

Active Corrosion: Containment Box Vent Line Design and Manufacture

1. Introduction

NNL are currently in the process of designing and manufacturing test rig to conduct experiments relating to the long-term storage of spent nuclear fuel. The test rig is to be installed in NNL's Active Handling Facility on the Sellafield site.

The test rig will consist of vessels within a radiologically shielded cave and pipework housed within a containment box in the personnel operating area. The containment box is to be maintained at a depression relative to the operating area for contamination control. The containment box is to be ventilated to the existing red extract system.

The scope of this supply is to provide the connection between the outlet of the containment box and the red extract system.

2. Project Status

NNL have engaged a third party supplier for the rig preliminary and detailed design which included HAZOP 1 and 2 studies.

The detailed process design includes approved P&ID's, calculations and datasheets.

The detailed mechanical design includes detailed drawings, layouts, parts lists and calculations.

Procurement for the rig manufacture is scheduled for early 2023.

A concept design of the vent line has been carried out and can be seen in Appendix 1 and Appendix 2. The interface between the vent line and the containment box will be the outlet of filter F-001 as shown on P&ID X80550 (Appendix 3). The interface between the vent line and the red extract will be on the new section of ductwork that the supplier shall design and supply.

3. Scope of Supply

The scope of this procurement exercise is to produce a detailed design and manufacture a new section of ductwork for the red extract and the vent line that connects the containment box of the Active Corrosion test rig to the red extract. The supplier will be expected to carry out a site visit as part of designing the vent line route, understanding where the vent line will tie into the red extract and to gather information for the design risk assessment.

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Production of the following design deliverables: -

- Vent Line Diagram
- Vent Line Route General Arrangements including fixings
- Manufacturing Drawings
- Design Risk Assessment
- Outline Installation Method Statement
- Parts Lists
- Design Justification Report

Manufacture and supply of the following items as per the detailed design: -

- New section of red extract ductwork
- Vent line between the containment box and red extract
- Brackets and fixings
- Any specialist equipment required for installation

3.1. Optional Supply

The supplier shall provide a quote for installation of the vent line which NNL may or may not choose to take up.

Installation team attending site will be required to hold valid SC clearance and must be SQEP for the task which will include having completed the following Sellafield training courses that are still in date: -

- Monitored worker
- Respirator fit test
- Enclosed Suit Training
- Enclosed Suit Medicals
- Tyvek Suit Training (delivered by NNL)

4. Standards

The supplier is expected to be aware of the applicable Sellafield site standards and requirements for design and manufacture to Quality Grade 02.

The supplier is expected to be aware of relevant national and international standards and applicable UK regulations relating to the design, manufacture, and installation of the vent line.

Valid SC clearance for personnel making site visits is essential.

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Appendix 1.

