Blockchain Technology to Prove Emissions

Paul Rushton, VP of Alternative Energy

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Blockchain Removes the Need for a Trusted Partner

"At Equinor's giant new North Sea oilfield, thousands of sensors feed into Data Gumbo's novel blockchain platform—encoding an immutable record of operations, the better to automate contracts, pay vendors and (in the not-too-distant future) even measure carbon emissions."

EDITOR'S PICK

NTB SCANPIX/AFP VIA GETTY IMAGES

HOW BLOCKCHAIN IS HELPING BIG OIL OPTIMIZE FOR A CARBON-FRIENDLY FUTURE

By Christopher Helman

At Equinor's giant new North Sea oilfield, thousands of sensors feed into Data Gumbo's novel blockchain platform—encoding an immutable record of operations, the better to automate contracts, pay vendors and (in the not-too-distant future) even measure carbon emissions.

In the frigid North Sea, 90 miles off the coast of Norway, oil giant Equinor has developed one of the biggest projects in its 50-year history—a 300-foot-tall platform called Johan Sverdrup, which when it hits peak output will be gushing 750,000 barrels of oil per day. The field, containing an estimated 2.7 billion barrels, will flow for decades, generating copious cash for Equinor, which is 70% owned by the government. Norwegians are of two minds when it comes to oil. It's made them among the richest people in the world, filling up the coffers of their $1.2 trillion sovereign wealth fund. But these environmentally conscious Scandinavians are also sheepish about its environmental impact. The company changed its name in 2018 from Statoil to Equinor (i.e., Equity+Norway), and new CEO Anders Opedal has pledged to make it carbon-friendly as the first "net-zero" oil company by 2050.

In the interest of optimizing efficiency, Equinor has outfitted Johan Sverdrup with thousands of sensors monitoring everything from how much oil is flowing through pipelines, how fast new wells are being drilled, to how much diesel fuel the facility is consuming. All told, Johan Sverdrup's sensors generate the equivalent of 15 high-def video streams, which are transmitted continuously to Houston-based startup Data Gumbo, which encodes the most important data onto a proprietary, immutable blockchain ledger called GumboNet.

"We use data from the field to confirm transactions, and we store that data in the chain. Customers manage the distributed ledger," explains Data Gumbo CEO Andrew Bruce. "No party can change any part of the transaction that provides the trust. There's not two versions of the truth."

The platform thus enables dozens of "smart contracts" between Equinor and its army of suppliers. "In the old days it would take weeks to reconcile orders with records, weeks more for contractors to get paid," says Bruce. Now a smart contract can be programmed to trigger payment to a drilling contractor when a sensor on a rig indicates that their drillbit has reached a certain depth. Contractors like Baker Hughes "get paid sooner and for the correct work," says Bruce. This gives Equinor leverage to negotiate for cheaper contracts, and to reduce both its ranks of back-office bean counters and working capital. Equinor figures that in its first year of operations Johan Sverdrup saved $20 million thanks to Data Gumbo.

Data Gumbo has 20 customers so far. Equinor, its most bullish adopter, began testing the GumboNet in 2019 with simple pilot projects like monitoring trucks hauling water for its U.S. shale fracking operations. It has since announced plans to deploy its platform at ten big projects, including its new Dogger Bank offshore wind project (set to be the world's largest). It has also acquired an equity position in Data Gumbo, investing $6 million into the Houston-based company. And it's not alone, Saudi Aramco, the biggest of Big Oil, has invested $4 million, and is considering deploying GumboNet for some of its own operations. Total fundraising is $20 million. "We have to show a compelling cost saving," says Bruce. "The oil crash was good for us in that it showed the status quo is no longer good enough. Companies have to reduce expenses."

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Scope 1
All GHG emissions from plant and equipment owned by us

Scope 2
All GHG emissions associated with the energy we purchase

Scope 3
All GHG emissions from everything else we buy or do across the entire supply chain

‘On average, **Scope 3 accounts for over 70%** of an organisations GHG emissions’

Deloitte

Scope 3
All GHG emissions from everything else we buy or do across the entire supply chain

The GHG Protocol Standards form the basis for other reporting standards to build upon, such as ISO14064 and PAS 2060.

