SAFETY MONITORING OF OXYGEN CONCENTRATION IN CENTRIFUGES

Servomex
LEADERS IN GAS ANALYSIS

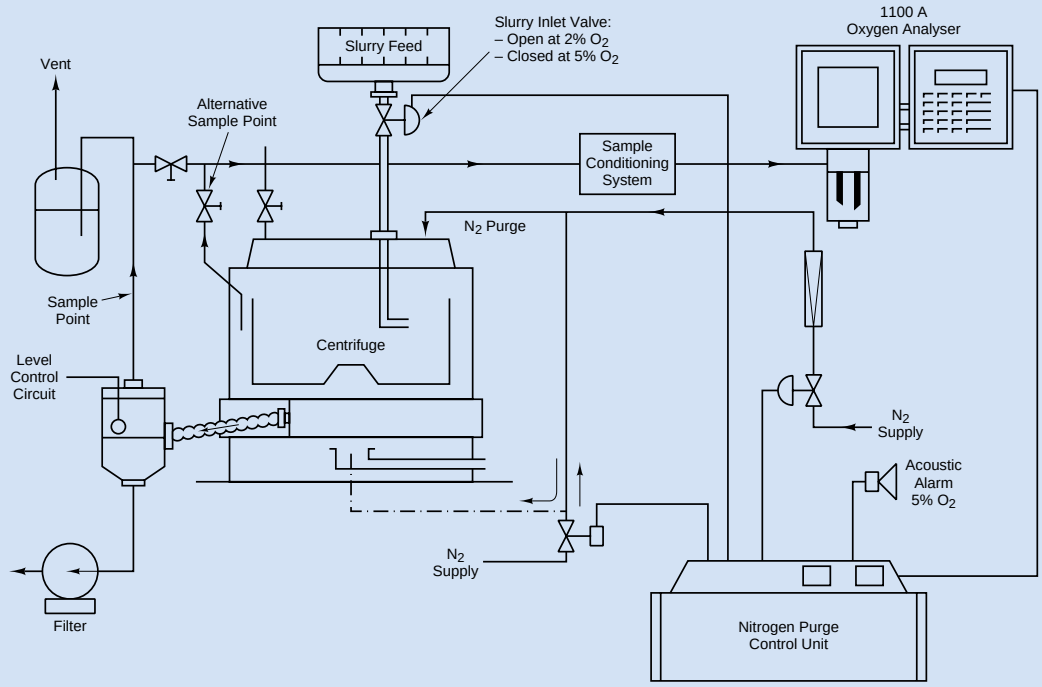

Figure 1

Operation of centrifuges can lead to a build-up of static electricity which could produce an electrical discharge. If flammable solvent vapours and air are present in the centrifuge this could result in an explosion. To prevent this, centrifuges are often purged with N_2 to eliminate the oxygen. The oxygen content should be measured to monitor the N_2 purging system and to guard against failure of the N_2 "blanket". The Servomex 1100A oxygen analyser with its paramagnetic cell offers fast and accurate measurement in the presence of solvents and can be installed safely in hazardous areas.

Centrifuge operation

A recommended method of operating nitrogen-purged centrifuges in pharmaceutical and fine chemical applications, particularly in high risk situations, is to monitor oxygen concentrations in the nitrogen using an on-line analyser in conjunction with a centrifuge control system (see Figure 1).

Before the centrifuge is started, a purge cycle is initiated to reduce oxygen levels to below 2%. When this level is reached, the control system allows the slurry to be fed into the centrifuge.

If the oxygen content should rise to 5%, the slurry feed valve will close and alarms will be activated. The valve will only re-open when oxygen levels have fallen to below 2%. In the event of the oxygen content reaching 8%, the system is flushed with nitrogen at a high flow rate from an emergency supply and the centrifuge bowl is halted by non-friction braking.

Analysis technique

The Servomex model 1100A oxygen analyser, operating as the monitor to the centrifuge control system, is particularly suitable for this application. The paramagnetic cell employed in the analyser is fast, accurate and unaffected by the presence of hydrocarbons and solvents in the sample.

Since it employs a physical measurement technique, maintenance requirements are low as there are no chemicals which require replacement.

Comprehensive safety approvals are available including an intrinsically safe measuring cell, to allow for the measurement of flammable sample gases. Versions of the Servomex 1100A are available for installation in Zone 1 or Zone 2 hazardous areas without the need for purging.

The 1100A wet gas sample system includes a bypass bubbler to ensure that solvent vapours do not condense in the analyser measuring cell. For low boiling point solvents, a cooler may be necessary.

Servomex has a policy of constant product improvement and therefore reserves

Certificate No._____Q5166
BS EN ISO 9001

Servomex
LEADERS IN GAS ANALYSIS

Servomex Group Limited:
Servomex International Limited, Jarvis Brook, Crowborough, East Sussex, TN6 3DU, England ☎ (44) 1892 652181. Fax: (44) 1892 662253
Servomex B.V., Stephensonstraat 20, 2723 RN Zoetermeer, Netherlands ☎ (31) 79-346 42 42. Fax: (31) 79-342 08 19
Servomex S.A., 8 Rue Proudhon, B.P. 50, 93212 St Denis La Plaine Cedex, France ☎ (33) 1 49 46 22 50. Fax: (33) 1 49 46 22 51
Servomex GmbH, Münsterstraße 5, 59065 Hamm, Germany ☎ (49) 23 81 68 82 13. Fax: (49) 23 81 68 81 75
Servomex Company, Inc., 90 Kerry Place, Norwood, MA 02062, USA ☎ (1) 781-769-7710. Fax: (1) 781-769-2834
Servomex Asia Pacific Ltd, 5F-4, No. 328 Chang Chun Road, Taipei, Taiwan ☎ (886) 2-2718 0031. Fax: (886) 2-2712 0653
CNTIC-Servomex Technical Service Centre, No.2 Sheng Gu Zhuang, Chaoyang Area Beijing, China, PO Box 9821, Beijing, Post Code 100029 ☎ (86) 10-64427984. Fax: (86) 10-64418694
Global email: info@servomex.com **Website:** http://www.servomex.com