



CASE STUDY

EMBEDDING PROCESS SAFETY IN SEMICONDUCTOR R&D

CLIENT: CONFIDENTIAL

LOCATION: UK

Highlights:

- Upper Tier COMAH
- DSEAR
- HAZID

THE CHALLENGE

Arthian's client is a global contract development and manufacturing organisation (CDMO) dedicated to animal health, specialising in the formulation of veterinary pharmaceuticals.

Between 2015 and 2025 the site underwent various changes of ownership, expansion of activities and reclassification of materials, leading the site to operate as a lower tier establishment under COMAH and then as an upper tier establishment. Our process safety team have worked in partnership alongside the in house team, supporting the site across the decade long journey from lower to upper tier establishment.



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THE SOLUTION

Arthian initially supported the project at its early stages, in 2019, supporting with the preliminary assessment of the gas storage and supply building. Arthian supported the development of a compliant design scheme, considering industry best practice expectations for gas separation and segregation between incompatible gas species and requirements for separation from worker areas, site boundaries and ventilation intakes.

Arthian then conducted consequence modelling using DNV PHAST to determine the worst case gas release in the event of a catastrophic cylinder failure and release of highly toxic material via the ventilation system. The analysis helped support the assessment of requirement for gas abatement systems, as required as part of Best Available Technique (BAT) assessment for early Environmental Permitting support, which Arthian also provided.

As the design matured, Arthian then supported the site with HAZID of the proposed site activities, to including compressed gas storage and supply as described above, but also to include other site activities such as handling of highly sensitive chemical precursors, wet chemistry within clean rooms and supporting site utilities and ancillary services. Arthian led a multidisciplinary team to assess each area in turn, applying risk scoring to identify consequence and severity to determine unmitigated and mitigated risk. An action register was developed to support the design ahead of commissioning.

Arthian was appointed to undertake further design phase DSEAR risk assessment and hazardous area classification of all dangerous substances to be handled on site, as described above. The output was a series of DSEAR risk assessment reports for each process area and a hazardous area classification schedule to be used to inform the selection and siting of electrical and mechanical equipment. Arthian was then appointed to support commissioning activities by undertaking verification and review of commissioning documentation to confirm the as-built plant met the required explosion protection.

Arthian continues to support the client through the operational phase via the provision of DSEAR awareness training and ongoing support in addressing actions identified in the HAZID and DSEAR studies.

Arthian process engineers will next support the development of operational procedures and updates of Piping & Instrumentation Diagram.



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