GHG Protocol reports emissions in C02 equivalent for city and business activities.

First published in 2001 by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). Over 9/10 fortune 500 companies use this standard.

The Greenhouse Gas Protocol is a globally accepted standard for the reporting and disclosure of scope 1, 2 and 3 GHG Emissions.

GREENHOUSE GAS PROTOCOL


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

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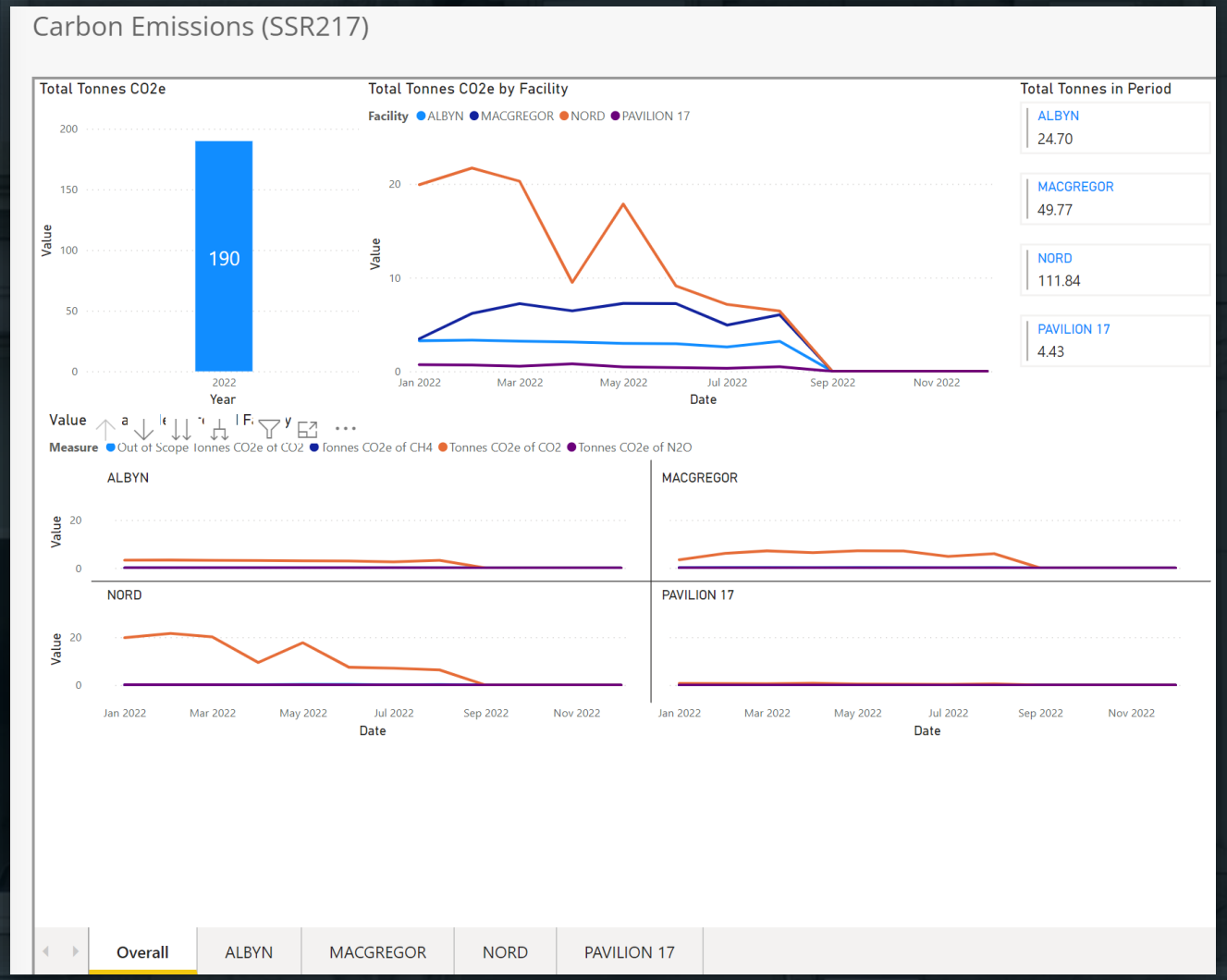
- Proof of Carbon Emissions
- Proof of Carbon Credits
- Proof of Redundancy of Carbon Credits
- Proof of Embodied Carbon

