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Introduction

Cleanroom Solutions Ltd has a wealth of experience together with a solid track record in the successful design, installation and commissioning of custom designed cleanrooms and laboratories.

From initial consultation through detailed design, installation, final commissioning, and project management we offer a total cleanroom solution.

The entire process is project managed with the utmost professional efficiency. All our designs comply with recognised industry practices in accordance with the appropriate cleanroom standards (ISO14644, EU GGMP, US FED STD 209).

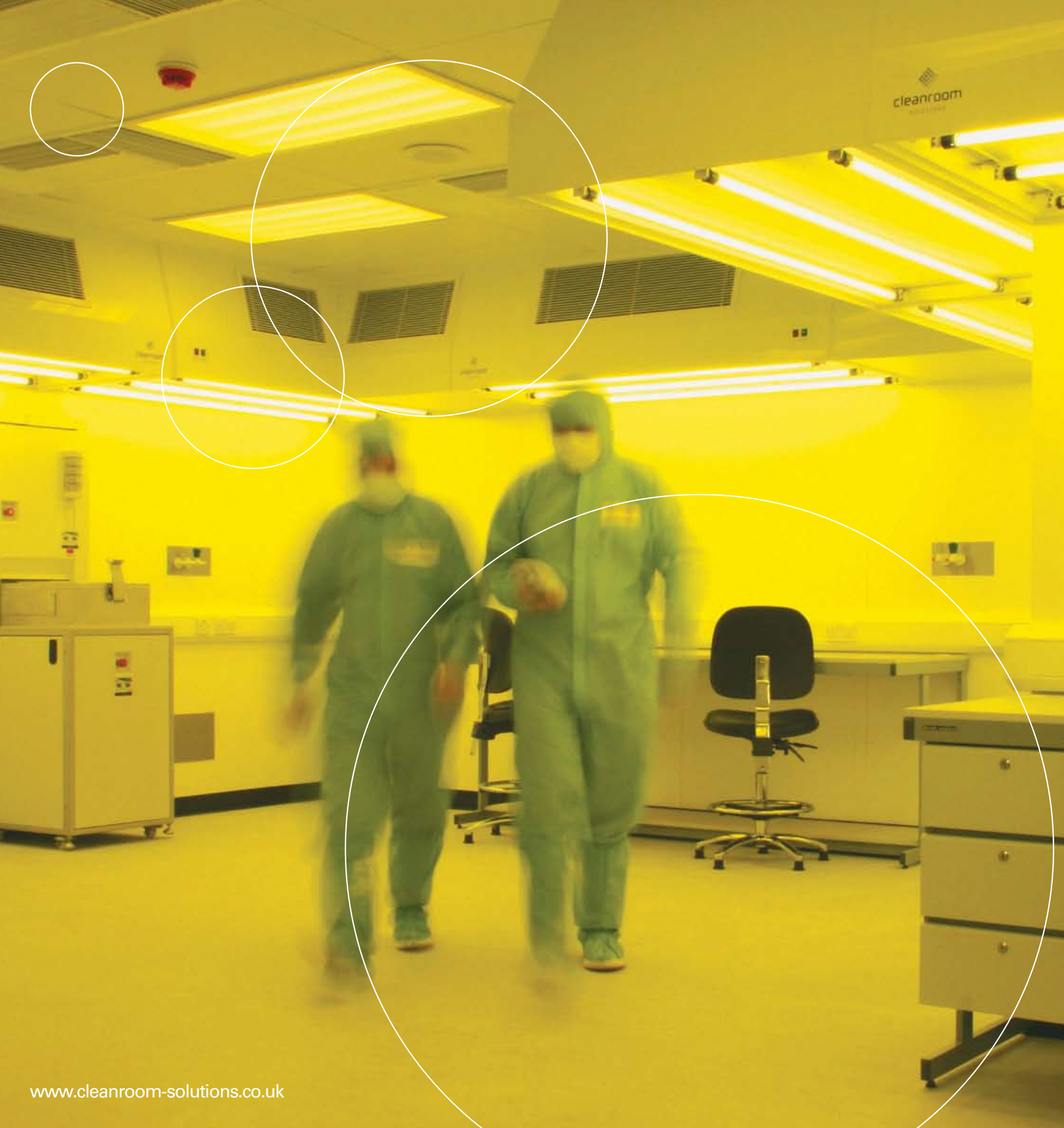
Cleanroom Solutions covers all major fields of cleanroom design including electronics, pharmaceutical, healthcare, optical, food and medical industries as well as research facilities for universities and colleges.

