

Business Review – Technology and Innovation

Technology and quality control

Borealis' proprietary Borstar® technology continues to provide a clear competitive advantage, enabling the delivery of differentiated products with superior performance characteristics that meet stringent customer requirements while supporting our sustainability and circular economy objectives.

This focus is critical to maintaining organisational readiness in an increasingly dynamic operating environment and to positioning Borouge to capture sustainable, long term growth opportunities. The launch of Bormed™ LE6607 PH in 2025 exemplifies this approach, enabling the development of a resilient regional medical supply chain and supporting local healthcare manufacturers in reducing risk, shortening lead times, and enhancing patient safety. More broadly, we continue to advance an extensive R&D programme spanning high value applications across healthcare and hygiene, clean energy and electrification, and sustainability driven circular economy solutions. In particular, next generation circular products are being developed to address critical challenges related to food waste reduction and recyclability, reinforcing our role as a provider of differentiated, future ready solutions.

Innovation Centre

Our Innovation Centre in Abu Dhabi, with over 1,400 active patents, continues to drive significant advancements in polyolefin solutions. In 2025, key achievements included:

- Launch of high-value LDPE healthcare grade, Bormed™ LE6607-PH, in the UAE.
- Launch of a fully-recyclable, mono-material barrier stand-up pouch solution, incorporating our Borstar® FB560.

- Received Asian Oil and Gas Award 2025 for BorSafe™ HE3492-LS-H, PE100-RC material.
- Inauguration of a joint innovation laboratory on advanced lightweight polyolefin solutions with ROX Motor in Shanghai.

Capturing future growth

Borouge is structurally well positioned to outperform industry peers across the cycle, supported by a differentiated product portfolio and a clear focus on value accretive growth. In addition to developing solutions that address the world's most pressing challenges, we continue to deliver product premia above benchmark prices. This capability is underpinned by our strategic focus on differentiated products and disciplined capacity expansion, embedding scalability into both our long term strategy and day to day operations.

The Borouge 4 strategic expansion project represents a significant step change in scale, increasing production capacity by almost one third while further strengthening our innovation platform. Together, these enhancements are expected to support sales growth in major markets and reinforce our ability to generate resilient, long term shareholder value.

Innovation remains a core pillar of Borouge's business strategy, underpinning our ability to achieve and sustain operational and commercial excellence across the organisation.

Throughout the year, we remained focused on ensuring that our product portfolio remains relevant, competitive, and well aligned with key global megatrends.

Case study

BH555MO

high-performance high-flow polypropylene for rigid packaging needs

BH555MO enables up to

50%

PCR content incorporation without compromising performance

BH555MO is a best-in-class block polypropylene (PP) grade engineered for exceptional impact strength and stiffness, even at low temperatures, making it ideal for demanding applications such as industrial pails, crates, pallets, and heavy-duty toolboxes. BH555MO offers superior processability, allowing faster cycles, smoother mold filling, and reduced energy use. Our optimised rheology enables complex designs without compromising strength, making it ideal for durable, everyday products.

This new product which enables up to 50% post-consumer recycled (PCR) content incorporation without compromising performance enhances our differentiated PP portfolio. Its approval by Keter for Milwaukee Tool Boxes underscores its commercial viability and societal impact by supporting durable, sustainable consumer goods. Aligned with global trends in circular economy and carbon reduction, BH555MO exemplifies our commitment to future-proofing our portfolio and driving profitability through sustainable innovations.

Digitalisation and excellence driving the future of polyolefins through AI-powered innovation

AI and digital driven transformation

Value generation

USD 717m

Through its AIDT programme

Borouge continues to implement AI and digital-powered autonomous solutions across our value chain, covering Operations, Asset Management, Supply Chain, Sales & Marketing, Innovation & Research, HSE and our Corporate functions. Our comprehensive transformation is anchored on strategic partnerships with world-leading service providers such as Honeywell, Yokogawa, Siemens, SAS, Emerson, Maersk, MBZUAE, and Gecko Robotics in addition to strong in-house capabilities.

This foundation enables the deployment of advanced AI and digital solutions, including autonomous operations, storage probability prediction, demand planning, hazard identification through computer vision, robotic inspections, and real-time optimisation to name few.

A critical pillar of this transformation is workforce upskilling, delivered through the 'Excite, Educate and Position' framework, ensuring our teams are equipped to thrive in a digitally driven future.

As we advance and implement a range of cutting-edge AI and digital solutions as part of our transformation journey, some of the key initiatives include:

AI enabled autonomous operations

In 2025, we successfully advanced Phase I of this initiative focused on Safe Operations in close collaboration with our strategic partners. The programme aims to equip our operating facilities with AI driven autonomous control rooms, powered by agentic AI to enable real-time decision making, unlock value creation, and proactively mitigate operational risk.