Crystal Chain

SLING SHOT

*Consumer Action Required



IGRIS - Carbon Emissions (SSR217) (global-ec.com)

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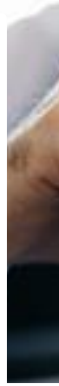
27


Zero Emission Hydrogen Bus
H2
hydrogen bus
LK60 HPE




Aberdeen
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Zero Emission Hydrogen Bus
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TORUS BGP Version 3.5.2.0

Canadian Natural

Search

Home > Project > 90375 (Ninian Central Platform)

R4

Replacement pipe support - 6"-P-021098-F1A
NC1300387 / 11.23
2023 - Q4 NCP (MCDRs)

Status	Budget	Schedule	Quality
Active 100%	On Budget	On Schedule	No Issues

Initiation	FEED	Survey	Detail Design	Procurement	Fabrication	Construction	Commissioning	Close-Out
			Progress 100% Start Date 27 January 2023 End Date 08 September 2023 Completed Issue Rev C1 Deliverabl... Issue Rev C1 Workpack 65kg C02e		Progress 100% Start Date 15 May 2023 End Date 02 June 2023 Completed 120kg C02e	Progress 0% Start Date 23 October 2023 End Date 26 January 2025 Unapproved 75kg C02e		

Project Notes

Links

Title	Type	Source System
NC1300387	Maximo Anomaly/M...	Manual
NC1300387	R2S	Manual

Documents

Name	Rev	Status	Rev Date	Download
16-90375-CO-WPK-0001	C1	Complete		
NINIAN CENTRAL - PIPING ANOMALIES 2023 - WORKPACK - REPLACEMENT PIPE SUPPORT - LINE NO 6"-P-021098-F1A-S - NC1300387				
NC235200-TOR-PI-WPK-00011.PDF			08 Sep 2023	
16-90375-PI-PIS-0001-001	C2	Complete		
NINIAN CENTRAL - PIPING ANOMALIES 2023 - REPLACEMENT PIPE SUPPORT PS-01 DETAIL - LINE NO 6"-P-021098-F1A-S - NC1300387				
NC235200-TOR-PI-PIS-00001 C2.PDF			04 May 2023	

