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Controlling Oil and Gas Emissions Carries Unique Benefits for Cryptocurrency Industry

This is the second in a series of articles on the growing interest in and shift toward cryptocurrency, concerns over its carbon footprint, and innovations being explored by the oil and gas industry to reduce that footprint. The articles will focus on cryptocurrency and its growing place in the construction industry, potential areas of dispute, and leading practices for minimizing risk while capitalizing on cryptocurrency's promise.

As the oil and gas industry faces growing pressure to reduce its carbon footprint and commit to more eco-friendly policies, emissions management, and reduction have become central to its targets and goals. In 2020, BP announced its ambition to become a net-zero company by the year 2050. Many other industry leaders have followed suit by making commitments to increase renewable energy usage and reduce emissions. To meet these goals, producers will need to find innovative ways to tackle environmental challenges while also protecting cash flow and reducing risk.

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The oil and gas industry currently is exploring one such innovation, which helps reduce carbon emissions from gas flaring while simultaneously providing power for cryptocurrency mining, a computerized process that demands large amounts of electricity.

Section 1 - What is Gas Flaring?

After a new oil or gas well is drilled, there is a highly volatile mixture of gases at the top of the well that block the oil underneath. To access that oil, producers need to either collect and store those gases, eliminate them through flaring, or find ways to process them in an eco-friendly manner. While collecting and processing the gases may seem like an obvious solution, producers face many economic and practical disadvantages to doing so. The traditional approach to collection and processing requires existing pipeline infrastructure, which is often unavailable near the wellhead. In addition, the cost of building infrastructure to process the gas is frequently much higher than the value of the gas itself.

Natural gas production increased by nearly 70 percent from 2008 to 2019¹, oversaturating the market. COVID-19 and a Presidential election year in 2020 further impacted natural gas prices and threw the market into a state of uncertainty. This mix of oversaturation and uncertainty offers little incentive for producers to store and process natural gas. Therefore, producers typically turn to either gas venting or flaring to expedite the oil extraction process. Of these two methods, gas venting carries a much higher environmental cost; thus,

burning off the gas has historically been a more acceptable industry practice.

However, that does not mean that gas flaring is environmentally friendly, or even legal. Gas flaring accounts for nearly 1 percent of all machine-made atmospheric carbon dioxide emissions around the world.² Although emissions levels vary depending on the site, gas flaring and venting can account for up to 90 percent of a site's greenhouse gas emissions.³ In Texas alone, the amount of natural gas expended through natural gas flaring stands equal to the amount of gas consumed by state residents, and the practice wastes hundreds of millions of dollars each year.⁴

Moreover, some evidence suggests that gas flaring occurs more frequently than actually reported to the US Environmental Protection Agency. Industrial combustion, such as flaring, is visible from space, and data collected from satellites do not match the EPA's official reports.⁵

Although flaring is both wasteful environmentally damaging, many producers have limited options for cost-effectively addressing this issue.

Section 2 - Capturing the Power of Flaring to Power Crypto Mining

The industry's primary challenge with gas flaring is how to reduce emissions while still making smaller rigs viable. While larger producers are better suited to invest in the infrastructure required to collect and process natural gas, smaller producers often cannot bear these long-term capital investments and remain profitable.

However, there is an innovative solution available through cryptocurrency mining. Mining cryptocurrency is an energy-intensive process, requiring vast amounts of electricity to maintain and operate massive computer systems. Crypto mining alone generates nearly 23 million metric tons of carbon emissions a year.⁶ As awareness around crypto's energy demands increases, underscored by Elon Musk's criticism on social media, cryptocurrency miners will continue to search for affordable and reliable energy sources.

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The natural gas that oil producers already are flaring at their sites offers a unique solution. Instead of burning off the gas at the top of new oil wells, this resource can be collected and converted on-site into electricity, which then can be used to power energy-intensive cryptocurrency mining. This practice not only significantly reduces crypto mining's electricity cost but also eliminates the need for gas flaring. As a result, oil and gas producers now can call upon innovative, environmentally friendly flaring alternatives that have far lower up-front costs.

Crusoe Energy Systems (Crusoe) in Denver offers such a turn-key service at approximately 20 data centers that are located in US oil fields, with several more scheduled for the future. Crusoe delivers and assembles portable, modular systems to each well site and coordinates the logistics and operations of their gas capturing and process systems.⁷ The company reports a nearly 95-percent reduction in methane emissions and offers a valuable solution for producers that must meet strict emission-reduction goals in an industry that is rife with fluctuations and market challenges.



Section 3 - The Crossroads of Energy and Crypto

As cryptocurrency mining operations seek new and creative solutions to address processing costs, energy access, and emissions, more avenues for opportunities appear. Some miners purchase defunct or abandoned energy infrastructure centers and convert them into dedicated power sources for crypto mining operations. Others are building new, dedicated energy sources for their mining centers. This vertical integration allows crypto mining companies to have direct control over their energy inputs and plan for future expansions.

Argo Blockchain recently purchased two hydro-powered data centers in Quebec to establish an eco-friendly mining operation.⁸ In Montana, Marathon Patent Group acquired the once coal-fired Hardin Station, powered by Beowulf Energy, with plans to build and power a data center dedicated to operating bitcoin mining servers.⁹ In New York, a similarly unproductive coal power plant on Seneca Lake was restarted for the purpose of powering cryptocurrency mining operations.¹⁰

Texas, in particular, has seen a dramatic increase in crypto mining operations, primarily because it offers both affordable electricity and a business-friendly regulatory environment. In fact, the growth has been so significant that, in 2020, the Texas Blockchain Council was created to support cryptocurrency mining initiatives.¹¹ In addition to its Quebec acquisitions, Argo also purchased land in Texas with plans to construct another crypto mining center fueled primarily by renewable energy.¹² The Whinstone Group is establishing a bitcoin mining operation in Texas under the roof of the idle Alcoa

plant, previously one of the largest aluminum plants in the world prior to the 2008 recession.¹³ Northern Data sold its mining operation in Texas to Riot Blockchain in order to fund the construction of eight new high-performance data centers in Europe and other parts of America.¹⁴ Riot Blockchain, in turn, is testing a new liquid cooling technology at its data centers to combat Texas' high-heat environment.¹⁵

Each of these projects is exciting, and this incongruous yet synergistic relationship between cryptocurrency and energy is expected to continue generating new innovations and new opportunities in the future.

Section 4 - Ramifications for the Construction Industry

As more cryptocurrency miners buy and build energy infrastructure to power their operations, they will encounter potential areas of risk and dispute.

Owners that are new to construction could encounter unexpected problems due to their inexperience and may require assistance in navigating the construction process and in establishing good working relationships with contractors, subcontractors, suppliers and regulators. Alternatively, contractors working with these new owners will need to consider issues such as cash flow and whether or not owners have the necessary mix of reliable financial resources and feasible expectations. Industry experts can help anticipate these issues and apply leading practices to help clients address challenges before they impeded progress.

Editor's Note: In the next article, we'll further explore how cryptocurrency mining could impact the construction industry as well as leading practices for mitigating potential risks.

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