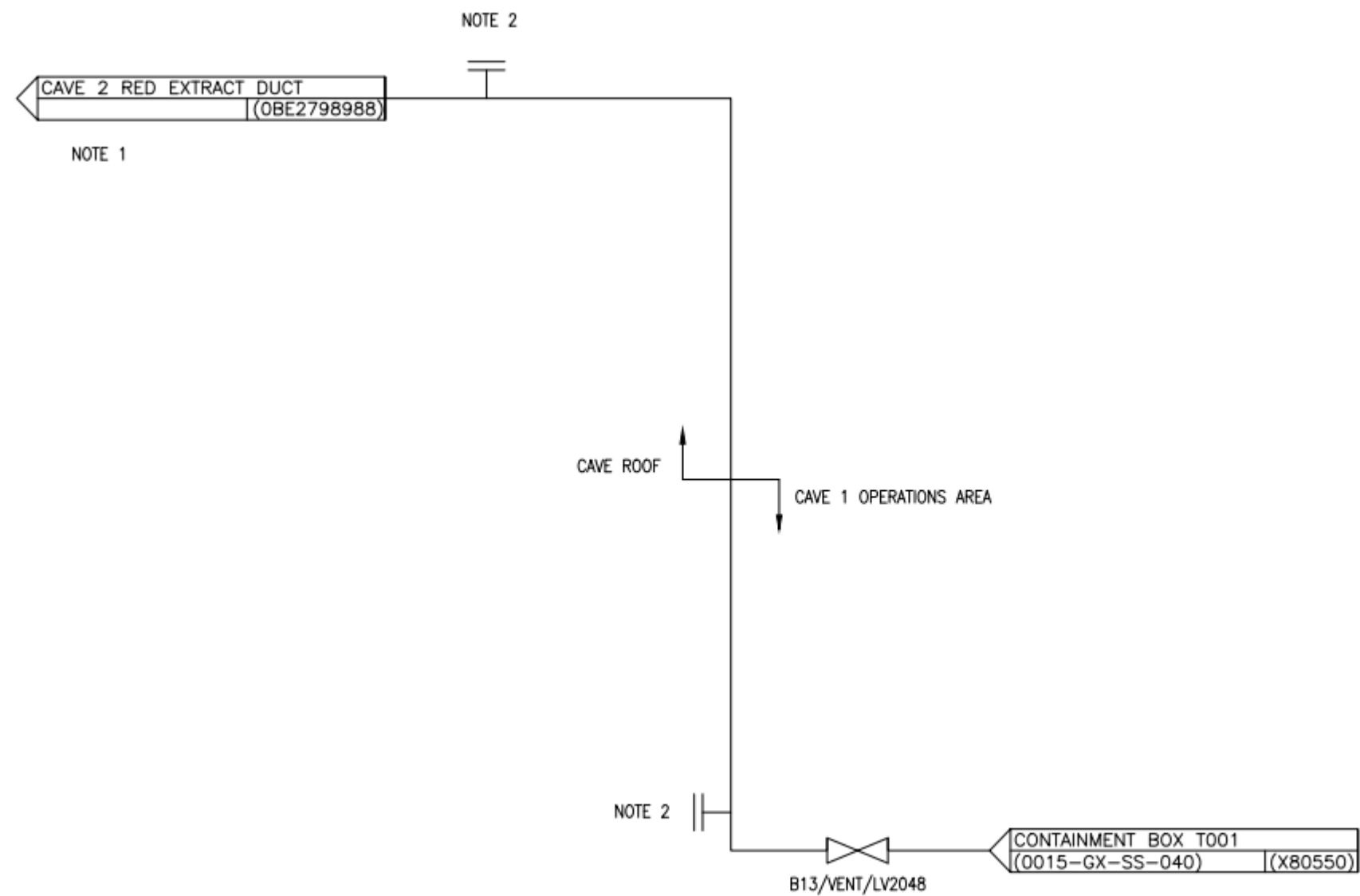


Figure 1: Concept Design of the Active Corrosion Test Rig Containment Box Vent Line

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Appendix 2.

