



cem solutions
CONTINUOUS EMISSIONS MONITORING

COMPLETE SOLUTION Replacement CEM system



Technical article

MOTIVATION FOR CHANGE

The UK has a mature install base of Continuous Emissions Monitoring Systems (CEMs) with many plants on their second generation of analysers and some on the third! Motivation for replacement can arise due to a number of reasons:

- End of life
- Unsatisfactory performance
- Substandard service support
- Operating / Maintenance Costs
- Poor Reliability
- Changes in legislation

CONSIDERATIONS / CHALLENGES

Choosing a replacement **CEM system** can feel like a daunting process, both in terms of selecting suitable equipment but also with the challenges faced by making the switch on an operational plant.

Plants typically operate for 24 hours a day - without CEMs they cannot run. When replacing the system there has to be a high level of confidence that there will be no delays or 'teething issues' causing plant down-time. There is also very little time for cold commissioning - the replacement of such a critical item typically has to occur during an outage. The key to success is within the planning as well as the project execution to ensure a seamless transition from the existing to the new system.

Capital cost is always a factor, but with systems typically operating for 10 or even 20 years, the longer-term support and running costs are also important considerations.



CASE STUDY

Complete replacement CEM system

CEM Solutions (UK) were recently involved in the replacement of an existing system on a fluidised bed waste wood co-incinerator which was constructed in 2006. The original system included a Duty / Stand-By arrangement offering a full duplicate set of measurements. Continuous measurement had been provided to the plant throughout the operation of the analysers, a quite credible achievement over a 15+ year period.

The system was, however, reaching the end of its serviceable life. Failures had become more expensive and frequent, leaks were beginning to appear in the container and the standby system was being relied upon more frequently.



Dr. Födisch

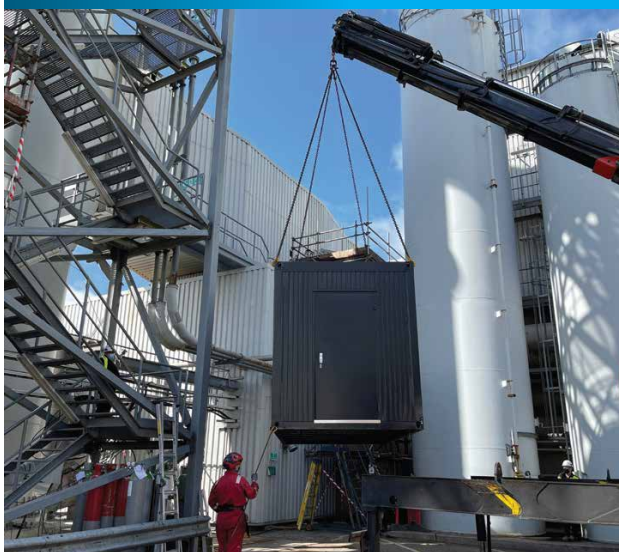
Umweltmesstechnik AG



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COMPLETE SOLUTION

Replacement CEM system



CEM Solutions (UK) were approached to advise on options for upgrading or replacement of the system. The most straightforward option would be to upgrade a system in stages, and on some plants this would be the chosen route. In this instance however, the CEM shelter was deemed to have a lifespan significantly shorter than that of the new analysers and so this was included in the scope for replacement as well – essentially requiring complete renewal.

When reviewing various options with the customer and specifying the analysis equipment to use, 'Hot Wet' NDIR technology was chosen. This had been the technology of the original gas analysers and had ultimately proved itself to be inherently robust and very suitable for the application. The decision was made to go for a fully containerised system, using the Dr. Foedisch MCA10 analyser to handle the majority of the measurements.

The **CEM Solutions (UK)** Projects Department drew up a detailed spec of the entire solution. This was a critical step as it had to interface with the existing control systems and also fit into the physical infrastructure of the site. It was clear that the removal and replacement was going to have to be done during an outage. Careful project planning, fully detailing every activity: disconnection, re-connection, signal exchange lists, comms protocols to name a few was executed in line with the site project team as well as the technology manufacturers, Dr Foedisch.

Preparations were made; prior to the outage, new cables were run, all old cables labelled and the comprehensive install and commissioning timetable was set in motion.

With the full co-operation of the site and commitment from both parties to work together closely, the change was made swiftly and safely and was cold-commissioned well within the seven day outage window. Our experienced and skilled commissioning engineers were on-hand to validate the installation, start-up the new CEM System and train the on-site engineers for handover.

Post Outage, the plant re-started with the new CEM fulfilling its requirements in full from the outset.

CEM Solutions (UK) Capabilities

CEM Solutions (UK) have an extensive experience in replacing or upgrading legacy analyser systems, working closely with their customers to tailor the new system to their specific requirements, from gas analyser replacements to complete CEM Systems.

By asking key questions regarding your process and requirements, **CEM Solutions (UK)** can offer a full turnkey solution, replacing existing aged CEM systems without compromising plant downtime and compliance.

Additionally we offer long-term comprehensive service packages, including 24 hour service support. References are available on request from our long-standing customer base throughout the UK.