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Technical Solutions

FOR SGS AUSTRALIA

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ENGIXO

CASE STUDY

SGS Australia & Engixo

SGS is the world's leading inspection, verification, testing and certification company, with more than 50 offices and 1,700 employees in Australia alone.

The scope of SGS means that their inspection services are interwoven with every industry that plays a significant role in the economy, including agriculture, chemicals, construction, consumer goods, energy, manufacturing, mining and transportation.

The alignment of vision and values between Engixo and SGS has further strengthened the two organisations' working relationship. SGS provides innovative ways to deliver business benefits, with the aim to be the most competitive and the most productive service organisation in the world. Engixo is committed to "promoting efficiency through innovative technical design", and plays a vital support role to key sectors serviced by SGS, including environmental, geo-chemistry, and oil & gas.

CASE STUDY

SGS AUSTRALIA & ENGIXO

Fume Cupboard 2 Refurbishment

Improving asset performance to reduce wastage and reduce costs.

Inspection Overview

Upon initial inspection it was noted that most of the components on Fume Cupboard 2 had failed either due to age, lack of routine maintenance or chemical corrosion. An old-style glass sash required replacing and as well as a failed control system. Upon further investigation it was noted that FC2 was inefficient, completely dilapidated and beyond use for the lab staff.

Works Carried Out

It was decided to use FC2 as a pilot project to carry out a complete overhaul and repair of the system with scope to return an updated product that would be functional, modern and efficient without the cost of a new unit.

1. Complete strip down and decommission of FC2.
2. Freight of cupboard to Engixo workshop.
3. Removal of old glass sash and sliders.
4. Remove all failed / rusted pulleys, chains, fixings, fastening, brackets, etc.
5. Stripped down cupboard internal components.
6. Complete jet wash clean and decontamination of cupboard and facia.
7. Reverse engineer new internal components, pulley system, sash cabling, etc.
8. Replace faulty control system for new modern touch screen system.
9. Completely rewire cabling system and replace GPO sockets.
10. Replace old faulty control gear, relays, contactors, rail mounts, circuit protection and terminal strips.
11. Install new Perspex sash, sliders, handle and edge protection.
12. Relocate assembled cupboard back to site and install in position.
13. Rewire components and install wall facia plate, cabling enclosure and PCB enclosure.
14. Install wiring protection and cable glanding.
15. Reinstall and remount VSD.
16. Replace old failed fluoro lighting with energy efficient LEDs.
17. Replaced corroded spray bar hoses and water solenoid valves.
18. Replace all mild steel fixings with fully stainless-steel parts.
19. Remanufactured counterweight system to suit new sash.
20. Installed new pot type sash position sensor.
21. Powered up and programmed with a new control system.
22. Reprogrammed VSD to suit new variable air flow.
23. Commissioned system and carried out AS Standard conformance testing.
24. System overhaul complete and put back into service.

Results

Following the overhaul of FC2, the system has been recommissioned and put back into service. Following the refurbishment works, this system now benefits from low-energy LED lighting, variable speed control for the fan motor and an audible alarm if the sash is left open during operation. This will prompt users to keep the sash closed and thus reducing fan speed and amps.