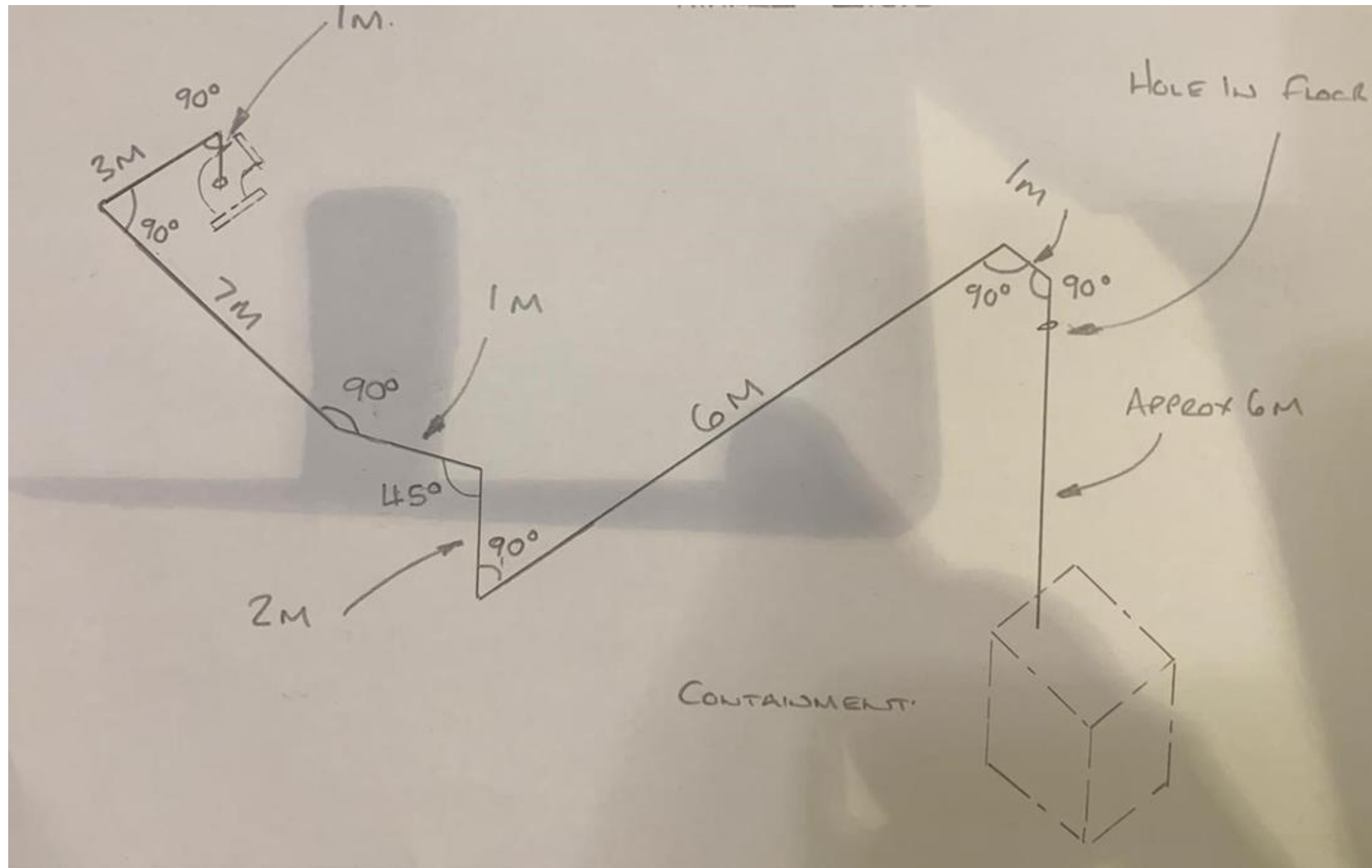


Figure 2: Concept Design Vent Line Route Diagram

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Appendix 4.

