Baker Hughes

Effective emissions reduction must be end-to-end

Pressure is growing to reduce emissions across the oil and gas sector. However, companies often don't have a full picture of emissions reduction opportunities, which complicates the process. By adopting an end-to-end approach, from measurement and analytics to abatement and verification, industries can achieve predictable outcomes in pursuit of emissions targets.

As with many industries today, the oil and gas sector is under pressure to demonstrate progress in reducing greenhouse gas emissions. Regulators, shareholders, law courts, politicians, and the public are all showing an increasing interest in our industry's progress. Emissions management today is a core strategic KPI. End users of energy products are requiring third-party certification on responsible energy production.

Emissions management is a challenge, yet it also presents opportunity. By responding strategically, a company will often find that an emissions reduction program will result in cost savings, increased production output, financial benefits such as carbon credits, and a boost to public reputation. Best practice involves looking at the entire chain, from identifying emissions to abating them, and finding ways to create adjacent value from improvement projects.

The fugitive emissions challenge

Last May, ExxonMobil's shareholders elected activist board members[1], despite the objections of management, while Chevron shareholders backed a proposal to cut emissions[2] from the company's products. Pressure is not just coming from shareholders. Earlier this year, Royal Dutch Shell was ordered by a court in the Netherlands[3] to increase its planned emissions cuts. In the U.S., Congress voted to restore Obama-era regulations[4] on methane emissions that had been cancelled by the Trump administration.

How should companies get ahead of the issue? First, they need to be able to identify, quantify, and monitor emissions. The problem itself is changing: CO_2 emissions used to be the main consideration, for example, but methane is, according to EPA estimates[5], 25 times more harmful to the atmosphere over a 100-year timeframe, and over 80 times stronger than CO_2 over a 20-year period. Industry initiatives, such as the Oil & Gas Methane Partnership, are creating new frameworks for reporting and transparency around methane emissions (i.e. OGMP 2.0 reporting framework[6]).

1 https://www.reuters.com/business/energy/chevron-shareholders-approve-proposal-cut-customer-emissions-2021-05-26/
2 https://www.reuters.com/business/energy/chevron-shareholders-approve-proposal-cut-customer-emissions-2021-05-26/
3 https://www.ft.com/content/340501e2-e0cd-4ea5-b388-9af0d9a74ce2
4 https://www.reuters.com/world/us/following-senate-us-house-reverses-trump-rollbacks-methane-rules-2021-06-25/
5 https://www.epa.gov/ghgemissions/overview-greenhouse-gases
6 https://www.ogmpartnership.com/

Companies have to be able to analyze the data effectively and make a plan for mitigating 'fugitive' emissions, that is those stemming from leaks and faults rather than from normal operations. Only then can companies move on to abating emissions and turning their management from a cost into a vital investment. You don't control what you don't measure.

Each of those stages is fraught with problems. Some companies struggle to gain the right visibility at the start. Which areas of a plant generate the most emissions, for example, and which are easiest to fix? Manual inspections can be incomplete if the inspector can't gain a proper view of the equipment, while even something as basic as following a different route can generate inconsistent data. For others, the problem is too much unstructured data. They can't tell what is important or uncover actionable insights.

Companies often find that the first 10%-15% of emissions reduction is low-hanging fruit. But then it becomes a CAPEX challenge: how much will a further emissions reduction cost? And what value will it return? What is the right choice to have the most significant impact and value for each specific operation? An emissions reduction journey rarely requires a single technology, but jumping from one abatement solution to the next is rarely the most cost-effective nor the most predictable solution.

We have seen success when customers engage with broad technology providers, which can help create emissions reduction plans and bring new technologies to the table swiftly.

Trusted partner with expertise across the whole chain

At Baker Hughes we share what we have learned from a century in oil and gas, and also in other sectors where emissions are a challenge, including shipping, waste management, and mining.

We help our partners identify how and what to measure during the initial phase of estimating, monitoring, identifying, and quantifying emissions. We have the technology, such as our LUMEN ground- and drone-based sensors, to identify and monitor emissions quickly, safely, and effectively. For example, one oil and gas customer opted to be notified when methane emissions of more than 50 parts per million were detected at its plant for 25 minutes or longer. When an alert was sent, the customer knew where to start looking for a fault and was able to despatch repair workers on the same day. They discovered and repaired a stuck dump valve on a heater treater.

As well as identifying faults, solutions such as our flare.IQ advanced control system can help customers reduce emissions. Incomplete flaring is one of the major causes of methane emissions across the industry. However, by using flare.IQ, operators can optimize their flare operations, realize operational savings, achieve flare combustion efficiency of 98 percent-plus, and therefore significantly cut methane emissions.

Providing customers with real-time data on the production floor, flare.IQ is easy to deploy and is supporting customers across North America, China, the Middle East, and Europe, including BP. We are deeply integrated in the various certification processes and in the definition of industry standards and toolkits, so are able to advise on how best to manage emissions to be compliant.

Creating value from emissions management

In each case we build on the deep insights developed by listening to customers and learning about their current needs, practices, and pain points. A common challenge, for example, is to meet the demands of energy transition while still ensuring a healthy and profitable business. We can develop a value proposition for emissions management and a clear roadmap to achieving impact.

There is often value in reducing waste when leaks are fixed, or in replacing costly and sometimes dangerous manual inspections. And there are other benefits, such as the reputational boost that can arise from demonstrating real progress on combating climate change.

With over 100 years of experience in the energy industry, with applications from upstream to midstream to downstream, Baker Hughes has a wealth of expertise in operational efficiency and emissions management. As we help our customers shape their emissions reduction journeys, we enable organizations to take full advantage of the energy transition.

To learn more, please contact our Emissions Management solutions team at **bakerhughes.com/contact-us**

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