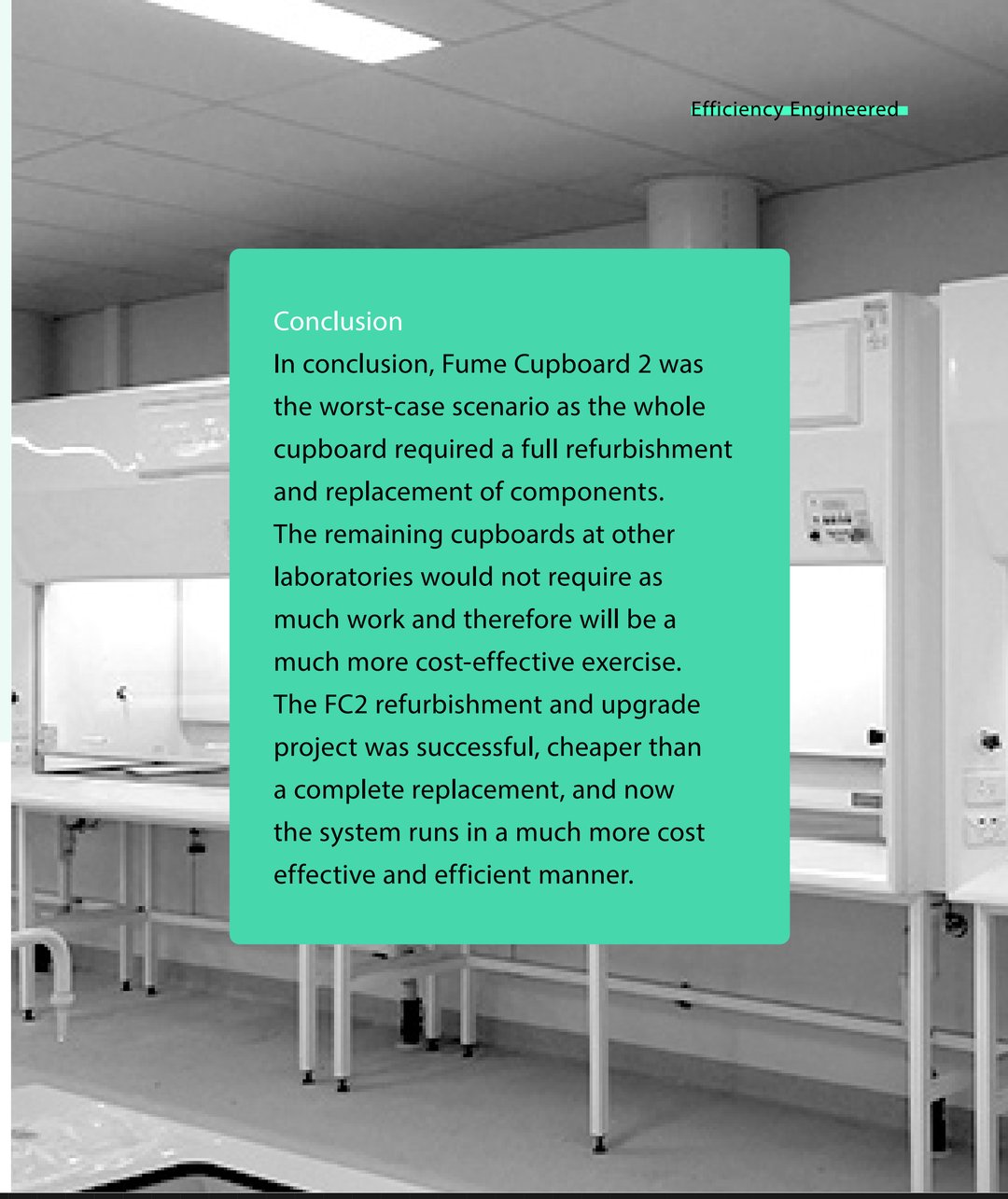
In controlling the fan speed in this way, and to meet Australian Standards, we can make the following assumptions based on the fume cupboard being used 5 days of the week:

With the sash closed we can reduce the fan running amps from 8 amps down to 1 amp, drastically reducing the operational cost.

Reducing the fan speed down to draw 1 amp would reduce the cost (based on the same figures) down to $673.92, an overall saving per cupboard per annum of $4,708.00

Based on 20 hours a day and a cost-per-Kw average of $0.45, the previous annual cost with the fan running full speed would be estimated at $5,382 per annum for one cupboard.

The true figure will vary depending on tariff and operational usage, however, based on these estimates, by following the FC2 refurbishment process to increase efficiency, SGS could see huge savings anywhere up to $140,000 per annum, with further additional direct savings from switching to fume cupboard LED lighting.



Conclusion

In conclusion, Fume Cupboard 2 was the worst-case scenario as the whole cupboard required a full refurbishment and replacement of components. The remaining cupboards at other laboratories would not require as much work and therefore will be a much more cost-effective exercise. The FC2 refurbishment and upgrade project was successful, cheaper than a complete replacement, and now the system runs in a much more cost effective and efficient manner.

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