Cleanrooms can be conventional flow, unidirectional flow, aseptic, sterile and containment or a mixture of the above, depending on the type of industry and the type of process required.

Our portfolio of solutions includes laminar flow canopies, chemical process benches, air showers, passthroughs, process gases, DI water systems, autolaves and a wide range of specialist equipment.

Our involvement does not just end with the cleanroom construction itself - we offer advice on cleanroom operation procedures, suitable protective clothing, as well as cleanroom cleaning and maintenance.

The principal aim and business philosophy of Cleanroom Solutions is to provide a high quality and professional service dedicated to matching our clients exact needs and requirements with the most cost effective solution, delivered within budget and predetermined project timescales.



Consultation and Design

During an initial consultation with Cleanroom Solutions, you will be dealing with dedicated industry professionals who pride themselves on listening and understanding your exact needs and requirements, prior to advising on and recommending a solution.

A comprehensive and in depth needs analysis is conducted to determine the most appropriate classification and configuration of room requirement. Data incorporating temperature and relative humidity requirements, process extract, process heat gains, etc., is used to determine the type, quantity and quality of airflow and conditioning systems.

Our calculations include heat dissipation, cooling required to de-humidify, moisture required to re-humidify and heating requirements. Most rooms are designed to operate at a positive pressure to prevent the ingress of contamination from the surrounding environment. This is achieved by providing fresh air for losses around doors etc. as well as air to replace air lost to extraction from process machines and wet benches/fume cupboards etc. Attenuation is chosen to meet specific noise levels depending on the purpose of each area or clients requirements for each area.

We design for flexibility but also economy. A cleanroom environment is only provided where it is needed and only to the level required.

Cleanroom Solutions has the expertise to determine and design the exact type of specialist process equipment required. Designs are dependant on chemicals used and special processes, which need to be incorporated.

Computer aided design systems and simulations complete the design procedure.

Materials are then selected which are most appropriate to each individual application, for example, antistatic, anti-bacterial, chemical resistant, wear resistant, fireproof, etc.

The stage is completed by the production and delivery of a detailed design solution presented in the form of a comprehensive specification and quotation, together with CAD drawings. Our proposals include detailed project plans, if required.



Materials Selection

Cleanroom Solutions are not tied to any particular method or materials of construction, we choose the most appropriate methods and materials to suit the specific project. The list is extensive but listed below are a few examples:

Walls – Glass partitions, coated steel partitions, painted (non particle shedding and/or anti bacterial) walls, vinyl lined walls, 'Trespa' walls etc.

Ceilings – Steel panels, plastic coated panels, walk on steel panels, painted etc.

Floors – Vinyl, epoxy screed, epoxy paint, ceramic, raised access, perforated raised access etc. All available in anti static, anti slip, chemical resistant etc.

Steelwork – When necessary our cleanrooms can be self-supporting. We will design a steelwork system to support the ceiling, ductwork, electrical and piped services, air handling units and walkways. The structures are provided with structural calculations for building approval purposes etc.

Air Conditioning – horizontal or vertical air handling units, electric or LPHW heating. DX or chilled water cooling, humidification, inverter fan control to maintain pressure even when doors are opened, remote computer control, attenuation, levels of filtration etc.

Electrical Services – small power sockets, 3 phase power sockets and supplies to equipment, data and telephone systems often run in 3 compartment dado trunking with the small power sockets, gas detection, PA, CCTV and other security systems.

Piped Services – Specialist gases (e.g. Ar, N₂, CDA, O₂, He, CO₂, CF₄ etc.), water, drain, process cooling, DI water, extract systems,

Fire Detection/Fighting – fire detection systems, sprinkler systems, fire extinguishers, wet bench fire detection and suppression systems (mainly for the solvent based benches).

Changing Rooms – Hand wash facilities, clothes storage systems, stepovers, mirrors, tacky mats, interlocks, various dispensers, air showers etc.

