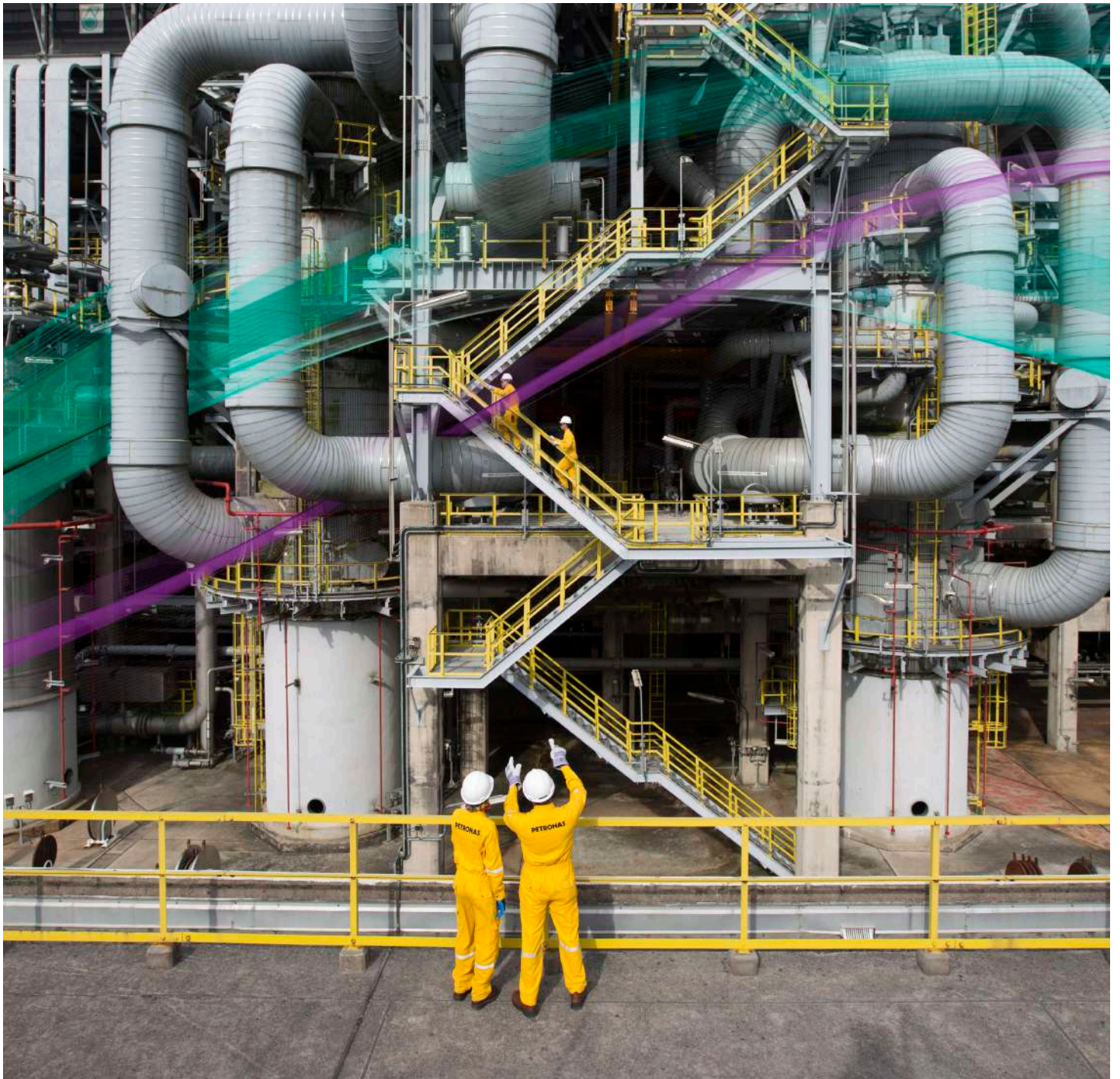


PETRONAS embraces digital technology for responsible, sustainable energy delivery.

As a progressive energy and solutions provider, PETRONAS remains steadfast in the commitment to reduce carbon footprint.





As a progressive energy and solutions provider, PETRONAS proudly takes the lead in delivering energy responsibly and sustainably. In today's world, there is a growing awareness not only of the importance of reducing greenhouse gas emissions (GHG) but also of the imperative to address climate change.

Parallel to this cause, PETRONAS is committed towards reducing emissions and carbon footprint in a sustainable manner. To that end, we have set a clear and ambitious goal: achieving net-zero carbon emissions by 2050. This aligns perfectly with Malaysia's own aspiration to become a net-zero GHG emissions nation by 2050.

Embracing this mission at the forefront of our operations, we have embarked on PETRONAS' Net-Zero Carbon Emissions 2050 Pathway that guides our approach to lowering overall GHG emissions.

As part of our decarbonisation efforts, PETRONAS is pursuing multiple pathways and approaches to decrease our carbon footprint and safeguard the environment.

In this article, we explore PETRONAS' digitalisation initiatives to enhance energy and production efficiency, building on existing operational excellence with technology and innovation. We embed digital solutions and implement alternative approaches within the LNG production process to chart our path for sustainability that starts at home.



Our aim is to produce liquefied natural gas (LNG) while using the least amount of energy possible.

To optimise energy consumption, PETRONAS has implemented a digital solution, known as ARIES, at the PETRONAS LNG Complex (PLC) in Bintulu, Malaysia.

ARIES is designed to make the gas liquefaction process more energy efficient, as it runs a closed-loop simulation alongside existing plants' advanced process controls (APC) to convert excess BOG or feed gas from fuel gas savings back into LNG production. This meticulous utilisation not only fine-tunes the production cycle for optimal power consumption but also substantially reduces our carbon footprint and production costs.

In addition to ARIES, we've also implemented hardware support for fuel gas optimisation. Known as the Utility Real-Time Optimiser (URTO), URTO is used as an advisory tool, providing real-time data from physical equipment. It optimises and ranks production modules based on their efficiencies and will prioritise the use of more efficient modules, thus leading to fuel gas savings and more streamlined production.

Further down the production line, PETRONAS has also put forth alternative approaches in flaring, in line with our key strategy of achieving zero routine flaring and venting.

The practice of flaring is mainly used to burn off excess gas, but it is a practice that can be inefficient and may pose a risk to the environment. In light of this concern, PETRONAS takes a proactive step with recovering ship vapour return (SVR). Instead of burning the excess vapour, we are developing methods to capture and utilise it for further reliquefaction, thereby ending flaring and minimising carbon emissions.



Thanks to the dynamic duo of URTO and ARIES in the LNG production process, PETRONAS achieved a GHG reduction of 88,000 metric tons of CO₂ equivalent in 2022.

While the dedicated teams at sea and onshore involved with our SVR efforts have helped us achieve a reduction of approximately 5,400 tonnes of CO₂ equivalent from 34 loading operations since January 2023. These cumulative achievements mark PETRONAS' milestones in reaching our goals for the future.

With our vision of net-zero carbon emissions lighting our way, PETRONAS forges ahead with advanced technology and energy-efficient methods, to decrease the overall environmental footprint of energy production. As we implement these methods across the LNG value chain, countless possibilities await as we journey towards enhanced operational excellence and reduced wastage – for a cleaner, greener future that benefits us all.