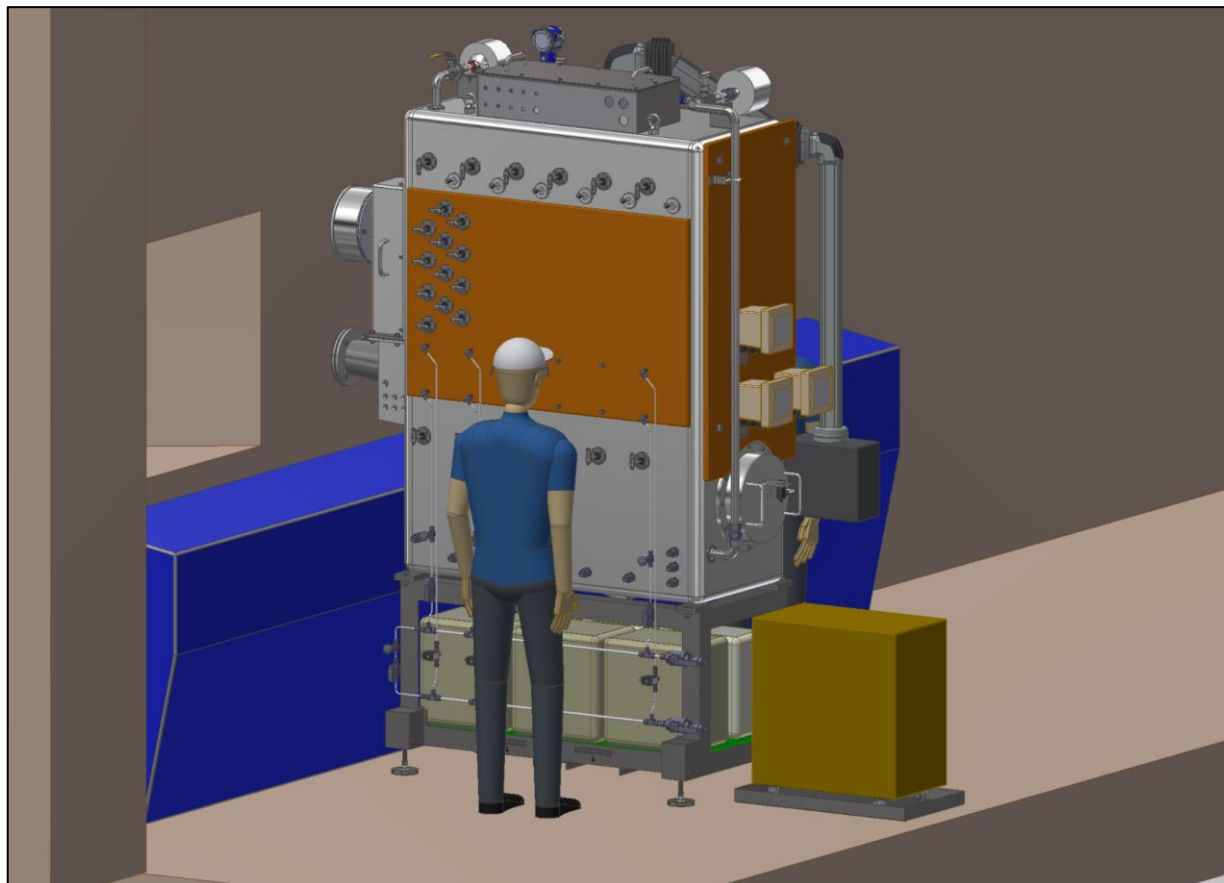


Figure 4: Active Corrosion Test Rig Containment Box

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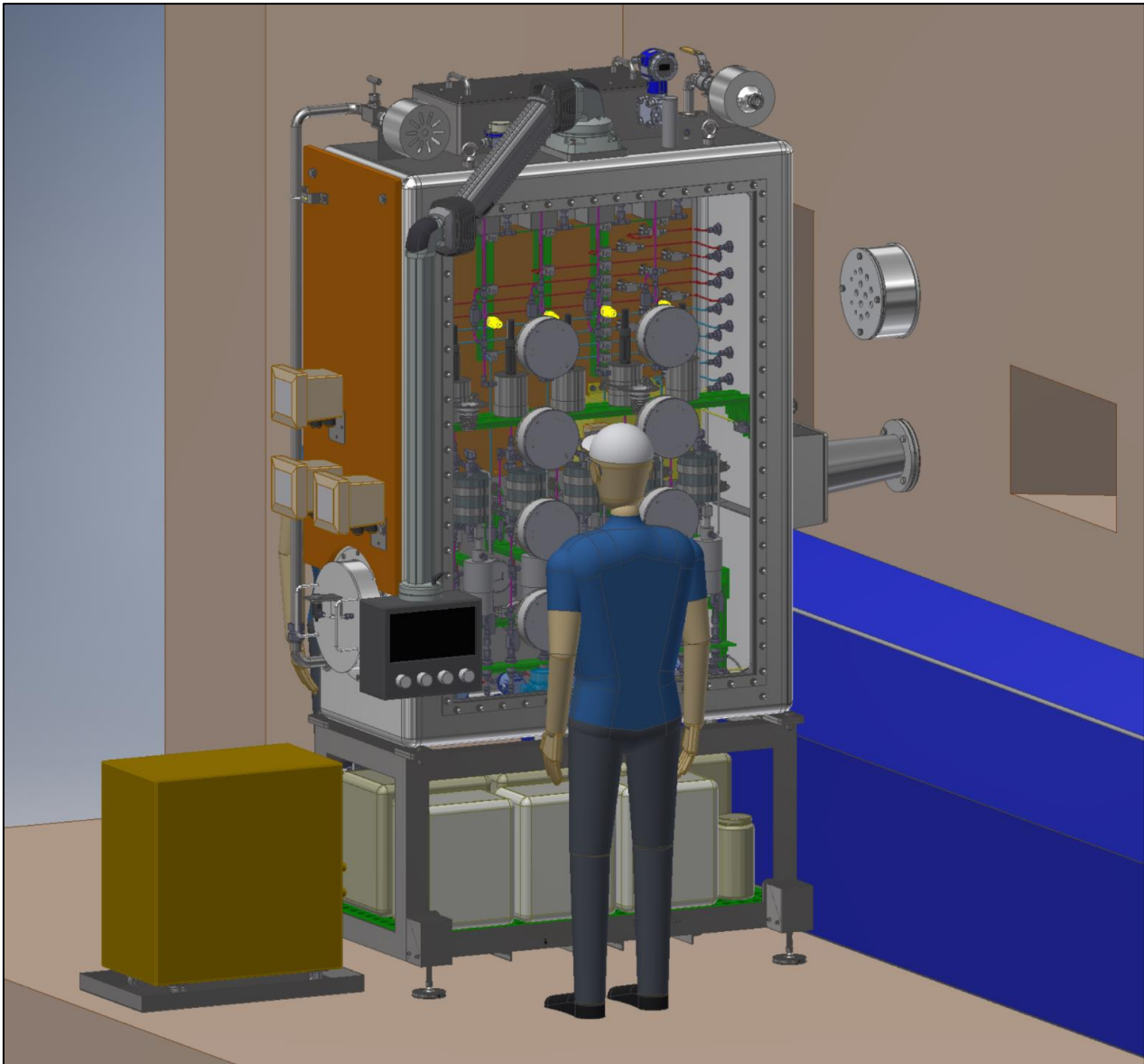


Figure 5: Active Corrosion Test Rig Containment Box

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