

# Lead by example

**Brendon McManus**  
**MD of Clean Air**  
**Technologies Ltd asks**  
**if training is a task or**  
**triumph for cleanroom**  
**operators**

**S**ome years ago I took part in a site visit to a company manufacturing a high volume of small medical devices in a cleanroom environment.

I saw operators on the production line visually inspecting the finished article. Despite what would appear to be a laborious task, they conducted each inspection in a very meticulous and conscientious fashion. On asking one operator what her role in the process was, she replied: "I save lives."

This initially seemed a little far fetched but on reflection, it was most certainly the case. What I was most impressed with was the pride and importance of that job to the individual when it was quite clearly a small part of a much larger process.

It was an illustration that the training given for the role had not only taught the staff member how to do their job but also how critical their input was in the delivery and safety of the end product.

The training was obviously of a high standard and achieved excellence through group understanding, as well as an awareness of the individual's responsibility to the product and end user.

As an industry we need to recognise that, although task led, training yields its own rewards and allocating a budget to staff development is as imperative as maintaining the environment and plant in which they operate.

I took this early insight into the value of training with me when setting up Clean Air Technologies and establishing our operating standards. Our quality and training of staff continues to be one of the key areas that steers our development and sets us apart from some of our competitors.

The company implements a rigorous and comprehensive training programme for all our cleanroom engineers from trainee through to senior level. The training is structured and provides each engineer with a sound knowledge of the following:

- Contamination control issues
- Testing procedures



**Brendon McManus, MD of CAT (left), with Steve Hufton, Commercial Director of AIS**

- Identification of cleanroom components
- Why products are manufactured in this controlled environment
- Problem solving encouraging thinking outside the scope of their allocated tasks

The six basic training modules devised deal with:

1. Method of use for test equipment
2. Cleanroom standards
3. Clean Air Technologies' reports and administration
4. Air balancing and commissioning
5. Project management
6. Draughting and design

We still use these modules today, although they are constantly evolving as changes are applied to the contamination control industry.

The modules themselves take a trainee engineer six to nine months for completion and can only be signed off by a Senior Engineer who witnesses the actual task or test to be performed. The work of the engineer is always coupled to ensure continuous supervision until all of the modules are successfully completed. A final evaluation of the engineer's skill set is then conducted at Director level.

Engineer forums are frequently held as a platform to facilitate sharing of information on individual skill sets and exchange on-site working experiences.

There are sound reasons and benefits behind the working practices that are adopted. While generic cleanroom validation tasks can be taught in a short space of time in a classroom, this does not

equate to the experience gained by engineers actually implementing the processes and procedures on the various different cleanroom systems and equipment available on each specific site.

The emphasis on training and the sharing of information allows our Engineers to test, interpret, recommend and rectify problems and prevent them from occurring again.

Cleanroom operators recognise the importance of contamination control and invariably manufacture within purpose-built, controlled environments. To engineer such an environment is costly; however, to monitor the performance parameters is not.

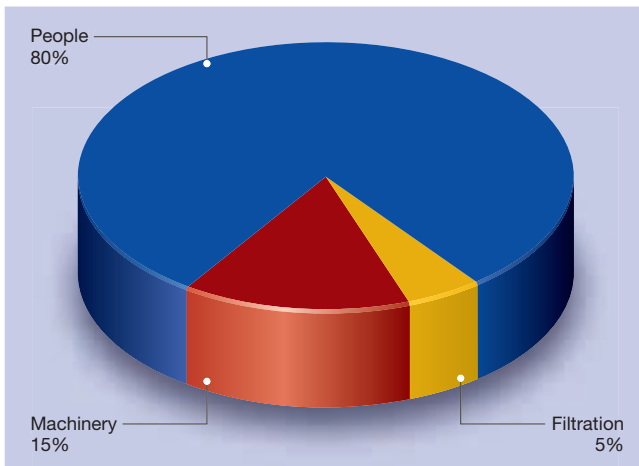
A properly designed and constructed cleanroom will not generate particulate but remove it. It is a well-documented fact that the operators inside the environment cause most contamination problems (see Fig. 1). The cleanroom is checked regularly by means of analysing its performance, but can the same be said regarding that of the operatives?

By recognising the need for cleanroom training, our company decided to evolve training courses on the principles of cleanroom contamination control.

A dual approach was identified to look at two distinct areas including cleanroom engineering and cleanroom disciplines. As specialists in engineering plant and cleanliness monitoring we joined forces with AIS Cleanroom Products Ltd, which is a company offering expertise in operator gowning, consumable selection and cleanroom disciplines.

The course has been successfully run for a number of our existing customers. These ►

# TRAINING



**Fig. 1 Sources of particles in the cleanroom**



**Fig. 2 Hourly particle count changes**

clients recognised the benefits gained by having on-site training by independent cleanroom experts, emphasising contamination issues and the need for cleanroom discipline in an informal manner.

While training cannot compensate for the failure of poorly designed products, it does minimise the risks and provides solutions for sound working practices. Delegate feedback has shown the courses to be professional enjoyable and educational.

Feedback has also shown that the cleanroom manager gains the co-

operation of staff through a greater appreciation of the specialist environment in which they work, and their acknowledgement of their ability to contaminate the product and the associated knock-on effects (see Fig. 2).

As cleanroom operators we should all strive for 100% efficiency yield or zero contamination or plant failure. Indeed, if an aircraft that was only rated as 99% safe, would you be happy to travel as one of its passengers? Everybody wants 100% safety – the same should be said for goods

produced in a cleanroom. At the very least, product failure by operator contamination accounts for lost profitability, reputation and the inherent risk of safety issues.

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