



HERSCHEL

SPIRE

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SPIRE Cryolab Descripton



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Table of contents

1	INTRODUCTION	4
2	LOCATION.....	6
3	ACCESS	6
4	SERVICES.....	6
4.1	POWER POINTS	6
4.2	NETWORK CONNECTIONS.....	6
4.3	TELEPHONES.....	6
4.4	AIR CONDITIONING	6
4.5	CRYOGENIC SERVICES.....	6
5	CLEAN ROOM.....	7
6	SAFTEY	8
6.1	LOG BOOK.....	8
6.2	FIRST AID BOX.....	8
6.3	LASER.....	8
6.4	CHEMICALS	8
6.5	OXYGEN MONITORS	8
6.6	FIRE EXTINGUISHERS	8
6.7	FIRE ESCAPE.....	8



1 Introduction

The cryogenic test facility comprises two main working areas: a clean room to house the cryostat and optical bench, and a control room to house the instrument EGSE and control equipment for the cryostat and calibration equipment, Figure 1. The working area around the cryostat will be class 1000, and other areas in the clean room will be class 10, 000 or better.

Due to lack of space, it is not possible to integrate the SPIRE instrument in the calibration facility. This activity will be done in a separate clean area within SSTD where there is more space. The instrument will be transferred to a Herschel Optical Bench Simulator, HOBS, and then to a support frame before integrating into the test facility. The instrument and GSE will be sealed to prevent contamination when transferring between clean rooms.

Services for the laser (Gas cylinders, vacuum pumps, water cooler) will be situated in a hut adjacent to the external wall of the laboratory.

