a wooden hose ramp, which is impressively effective, and probably costs a fraction of the price of the metal ramp.

The next demonstration had been organised by Terri Smith, Fire

Safety Manager and Head of the Firefighting team at the neighbouring Fawley Refinery.

Smith highlighted how an HS150 could be used as a water supply for storage tank firefighting, using his brand new super compact Iturri/Protec vehicle, equipped with two Williams high capacity monitors that had a capacity of 12,500 litres each. The vehicle is based on a Mercedes Benz Atego chassis, and is very likely to be the most compact industrial vehicle currently on the market. Smith and his team have also bought into the concept of radio operated monitors, which saves operators having to stand on the roof, illustrating how this vehicle is overall designed for optimum efficiency and safety.

Eddie Impey, Industrial Sales Manager for Iturri, was also present and he explained that the team at Fawley Refinery had very specific requirements for this truck. "The narrow size of the roads within the Fawley Refinery are very restrictive, so a large industrial fire appliance was not an option, because of the lack of space to manoeuvre. Therefore the chassis design had to be as compact as we could master, but have a massive capacity in terms of pump capability. We were able to create an innovative and unusual design to the storage within the vehicle itself. For example, the breathing apparatus is mounted on a foldover dispenser."

In addition, careful and intricate design of the pipework and the supply routes for the water and the foam were required. The designers found a way of keeping this extremely compact in order to meet with Fawley's specification.

The vehicle can be used as a standalone unit delivering 10,000 lpm, or it can be attached to an HVP, to use it to its maximum capacity.

During the next stage of the demonstrations Surrey Fire and Rescue Service showed how the actual submersible pump was removed from the water at the quay, and the Firefighting Team from Grangemouth refinery displayed the enormous capacity of their HS 450 by connecting it to a Williams Six Gun, delivering 11,000 lpm in total.

McGill added that the UK Fire Service was still learning from the recent floods, and that FRSs – even internationally – should actively work and exercise together to use these assets to their full potential. "We really want to push this wonderful resource that has been given to us by the UK Government. It is the most used piece of kit in the New Dimension arsenal. It is excellent and simple, and brigades are only now really beginning to develop other uses, such as running water mains and supplying water. If we do not get smart with this equipment, we are going to get caught out."

Top: Hampshire FRS's impressive "home made" wooden hose ramp. Below: Grangemouth Refinery is using an HS 450.

