

GROWING MARKET FOR CEMS IN DEVELOPING COUNTRIES

A wide variety of research reports are available (at significant cost) on the market for emissions monitoring systems (EMS). The main point of agreement among these reports is that there will be significant growth in the market in the next few years, particularly in developing countries where utilities and the most polluting industries are growing quickly. Estimates for the global market vary considerably – probably because most manufacturers do not publish revenue data specifically for EMS and market analysts may use different definitions of the market.

In March 2015, TechNavio's analysts forecast the global CEMS market to grow at a compound annual growth rate (CAGR) of 9.7% over the period 2015-2019. In November 2015, marketsandmarkets.com produced a report saying that the EMS market was valued at USD 1.57 Billion in 2014 and is expected to grow at a CAGR of 10.4% between 2015 and 2020. This report valued the CEMS market at USD 1.17 Billion in 2014. However, it said that the market for predictive emission monitoring systems (PEMS) is expected to grow at a high CAGR of 12.3% between 2015 and 2020.

In May 2017 Transparency Market Research estimated the value of the global EMS market to be USD 3.74 Billion at the end of 2016, with a projected USD 7.23 Billion by 2025. This report estimated that during the forecast years of 2017 and 2025, the global EMS market would experience a CAGR of 7.5%. The Asia Pacific region is expected to be a lucrative market in for EMSs, with a CAGR of 8.4% over the forecast period.

President Trump seems determined to weaken environmental protection in the United States (more on this below), and European EMS markets are relatively mature, so it is logical to assume that the main growth in the market will come from developing countries where new processes are being built that require monitoring, and where new environmental regulations are forcing existing processes to install EMS. In India, for example, the Central Pollution Control Board (CPCB) has adopted Continuous Emissions Monitoring Systems (CEMS) as the preferred method for measuring industrial emissions. The CPCB has initially directed plants in 17 categories of highly polluting industries to install CEMS for real-time monitoring and compliance with regulatory emissions limits. The parameters specified for continuous monitoring include Particulates, Hydrogen Fluoride, Ammonia, Sulphur Dioxide, NOx, Chlorine, Hydrogen Chloride, Carbon Dioxide and Carbon Monoxide. Clearly, this is a major initiative with enormous implications, and a Conference (CEM India 2017) taking place this September will facilitate the sharing of knowledge and expertise in the implementation of this plan, this conference will be attended by Ministers from India's Environment Ministry and their CPCB who will discuss stricter Indian regulation and Policy.

One of the companies that will be exhibiting at CEM India 2017 is Gasmot Technologies from Finland. Their CEO Mikko Ahro, says: "Gasmot sees double digit growth rates in continuous emissions monitoring markets. Regulations are naturally driving the CEMS market, but the underlying driving force is the health effects of pollution - especially in growing economies where the serious health impacts of pollution can only be controlled with the help of accurate measurements. Tightening regulations combined with the trend to build multi-fuel boilers are increasing the demand for future-proof solutions where the set of measured parameters can be changed without additional hardware changes."



Rod Robinson, Principal Research Scientist in the Emissions and Atmospheric Metrology Group at the UK's National Physical Laboratory says: "It is difficult to say how the global CEMS market will change in the future, but it seems likely that the main growth will be in the emerging markets of the Middle East and Asia. The EU and US markets are relatively mature, so the main CEMS market in these regions will be in replacement systems and for new equipment as limit values decrease or new pollutants are added to the monitoring requirements. In addition there are a number of new markets – in energy from waste for example."

What is Trump doing?

Despite President Trump's stated intention to withdraw from the Paris Accord, carbon emissions in the United States will continue to drop. Many have predicted that Trump's withdrawal plan will result in carbon emissions falling by about half of what had been planned by President Obama. This is because energy production in the United States now uses more gas than coal because it is more flexible and integrates better with renewable energy supplies.

Trump's decision to withdraw from the Paris Climate Accord is not likely, in itself, to significantly impact the mature CEMS (Continuous Emissions Monitoring Systems) market in North America. Indeed, his support for the fossil fuel industry may even increase the market for CEMS. However, this decision provides a clear indication of the President's priorities, so it seems likely that the prospects for environmental regulation in the United States are poor and that CEM manufacturers should be looking to increase their sales for equipment outside of the US markets.

Trump's 'America first' budget proposal includes a \$2.6bn cut (31%) in funding for the USEPA in 2018, which could mean that 20% of EPA employees would lose their jobs. This would inevitably limit the effectiveness with which environmental regulations can be enforced, which in turn, may lead to a watering down of environmental standards so that environmental enforcement can match the requirements. In practical terms, this may mean that less processes fall within regulatory requirements and those that do, for example, may be required to conduct occasional monitoring rather than continuous monitoring. They may also be required to monitor less parameters or to comply with higher emission limits.

The President's plans include the removal of funding for the Clean Power Plan and all climate change research programs and partnerships, and funding for the enforcement of the EPA's clean air and water laws would lose \$129m – around 20% of its budget. The prospects for the US CEMS market therefore appear to be rather bleak! However, and this is a big HOWEVER, the President can only recommend a budget; it still has to be written and passed by Congress. So, the debate will continue and the cynical observer might view Trump's budget as an aggressive negotiating position.

Air pollution, public health and climate change

The growth of utilities and industries in developing countries generates pollution and greenhouse gas (GHG) emissions. However, it also creates the funds that make pollution abatement and GHG emissions reduction possible.

The monitoring required for climate change purposes can be less precise than that required for pollution control because GHG emissions tend to be calculated by sector and country rather than by individual stack. In contrast, the pollutant emissions from stacks can vary widely, and the effects of air pollution are more localised and can be more acute. Air pollution is therefore a greater driver for emissions monitoring – as economies develop, the requirement for emissions control increases as citizens become less concerned about a basic requirement food, energy and water, and more concerned about the toxic effects of pollution.

According to the World Health Organisation (WHO), in 2012, an estimated 6.5 million deaths (11.6% of all global deaths) were associated with indoor and outdoor air pollution. Nearly 90% of air-pollution-related deaths occur in low- and middle-income countries, with nearly 2 out of 3 occurring in WHO's South-East Asia and Western Pacific regions. Ninety-four per cent are due to non-communicable diseases – notably cardiovascular diseases, stroke, chronic obstructive pulmonary disease and lung cancer. Air pollution also increases the risks for acute respiratory infections. Furthermore in 2016 the WHO estimated that 92% of the world's population lives in places where air quality levels exceed WHO limits.

Public awareness of air pollution and its effects is high where the problem is visible – in towns and cities affected by smoke and smog. However, fine particulates (PM2.5) and nitrogen dioxide – the two main pollutants responsible for high levels of deaths – are not visible to the human eye, so there is a greater challenge in helping citizens to understand the problem. Nevertheless, air pollution is rising quickly on political agendas all over the world and governments are responding.

Urban air pollution is largely due to diesel vehicle emissions and indoor pollution is a major problem in countries where people cook indoors on an open fire. However, emissions from incinerators and other plant are also significant contributors to air pollution so there is a growing pressure for emissions reduction, and therefore emissions monitoring, in developing countries.



The Volkswagen scandal has helped to raise the profile of the public health emergency caused by air pollution, but it delivers a salutary lesson on the importance of reliable monitoring data. It is vitally important therefore, that in those developing countries where new emissions monitoring systems are being installed, that the regulators, the regulated processes, the monitoring organisations and the instrumentation manufacturers all focus on the accuracy and reliability of monitoring data.

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