Process Equipment – We can also 'hook up' clients' process equipment by locating the equipment and running electrical and piped services to it. The equipment can be bulkhead (through the wall) fitted with main parts in specially designed service chases etc.

Cleanroom Consumables – We can provide all necessary cleanroom clothing including, suits, gloves, hoods or hats, over shoes, face masks, cleaning materials and detergents etc.



Installation and Project Management

For your complete peace of mind, the entire project is overseen by one of our experienced project managers who will be responsible for every aspect of project planning, delivery and implementation.

Cleanroom Solutions project management skills encompass safe and efficient installation to CDM and Health & Safety regulations, compliance to standards and safety protocols including method statements and risk assessments. We often act as the principal contractor, when so required.

We are always pleased to work with the client's own Health and Safety officer and provide a H&S Plan to suit the specific site requirements.

All subcontractors are vetted to ensure they match and adhere to the high standards set down by Cleanroom

Solutions; the majority of whom we have worked with for many years. In all cases, all site personnel working for Cleanroom Solutions are directly responsible to our project manager.

All personnel are skilled in their own field as well as cleanroom build protocols.

To enable efficient and effective project management, our method of operation includes regular site meetings and project updates, which ensures that all cost constraints and project delivery milestones are met.

As part of our flexible way of working we are always pleased to incorporate any client changes that are made during the construction phase and modify drawings to show the 'as built' solution.



Commissioning and Maintenance

Naturally, on completion, all specifications are meticulously checked and proven. These include particle counts, temperature, humidity and pressure readings as well as DOP tests where required. Our service also includes the option of using independent engineers to test the facility, should that be preferred.

Air conditioning is checked to ensure design criteria are met, these include: duct velocity checks (to meet noise constraints), filter face velocities (to keep within stated limits and calculate air change rates), room pressure rates and pressure regime between rooms (balanced by adjusting supply, return and fresh air rates).

Controls are checked against calibrated sensors and programmed into the CPU controller. On completion of commissioning we often leave a laptop on site to download the parameters and show these in the form of graphs to form part of the commissioning documents. A permanent connection can be made to a client's computer so that the performance can be viewed as part of the day-to-day QA functions (specialist software is required). The controls can also be connected to the general building BMS system. Modems can be fitted to enable our controls engineers to view read-outs from their offices without the need to visit site, enabling on line diagnosis of any problems.

Wet bench supply and extract air volumes are set to design criteria and system compatibility proved using smoke tests.

To protect your investment, we provide a recommended list of spares as well as arranging a routine maintenance programme incorporating an emergency callout facility.

We will, as part of the service, provide your staff with a comprehensive training program in cleanroom procedures and maintenance, complemented by a full set of maintenance manuals.



Cleanroom Products

Our range of state of the art cleanroom equipment is as advanced as it is extensive, and includes:

Laminar Flow Cabinets

Proven and versatile, these high performance cabinets are available in either vertical or horizontal flow configurations in a wide range of sizes and specifications. The cabinets can be self supporting, mobile, ceiling mounted or bench mounted and include lights, curtains or screens if required. Most importantly, they are custom designed to meet your exact requirements.

The cabinets are manufactured from fire retardant polypropylene, or epoxy coated sheet steel or stainless steel depending on the application.

Cabinets can be fully acoustic lined to minimise noise breakout. They can be configured for re circulation operation or air conditioned operation or a mixture of both depending on the conditions required. Yellow light tubes can be fitted for photosensitive operations. Magnahelic gauges can be fitted to monitor Hepa filter pressure drops to determine filter change cycles.

