

Nitrogen Generator Case Study

FingerPrints Proteomics Facility – College of Life Sciences - University of Dundee

1. Background

The FingerPrints Proteomics Facility is a fee for services facility based in the College of Life Sciences at the University of Dundee and is recognised as one of the main mass spectrometry facilities in the UK. It analyses a wide variety of sample types (e.g. proteins, peptides and small molecules) and offers an extensive range of proteomics and mass spectrometry based services, including protein identification by nLC-MS-MS, Phosphorylation Site mapping and quantitative proteomics. The facility has a number of high end mass spectrometry based systems that require a continuous and sustained supply of high purity nitrogen including:

- 4 x LTQ Orbitrap (Classic, XL, Velos and Velos with ETD - Thermo Scientific)
- 2 x QTRAP 4000 nLC-MS-MS systems (Applied Biosystems)
- 1 x QTOF 6520 with Chip Cube interface (Agilent)

2. Issues

Nitrogen had been supplied by two older systems which did not offer enough capacity for efficient operation of the two QTRAP 4000 nLC-MS-MS based systems. Maintenance intervals had increased to an undesirable level therefore creating inconvenient downtime thus affecting productivity.

3. Methodology

The existing nitrogen systems had been struggling to keep up with the demand and had become unstable and required frequent intervention by service engineers to keep them functioning optimally. After a number of visits the Dundee Nitrogen Company service engineer concluded that the current systems could not supply a sufficient volume of nitrogen for normal system function. Increased nitrogen consumption and increased maintenance intervals were considered and taken into account before a recommendation was made to the facility. A DNC-HF60 High flow Nitrogen Generator has been recommended to replace two ageing systems and remedy the problems.

4. Benefits

The DNC-HF60 Nitrogen system is now delivering sufficient flow and level of purity for efficient operation. The new system also offers enough flexibility with capacity to offer increased flow of nitrogen should the consumption increase in the future. Maintenance cycle has been increased to a 12 month service interval so reducing downtime to lowest possible level.

5. Reflections

A post installation survey has been performed confirming that the DNC-HF60 has provided a solution for all issues and has increased productivity at the laboratory while providing enough headroom should nitrogen consumption increase in the future.

