

smart | clean | green

the closed-loop control system



Cleanrooms

A definitive change in cleanroom technology

The Connect 2 Cleanrooms closed-loop control system is designed to ensure the cleanroom operates at optimum effectiveness whilst consuming the minimum of energy.

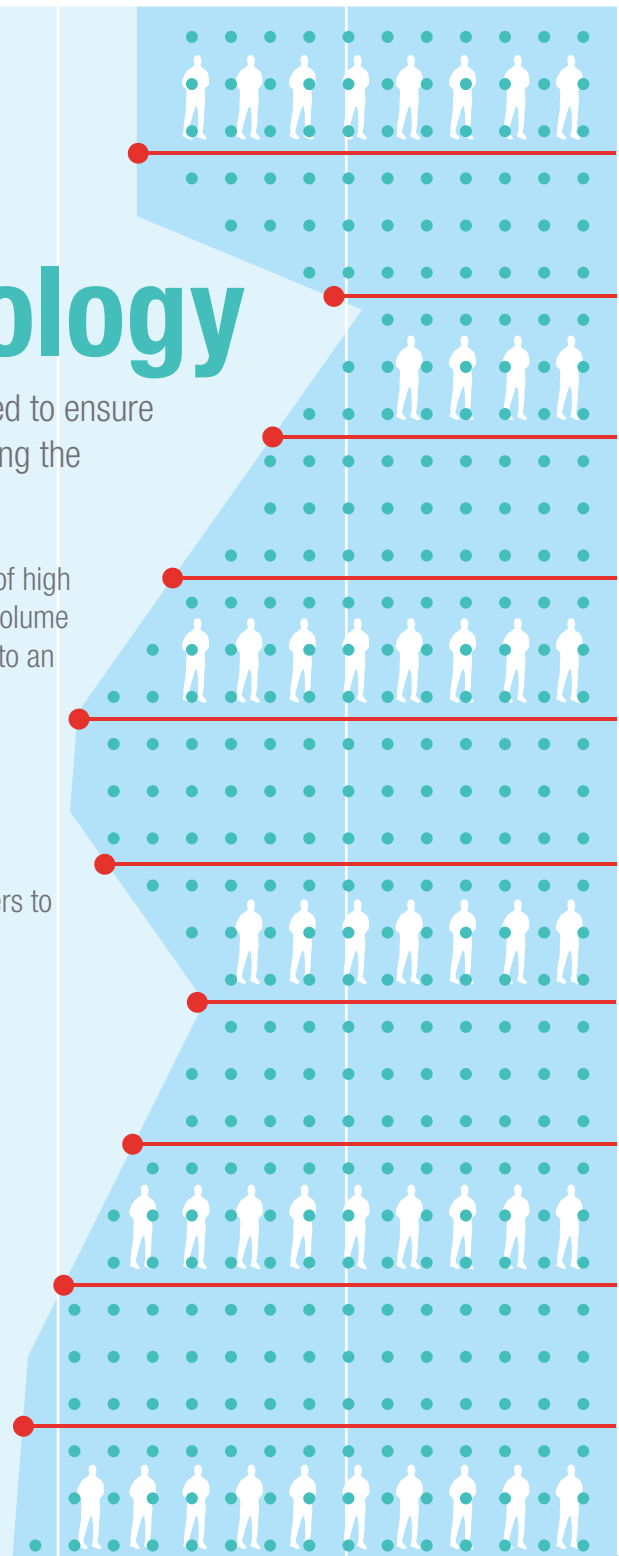
This is achieved by using our ECO-1 Control Panel interfacing with a series of high resolution particle and pressure sensors then using the outputs to vary the volume of filtered air delivered in to the cleanroom to dilute the concentration down to an acceptable level designated by ISO 14644-1 Cleanroom standard.

Monitoring and Measurement

Through monitoring and measurement of parameters involving power consumption the ECO-1 is the ideal addition for cleanroom users working towards BS EN 16001-2009 Energy and Management System. Allowing users to identify areas where energy can be saved reducing the carbon footprint and maximises cost savings.

