University of Glasgow | School of Engineering

Thomson building (Anatomy) wind tunnel laboratory

Wind tunnel director team comprising:

Wind tunnel director, Richard Green

Assistant wind tunnel director, Craig White

CODE OF PRACTICE

The adoption and practice of good safety procedures is of paramount importance for both the health and safety of fellow workers, and for the integrity of the fabric of the wind tunnel laboratory.

1. Lab Safety Management Responsibilities

1) **EVERYONE** has a role in protecting the health and safety of both other lab users and themselves, and thus should be familiar with the **School's Safety Manual**.

2) **ACADEMIC SUPERVISORS** take **FULL RESPONSIBILITY** for the health and safety of their own group's research activities and for correct use of equipment, and consequently must ensure their staff and students are familiar with both the content of this **Code of Practice** and the **School's Safety Manual** and apply its requirements and that personnel have correct training**.**

3) No activities shall be carried out without the prior permission of the **Lab Responsible Person**. The role of the Lab Responsible Person is specified in **Appendix A,** in accordance with the **School's Safety Manual**.

4) No work shall be carried out until a **Risk Assessment** has been conducted by the research staff/students, **approved by their Supervisor** and the **Director of Safety,** and acknowledged by the **Lab Responsible Person**.

5) An **electronic copy** of the approved Risk Assessment shall be sent to the Lab Responsible Person to be kept as record (note that this can be done using the online risk assessment system). A hard copy of the approved risk assessment shall be displayed next to the relevant research rig and equipment for inspection. The procedures of the preparation of Risk Assessment are summarised in **Appendix B**.

6) **All lab users** should make themselves aware of the **general safety procedures** highlighted in the School's Safety Manual, and of the location of safety equipment in the lab, and of the safe operation procedures of the facility.

   In case of emergency, dial telephone number: **4444 (internal), 0141 330 4444 (external)**

   Be aware of the location of emergency exits

   Be aware of the location of fire extinguishers

   Be aware of the location of First Aid kits

7) Work outside normal office hours (including weekend working) requires the permission of your **supervisor and the Lab Responsible Person, but the supervisor carries responsibility**. This can be given by an e-mail trail for audit purposes in the event of

an accident and can be for multiple or extended periods of time. Potentially dangerous operations **must never** be undertaken out-with normal hours **unless a second responsible person is present**. (Please read the safety regulations in the School's Safety Manual for more details.)

2. Practice of General Activities

1) **All areas must be kept tidy and clean**. This is **NOT** the responsibility of the cleaners. Good housekeeping must be maintained by the lab users and be monitored by the responsible person of each area (see Appendix C).
2) **Food and drink are not permitted in the lab.**
3) The **walkways** and **marked out** sections of the floor leading to fire exits must remain clear. Under no circumstances should lab equipment be stored in the route from your place of work to the fire exit route. If things are possibly impeding your exit then you should either move them, contact the person who placed them there, or inform both the Lab Responsible person and your supervisor.
4) Do not place equipment anywhere that will block access to other locations.
5) Dedicated storage cupboards and areas must be used. Do not leave anything lying around that clutters space.
6) **Laboratory doors should remain shut** at all times to ensure security and fire safety.
7) Equipment must be placed in appropriate locations to safe-guard its integrity, minimise potential damage and to allow other researchers access to it. Never place equipment on a floor where others may walk around, always place it on a platform.
8) Once experimental work has been completed and the experimental setup is no longer required, the **experimental area must be cleared** in preparation for other experiments and researchers.
9) If it is necessary to remove equipment from the lab, permission **must** be given by your supervisor and the Lab Responsible person. If necessary, seek assistance with moving heavy items.
10) If equipment breaks down or is not working, report the fault to your supervisor and the responsible person (see Appendix D) immediately.
11) A fault with the fabric of the room, such as a lighting failure, should be reported through the Maintenance Request portal found on the Estates and Commercial Services webpage, http://www.gla.ac.uk/services/estates/.

3. Covid-19 measures

1) Guidance from the HSE, UK Government and Scottish Government to manage the risk related to Covid-19 pandemic must be applied to this laboratory. These include physical distancing, frequent hand washing and hygiene measures, cough etiquettes and face covering in enclosed public space. Users should refer to the general school of engineering standard for covid-19 and code of practice.
2) Physical distancing limits occupancy of the laboratory. This means that it will not be possible to conduct certain types of activity where physical distancing is encroached upon.
3) Total occupancy of the laboratory is to not exceed 1 person

4) Demand to use the lab will be managed by the wind tunnel director team.
5) Lab users must wash their hands regularly and wipe workstation surfaces, materials, and equipment at the start of their work and before leaving.
6) Ensure that you have your own supply of hand tools to do your work. Do not take hand tools from any other laboratory area.
7) Emergency support (First Aiders and Fire Area Officer) might be constrained due to Covid-19 restriction on building capacity. Task risk assessments need to be revised to include the above measures and to review with personnel through the risk assessment, which work can be safely undertaken with reduced access to emergency support. A Covid-19 risk assessment template can be found here (https://www.gla.ac.uk/media/Media_723618_smxx.docx).