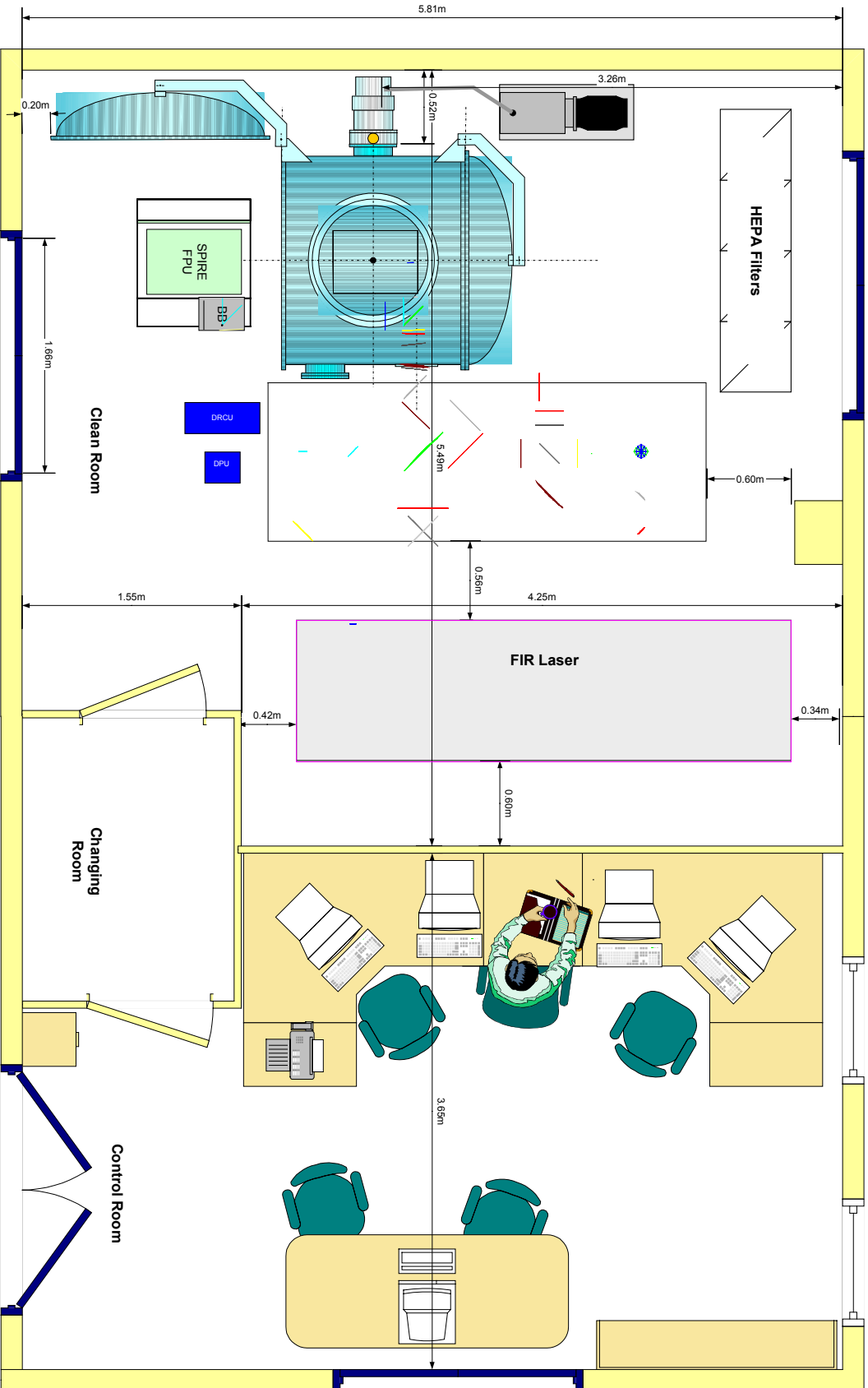


Figure 1. Floor Plan of SPIRE Cryogenic Test Facility



2 Location

The cryolab occupies rooms G123 and G125 of building R25.

3 Access

Access to the control room is from the ground floor corridor and is restricted by means of a card key system. Entry to the room will be logged automatically by the RAL AIV facility. An alarm will sound if the door is left open for more than TBC seconds.

Entry to the clean room will normally be via a changing room. Access to this room will be restricted to only a few essential personell to reduce the risk of particulate contamination and because of space restrictions. It is also possible to enter the clean-room directly, but this will only be done when it is necessary and under supervision.

4 Services

4.1 Power Points

There are three main circuits from a single fuse box:

G9-8-2A is a 32A supply for the control room. There are 24 outlets, 12 of which are on the partition wall facing the clean room.

G9-8-3A is a 32A supply only to the clean room. There are 12 outlets, 6 of which are on the partition wall adjacent to the FIR laser and 4 adjacent to the cryostat. The main vacuum system will use this supply.

G9-8-1A is a 32A supply shared by both the clean room and the control room. This supply will be mainly used for the laser services (vacuum pumps, water cooler).

A separate clean grounding point is provided in the clean room.

4.2 Network Connections

There are 9 connection points in each room to the labs digital network. These will be used for computers, faxes and printers.

4.3 Telephones

Control Room – Ext TBD – this has a digital display, microphone and loudspeaker.
Clean Room – Ext TBD

4.4 Air conditioning

Both rooms have air conditioning. The clean room temperature is maintained at 21°C.

4.5 Cryogenic Services

Liquid nitrogen and helium will be supplied in 200l dewars. Helium will not be recovered.

5 Clean Room



Figure 2: SPIRE Cryolab clean room before installation of test equipment.

The clean room is nominally class 10,000 for all areas.

A laminar flow unit is provided to give class 100 conditions downstream.

The particulate levels within the laboratory will be monitored throughout the SPIRE tests.

The hats, coats and overshoes provided in the changing room are to be worn at all times when working in the clean area.

The room will be cleaned daily by approved cleaners.

Personnel must not bring food or drink into the clean room. Smoking is not permitted.



6 Saftey

All saftey practices and procedures for the laboratory will be based on the RAL SSTD saftey plan. All persons working within the area must be familiar with this plan. A copy of the plan is available on request.

The following items are specific to the cryolab.

6.1 Log Book

A log book is located in the control room. This contains copies of the Risk assessments, COSHH assessments, materials data sheets, saftey inspection reports, records of electrical tests etc., and an up to date copy of the saftey plan. The logbook is maintained and is inspected by the division head. All persons working in the area should be familiar with its contents.

6.2 First Aid Box

A first aid box is provided in the main control room. Eye wash is provided for use with chemicals.

6.3 Laser

The clean room houses a class 4 infrared laser. Several saftey precautions are in place to prevent accidental exposure:

- Warning lights in the corridor and control room.
- Saftey goggles
- An interlocking system to shut off the main beam in the event of doors being opened accidentally.

A full risk assessment has been made and is kept in the saftey logbook. All persons working in the area must read the risk assessment and adhere to its recommendations.

6.4 Chemicals

There is some limited use of cleaning agents (IPA and Acetone) and laser gasses. To conform with the Control of Substances Hazardous to Health regulations 1999, a risk assessment of each substance used will be made and appropriate saftey measures taken.

All flammable materials will be stored in a fire proof box when not in use.

6.5 Oxygen Monitors

Oxygen monitors will be provided. These will be routinely tested and calibrated in accordance with SSTD saftey plan.

6.6 Fire Extinguishers

A fire extinguisher is provided in the clean room and control room. These are regularly inspected and maintained by the RAL site saftey officer.

6.7 Fire Escape

In the event of a fire alarm, all personnel should escape through the control room.