ECO-1 Features Include

- Programmable - Day to Night Control
- Automatic Switching of Lighting
- Data Logging and Download
- Alarm Outputs with Remote Signalling
- Validation / Service Reminders and Scheduling
- Temperature / Humidity Monitoring
- Batch Identification
- Secure Login for Access Control
- Ethernet Network Compatibility



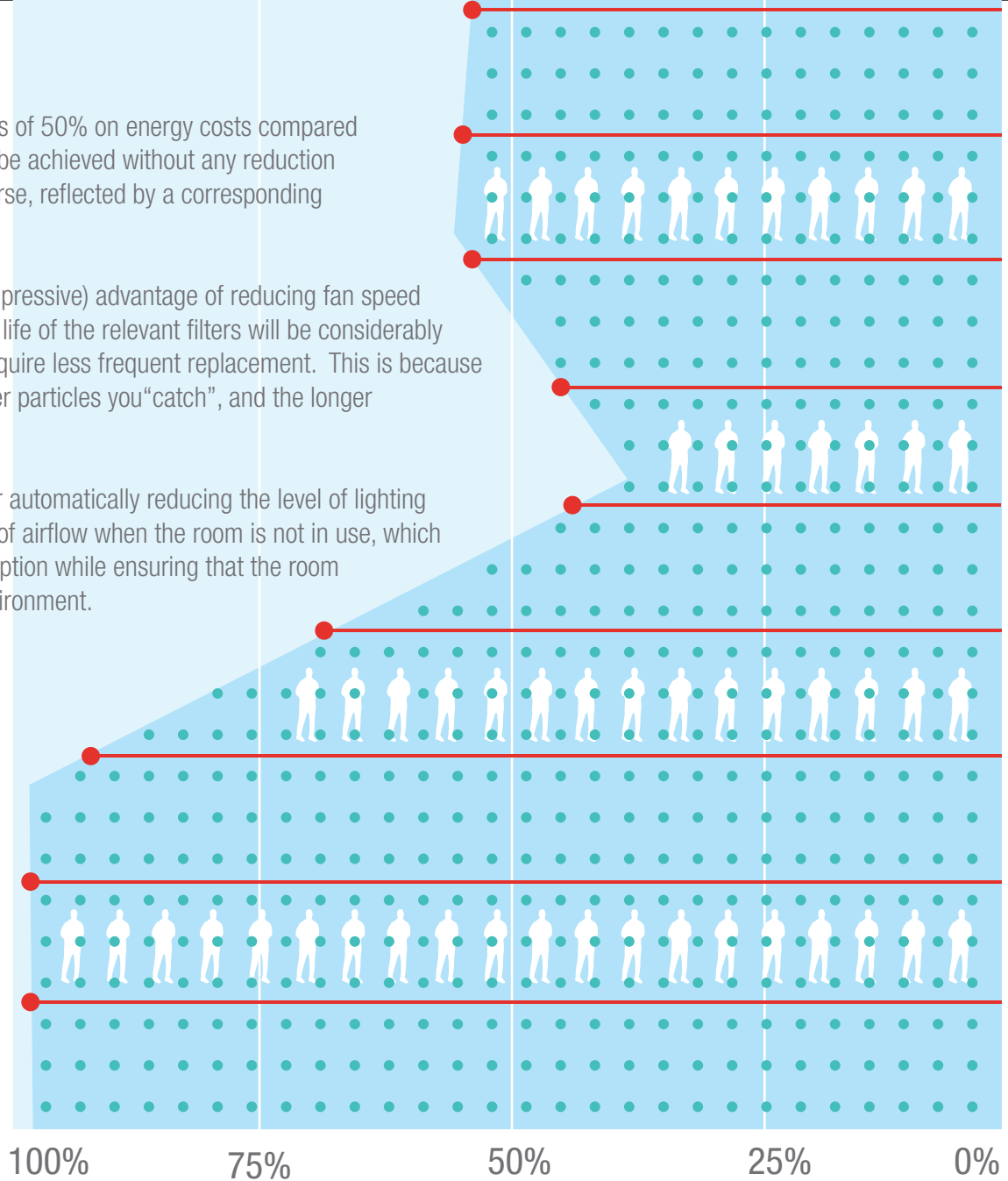
The Green Reasons

Tests have shown that savings of 50% on energy costs compared with a typical cleanroom can be achieved without any reduction in cleanliness. This is, of course, reflected by a corresponding decrease in carbon footprint.

