

# Contamination control

Equipment for the detection and removal of radioactive contaminants must undergo continuous improvement. **NEI** learns how a smaller, portable device has been developed to meet operator needs



Above: The new **CYCLAIR 180** is portable and compact for use in hard-to-access areas

**EDF GROUP'S RADIOPROTECTION APPROACH** is built on optimising external exposure (ALARA approach) and controlling internal exposure (contamination).

For the latter, the markets provide access to personal and collective protection equipment. It is essential to prioritise collective approaches to protect as many workers as possible. This requires static containment (airlocks, confinement areas) and dynamic containment (using negative pressure).

Negative pressure generators have often been purchased from Delta NEU, a company known for its filtration units and range of radioactive particle protection equipment. For ten years Delta has provided radioprotection systems for most of France's nuclear power stations.

Delta NEU designs and implements negative-pressure ventilation units that trap the radioactive elements that are present during maintenance works in active installations.

The units filter air from contaminated zones and can be used for airlock ventilation or dynamic containment. They can also be used to eliminate residual water in tanks, dry steam generator and exchanger circuits, or to decontaminate working areas.

For example, the Delta NEU MED CP unit can be used to apply negative pressure to the primary circuit during the valve inspection phase. When used as a 'lower generator' this unit applies negative pressure to the primary circuit and automatically controls the airflows to be applied, regardless of the number of valves open. The air taken in by the two nuclear filters is then heated before being passed through a second filter stage to trap radioactive iodine. The cleaned air can then be released into the reactor building or

EBA system. The radiological danger is reduced thanks to an individual or collective dose rate.

To comply with DT 288 (EDF Framework and Technical Directive), negative pressure must be applied to the pressuriser. Delta NEU has designed a specific unit, the MED PZR, which can be connected to the MED CP. This is a mobile negative pressure generator with an absolute nuclear filter, activated carbon iodine trap, heating battery and control systems. A similar type of negative pressure generator, the MED GV, is used to dry the primary side loops and apply negative pressure to the steam generators.

## A new need

There are many spaces inside the installations where access is quite difficult. Spaces do not have smooth straight walls and in some the current equipment, up to 2m high and weighing 300kg, is very awkward for operators to handle and complicated to maintain.

Clement Marcillet, the technical referrer for the containment equipment section of the Nuclear Production Division (DPN) of EDF asked Delta NEU to develop a portable < 25kg negative pressure generator, which can still meet nuclear requirements.

In response, the Delta R&D department came up with the CYCLAIR 300, and the CYCLAIR 180 for the US market.

The first prototype weighed 40kg but after three months EDF was supplied with a unit weighing only 17kg. Each intervention can now be completed more rapidly and areas are contained and decontaminated with greater speed.

The CYCLAIR 180 measures 15 x 31.5 inches and weighs 38lbs. Its noise level is 52.7 dB (A) and it can be carried using a handle or strap.

The device has a 'nuclear' VHE filter with an airflow of up to 180 cubic feet per minute. Its power is 0.17kW, with a Uranine purification coefficient of more than 5000.

After a tender process by the EDF Group Purchasing Department, Delta NEU has been selected as EDF's sole partner for this type of equipment.

"We visit the sites to gather and process expressed requirement data, then we seek out the solutions which best respond to them. We then create a very precise specifications document and select the supplier that is the best placed in both technical and economic terms," says Laurent Delhumeau, the purchaser in charge of tender processes for the containment equipment section at EDF.

"We then establish a framework contract for the supply of all of the Group's installations. This global approach allows us to save money and ensure that supply is as efficient as possible." ■