This initiative is designed to accelerate growth, enhance safety and asset integrity, and reduce production losses by leveraging advanced data analytics, anomaly detection, and predictive pattern modelling. These insights activate interconnected agentic AI solutions across operations, enabling seamless field coordination, effective shift handovers, management of transient operational activities, plant optimisation, and flawless communication. The project is underway with our strategic partners across the EU2 cracker covering the Gasoline Redistillation Unit furnace and the OCU unit (dimmer section) as well as the EU3 cracker for the C3 splitter column furnace. Robust execution has commenced to ensure successful deployment over the coming years.

3D printing and digital warehouse

Borouge as successfully completed a POC by producing more than 450 critical spare parts through 3D printing, which significantly reduced cost, lead time and inventory carrying cost. We are aiming to deploy this digital technology at full scale, having identified over 15,000 potential spares to digitise while more than 1,500 spares are planned during 2026.

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450

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Robotic sphere inspection

Inspection of spherical tanks using robotics was successfully performed during the Borouge 3 plant turnaround in 2025. A wall-climbing robot was deployed to conduct ultrasonic thickness measurements on the tank to assess its structural integrity and overall health. This AI-enabled solution demonstrated enhanced safety and enabled faster inspection, thus reducing turnaround time and costs.

Crackers front-end online optimisation

By integrating AI, process modelling, and real-time analytics, our crackers will consistently operate at their most efficient, profitable, and sustainable levels by dynamically adjusting over 2,500 process parameters and 70 performance targets while maintaining over 500 operational constraints.

2,500

process parameter

70

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Supply chain agent hub

We are transforming traditional logistics and supply chain operations to fully AI and digitally enabled processes through centralised digital hub, by data integration and storage, cleansing and knowledge mapping. The hub links external data sources and global supply chain factors to enhanced customer regularity, price forecast, demand planning and inventory management. We are now working with our leading shipping line partners to integrate their systems with the maximised yield of the Agentic Hub.

Knowledge based sales system

Our sales team benefits from an AI powered knowledge management system built on 25 years of structured and unstructured data. Leveraging large language models (LLMs), the platform enables faster and more accurate access to information, strengthening decision making, improving marketing efficiency, and enhancing customer service.

Realwear Z1 navigator

We successfully deployed Realwear Z1 Navigator at full scale, beginning with a Proof of Concept in early 2025. The intrinsically safe rugged wearable headset is designed for frontline field teams working in hazardous environments, who benefit from a voice-activated, hands-free device that displays digital information while they work on site. It has drastically enhanced productivity, safety and efficiency in tough real-world environments where traditional electronics cannot be used. Our field team have yielded benefits of remote expert assistance, improved inspection and data capture, reduced downtime and errors.

Borouge's robotics process automation

AI is deployed alongside Robotic Process Automation (RPA) to automate repetitive tasks across our operations, ensuring consistent, accurate, and error free execution while reducing manual workload and human error. This initiative enhances process reliability and speed, supports scalable operations, and advances our broader digital transformation agenda.

Launch of MEERA GPT agent

In January, our Digital and Analytics solutions and Sustainability teams partnered to launch the Borouge Sustainability Agent, Meera GPT. The tool enables ADNOC employees to easily access and learn about sustainability across Borouge, including our goals, strategies, governance framework, and key initiatives. This initiative was recognised as first runner up in the Borouge Excellence Awards under the AI & Digitalisation stream.

Recognition, reward and upskilling programme

Our AI and Digital transformation journey earned strong external recognition, reinforcing our position as an industry leader in innovation. Key accolades include the GPCA Supply Chain Innovation Award and two Industry Eagle Gold Awards for S&OP Quintiq and Bronze for our AI driven demand planning solution. In addition, Borouge was named a finalist at both the IChemE Global Awards and the Gulf Energy Excellence Awards for our real time optimiser, further validating our commitment to embedding intelligence and automation across operations to drive long term value creation. A notable highlight was our impactful showcase at ADIPEC 2025, which attracted industry leaders and positioned Borouge at the forefront of transformative advancements across the value chain.

Building on this momentum, we continue our strong focus on innovation and digital adoption, structured around three core pillars: Excite, Educate, and Position. As part of this approach, we launched a comprehensive Upskilling Programme to strengthen workforce capabilities through a broad range of internal and external learning opportunities. The initiative has delivered strong results, with 64.4% of employees (1,700 individuals) actively participating, exceeding the annual target of 60%.