4. Practice of Hazardous Activities

1) **Electrical connections** between different devices or equipment should be safe.
2) To minimise **trip hazards**, extension cables should be plugged into the closest socket and avoid crossing pathways. If crossing a pathway is totally unavoidable then, only as a temporary measure, the cable must be secured to the floor and covered with a suitable (commercially supplied) floor cable cover, cable protector, floor cable tidy to prevent tripping hazards. However, leads crossing pathways at the top or bottom of stairways is not allowed, even as a temporary measure – they should be routed at least 2 m (i.e. two paces) away from these areas.
    i. Once equipment is not in use, it must be turned off and any extension cables used should be tidied to a suitable location.
    ii. Leads and plugs should ONLY be used on the allocated item of equipment and should NOT be switched between equipment
    iii. All equipment plugged into university outlets must be PAT tested (contact the electrical workshop for testing).
3) To minimise the risk of **falling objects**, no equipment or lab materials should be kept on top of cupboards and file cabinets.
4) Fire hazards:
    i. All **flammable materials** (gases, liquid and solids) should be stored and handled in accordance to the School's Safety Manual and relevant SEPS guidelines.
    ii. All equipment or experimental rigs using flammable materials should be certified and have adequate measures for preventing fire hazards.
    iii. All users of flammable gases should be trained.
5) Explosion hazards when using compresses gases:
    i. All gas cylinders should be secured to prevent falling.
    ii. All pressure vessels should be certified by a professional manufacturer.
    iii. All pressure vessels should have measures to preventing over-charging, such as relief valves.
    iv. You should seek support from technicians when moving gas cylinders.

v. All users of compressed gases should be trained.

6) Ear protection and laser safety spectacles should be used when appropriate.

7) **NEVER USE EQUIPMENT WITHOUT PRIOR TRAINING.** If you are unsure how to correctly use an item of equipment, seek assistance from an appropriate responsible person(s) (see Appendix D).

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Appendix A duties of the Lab Responsible of Anatomy tunnel

According to the School's Safety Manual, the **Lab Responsible is responsible for implementing safety policies in the Thomson Building (Anatomy) wind tunnel on a day-day basis**.

1. The specific duties of its Lab Responsible is listed as below:

    1) to maintain the Code of Practice (CoP);
    2) to ensure the lab users keep their area in tidy and clean condition;
    3) to ensure each activity (experimental rig/equipment) has a Risk Assessment before work commences;
    4) to coordinate actions according to the School's Director of Safety's report / instructions following inspections;

Appendix B: Procedures of the preparation of the Risk Assessment

1. PDRAs and PG/UG students are responsible for formulating Risk Assessments on a day-day basis. For potentially hazardous activities, in addition to assessing the risks, the risk assessment form should include a standard operating procedure/method statement (and/or instrument manual) as an appended document.

2. Whilst the preference is for the persons undertaking the practical work to make their own risk assessments, it is permissible to use the on-line multi-user risk assessment forms for activities that will be undertaken by groups of people. However, in this case, each person involved in the practical work must sign the multi-user form online and a strict regime of user training should be in place that encompasses both the risks associated with the work as well as the practicalities of undertaking it.

3. Academic supervisors should assist the PDRAs and PG/UG students in preparing the risk assessment (this would typically be the case for less experienced PDRAs and PG/UG students). They should **ensure** foreseeable risks have been identified and adequate mitigation measures have been provided to reduce them as far as possible.

4. The academic supervisors should then approve the risk assessment form online (or ask for further information to be added); the Lab Responsible should also acknowledge (on-line) that the risk assessment has been completed, to indicate that as far as they can see, this activity does not conflict (in safety terms) with other activities in the lab. The Lab Responsible can also ask for further clarifications/additions concerning the procedures involved to be made, if necessary.

5. After the risk assessment has been approved/acknowledged by the supervisor and Lab Responsible/Lab Guardian, the School's Director of Safety approves, seeks further clarifications, or (exceptionally) rejects the risk assessment if there are clearly hazards that cannot be sufficiently mitigated.

6. An e-copy of the **approved** Risk Assessment should be sent to the Lab Responsible by the PDRA or PG/UG student that originated the assessment (n.b. pdf's of the online form can be made by using the Print to PDF option available in most browsers)

7. A hard copy of the approved Risk Assessment and standard operating procedure should be kept or displayed next to the relevant experimental rig or equipment.

8. The Lab Responsible approves the start of activity after receiving the **approved** Risk Assessment.

9. If there is any substantial change to the people or research activity as stated in the Risk Assessment, it MUST be revised accordingly, and pass procedures 1-7 as above.

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Appendix C: Responsible Person of Anatomy tunnel

Wind tunnel director **Richard Green**
Assistant wind tunnel director **Craig White**

The current responsible people include:

- **Richard Green**

Appendix D: Responsible person of equipment and rigs

This document records the responsible person for the research activities and equipment. If there is any issue arising, please contact the relevant responsible person, and also inform the Lab Responsible in the same time.

D.1 Low-speed wind tunnels (Richard Green)

1) **A wind tunnel test MUST have a wind tunnel captain in control of the testing. The wind tunnel captain can only be nominated by Richard Green.**
2) **The wind tunnel captain MUST provide Richard Green with a test programme for the facility.**
3) **The wind tunnel captain MUST provide Richard Green with an update of progress of the tests.**
4) **No access to the wind tunnels is permitted without prior training and evidence of competence.**
5) **Users** must look after the equipment. **Supervisors** carry responsibility for damage. **Supervisors** must be prepared to cover maintenance and repair costs for any instrumentation used for their projects.
6) **Supervisors** carry responsibility for the state of the facility after the test programme is finished. **Supervisors** must ensure the lab area is left tidy, that all equipment is packed away (if required), and that all equipment faults are resolved.