Readiness Flags

WP Ready	Materials	SPRAF	Asbestos Check	Isol. Conf.	Scaffold
✓	✓	★	★	✗	★

Material Tracking

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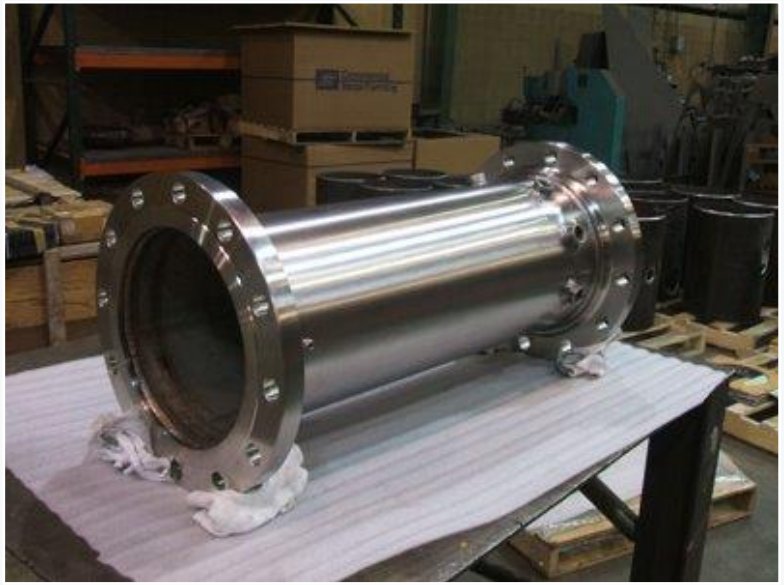
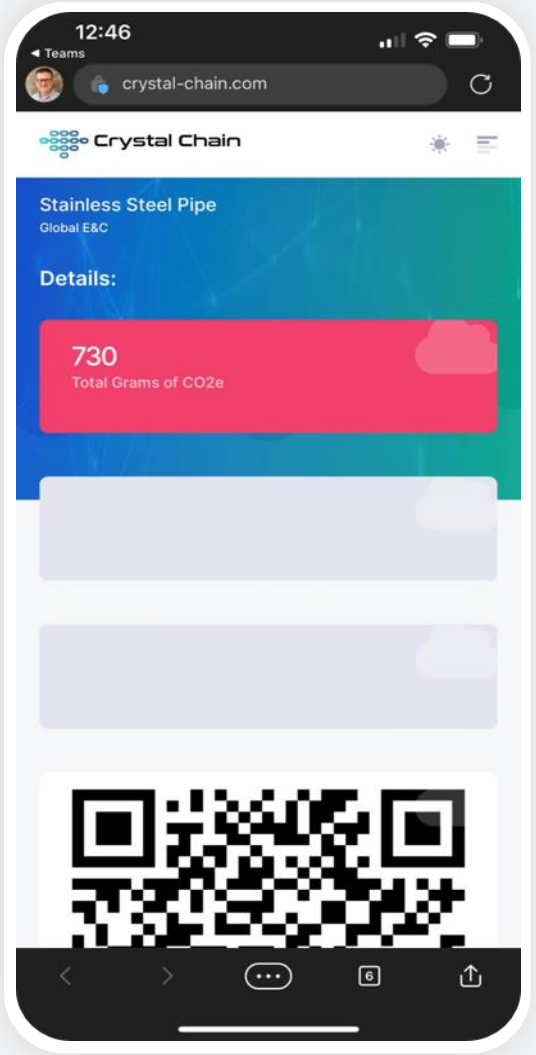
Stainless Steel Pipe Spool





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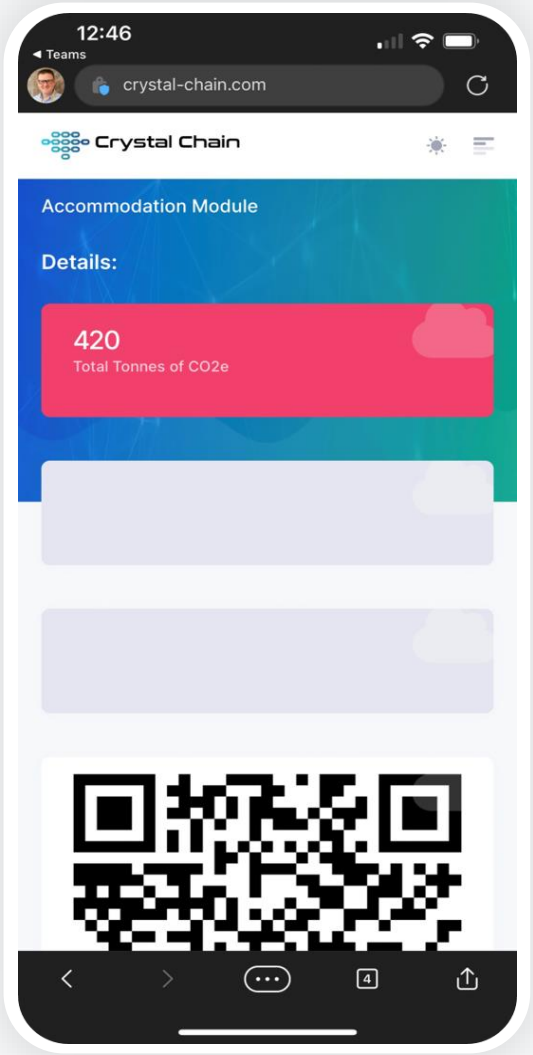

Accommodation Module

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