Case Study

Development of a mobile spectrometer cart

Working with a leading integrator of process spectrometers to develop a mobile solution for a pharmaceutical application

Overview

Production of pharmaceutical small molecule Active Pharmaceutical Ingredients (APIs) entails the use of reaction vessels and complex piping systems for the delivery and control of reactants, and discharge of the finished product. Residual API must be removed from the system before they can be released for use in the manufacture of another material.

Vessel cleaning entails the introduction of wash solutions or solvents into the vessels and piping. Typically, samples of the rinse solution must be removed from the system and taken to the laboratory for analysis of the residual API content in the rinsate. This greatly slows the cleaning process while adding to the laboratory test burden. Hence an in-situ analysis solution gives significant benefits in both cost and time.

Project Brief

The client, Clairet Scientific, identified a specific model of safe area UV spectrometer that was most suitable for detecting these trace API residues. However, as many pharmaceutical production areas are classified as hazardous areas, a certified solution was required to permit in-situ deployment and validation of the cleaning. Additionally, for flexibility within the manufacturing area, a mobile solution was preferred.

Challenges

Develop a mobile Ex p enclosure suitable for housing the Zeiss spectrometer

Minimise modifications to the spectrometer, but still permit adequate internal purging

The system would initially be certified for ATEX Zone 2, but might require updating to Zone 1

Outcome

Expo designed and built a mobile Ex p spectrometer cart with lockable, anti-static wheels, purged & pressurized by Expo's SmartPurge II. The system could easily be moved between production locations, simply connecting to power and instrument air at each location and initiating a relatively short purge sequence.

Ventilation to the spectrometer unit was improved through mechanical modifications that did not impact its function.

After enclosure manufacture at Expo, the spectrometer and other peripheral components were integrated at the client's facility. Expo then carried out a remote inspection prior to issuing ATEX Zone 2 certification under our Populated Enclosure Certificate.

Expo Technologies Ltd.
Unit 2, The Summit,
Hanworth Road,
Sunbury on Thames,
TW16 5DB, UK.
T:+44 (0) 208 398 8011
E: sales@expoworldwide.com

Expo Technologies Inc.
9140 Ravenna Road, Unit #3,
Twinsburg,
OH 44087,
USA
T: +1 (440) 247 5314
E: sales.na@expoworldwide.com

Qingdao Expo M&E Technologies Co. Ltd.
329 Huashan Er Lu,
Jimo City, Qingdao,
266200 China
T: (86) 532 8906 9858
E: qingdao@expoworldwide.com

Expo Products and Services

SmartPurge II

IECEx, ATEX & FM certified intelligent purge & pressurization system

Features

- Global approvals
- Purge flow capacity up to 540 Nl/min
- Can be configured as Type X, Y or Z purge
- Leakage Compensation or Continuous Flow
- Stainless steel enclosure construction

The SmartPurge II (SP2) is a highly flexible electronic purge and pressurization system suitable for a wide range of flow rates and duties. It can operate as either X, Y or Z purge, and in leakage compensation (LC) or continuous flow (CF) modes.

Click here for more information.

Design and Consultancy services

Expo Technologies' team of consultants and certification engineers have the experience and knowledge to support our customers through the certification process for equipment to be used in Hazardous Areas.

From concept design through to maintenance, Expo Technologies works with you to reduce the risks and accelerate your entry into global markets.

Click here for more information.

Certification consultancy

Our Certification Engineer works with the customer through a standard, well-proven process to make sure the design is compliant with the Expo's Schedule of Limitations (SoL), ensuring successful project completion. The SoL defines the scope of what can be certified under Expo's populated enclosure certificate and is broad enough to cover most applications.

Click here for more information.

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266200 China
T: (86) 532 8906 9858
E: qingdao@expoworldwide.com