A less obvious (but equally impressive) advantage of reducing fan speed whenever possible is that the life of the relevant filters will be considerably extended, causing them to require less frequent replacement. This is because the less air you filter, the fewer particles you “catch”, and the longer your filters remain effective.

Facilities are also provided for automatically reducing the level of lighting and maintaining a base level of airflow when the room is not in use, which again reduces power consumption while ensuring that the room remains a safe and clean environment.

“You can’t control what you don’t measure”



Standard fan power consumption



Closed-loop system power consumption



Air contamination levels



Cleanroom activity levels



Actual particle count

Additional Advantages

As well as the particle counter, the control system incorporates a comprehensive set of additional sensors so that room temperature, humidity and pressure can be monitored, logged and used to generate alarms to alert supervisory staff if the cleanroom strays beyond a user-defined set of control parameters.

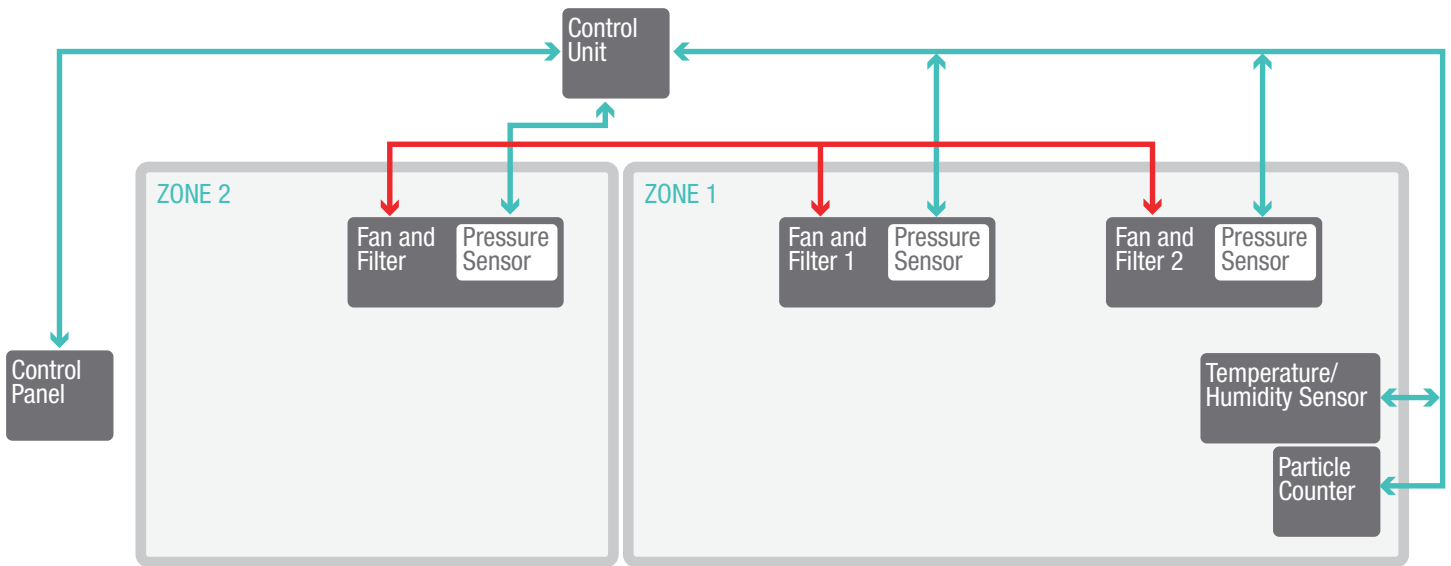
This enables blocked or cracked filters, failed fan motors, unexpected levels of temperature and / or humidity etc. to be detected and rectified. There are also facilities for recording a batch I.D. to identify the process to which each set of data relates, and for logging which members of staff were involved with each process.