Chemical Process Benches

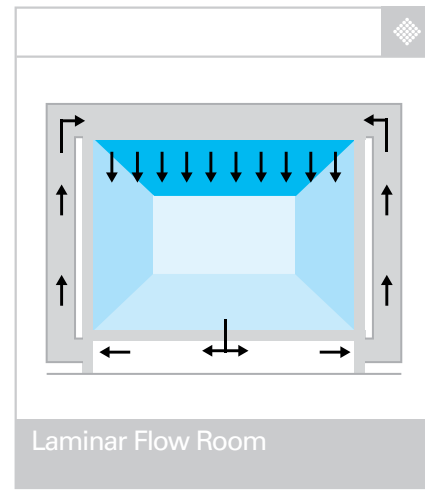
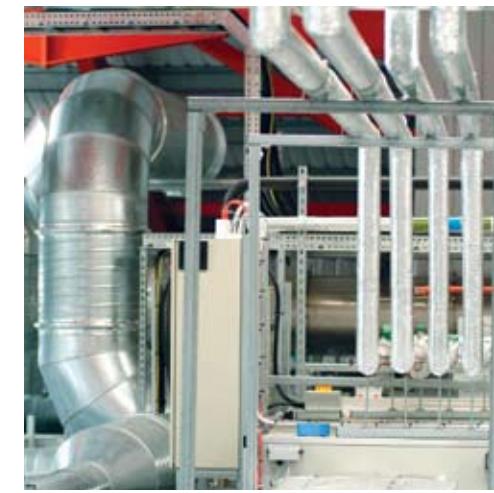
Wet benches are custom designed for processes involving corrosive chemicals. Built from fire retardant polypropylene, PVC or stainless steel. Generally Acid benches are manufactured from Polypropylene and Solvent benches from stainless steel.

Further options include special purpose worktops fitted with DI water taps and guns, nitrogen guns, wash/weir tanks, aspirators for the extraction and dilution of acids, quartz tanks, hot plates, ultrasonic tanks, sinks, hinged and sliding visors and folding night covers. We offer 'low extract' type benches as well as fume cupboards. The low extract benches are designed to minimise the quantity of conditioned air that is extracted out thus saving on size of fans, extract ducts as well as running costs for the air conditioning.

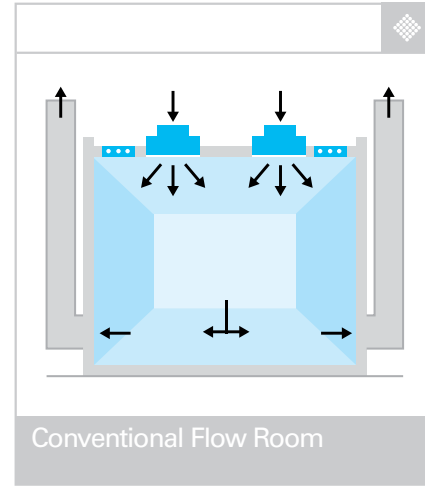
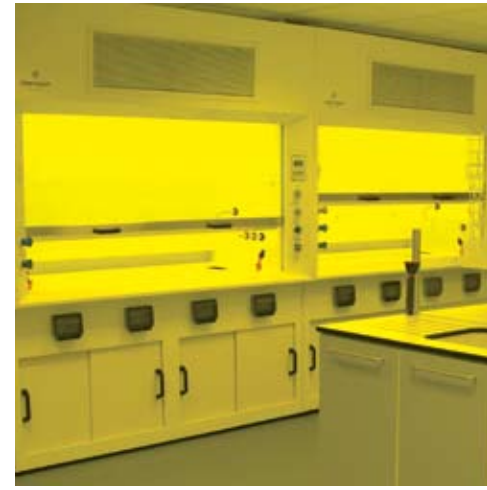
Ancillary Equipment

We offer a range of air showers, stepovers, passthroughs, clean garment storage as well as workbenches, chairs etc.

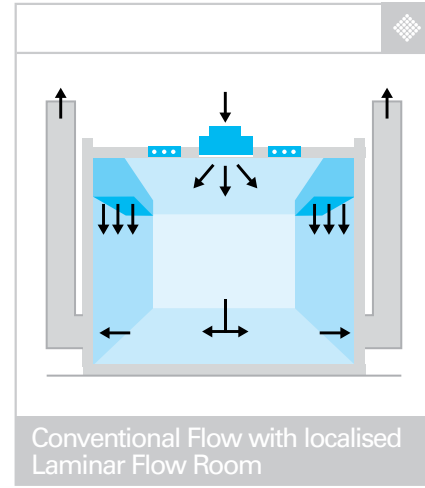
With our meticulous attention to detail, exacting standards and commitment to designing and implementing effective solutions we aim to set new benchmarks in cleanroom technology.



Laminar Flow Room



Conventional Flow Room



Conventional Flow with localised Laminar Flow Room