As a side effect of the closed-loop control process, a great deal of useful Management Information is generated and can be used to demonstrate historical conformity to the required level of cleanliness as well as to analyse any variances in production processes. Facilities are provided to log and export this data, which can subsequently be archived for future reference.

The basic system envisages a cleanroom with two zones – typically a main production zone and an ancillary zone used for activities such as production staff changing into cleanroom attire and back again. Both zones are provided with filtered air at a pressure higher than the atmosphere outside, but if required the system can ensure that pressure in the production zone is always higher than in the ancillary zone, so that particles introduced into the ancillary zone will not enter the production zone.



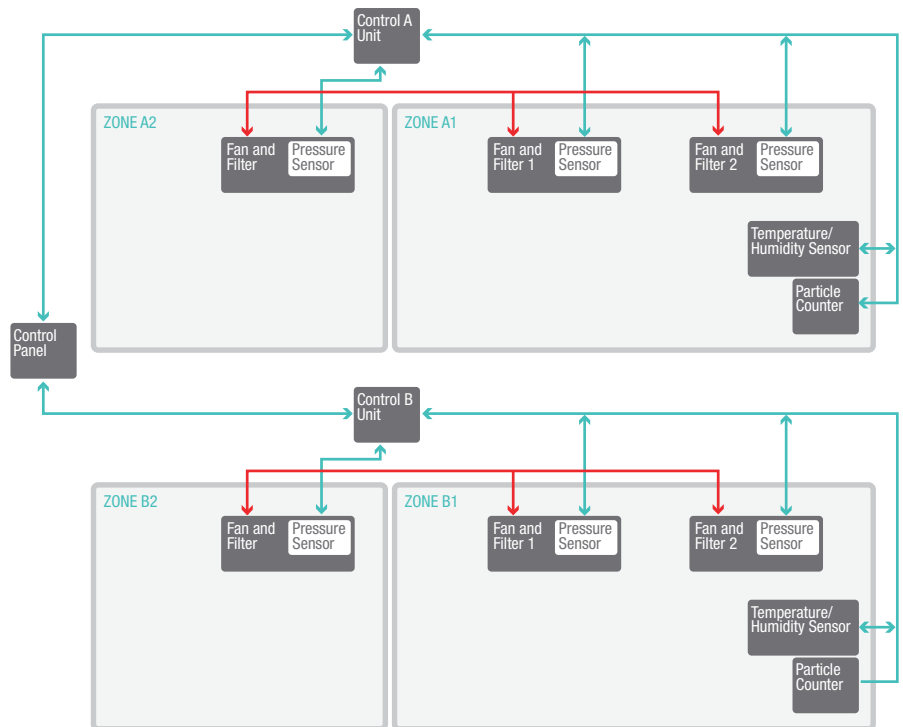
The main elements of the system are shown below:

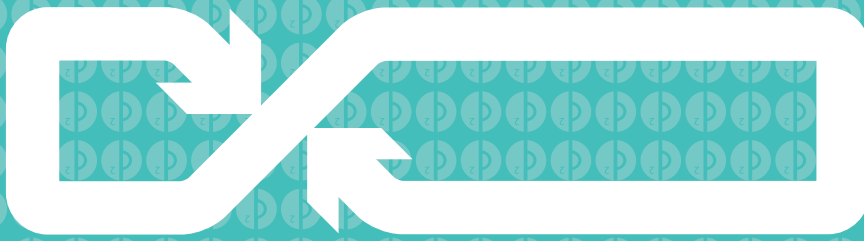


If required the system can be expanded by additional Control Units which are driven by the same ECO-1 Control Panel allowing the units to be future proofed for potential growth.

Each Control Unit can drive six filters in Zone 1 and two in Zone 2 with its own particle counter and temperature / humidity sensor. Each Control Panel can drive up to 16 Control Units.

A typical multi-unit system may be configured as detailed to the right.





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