

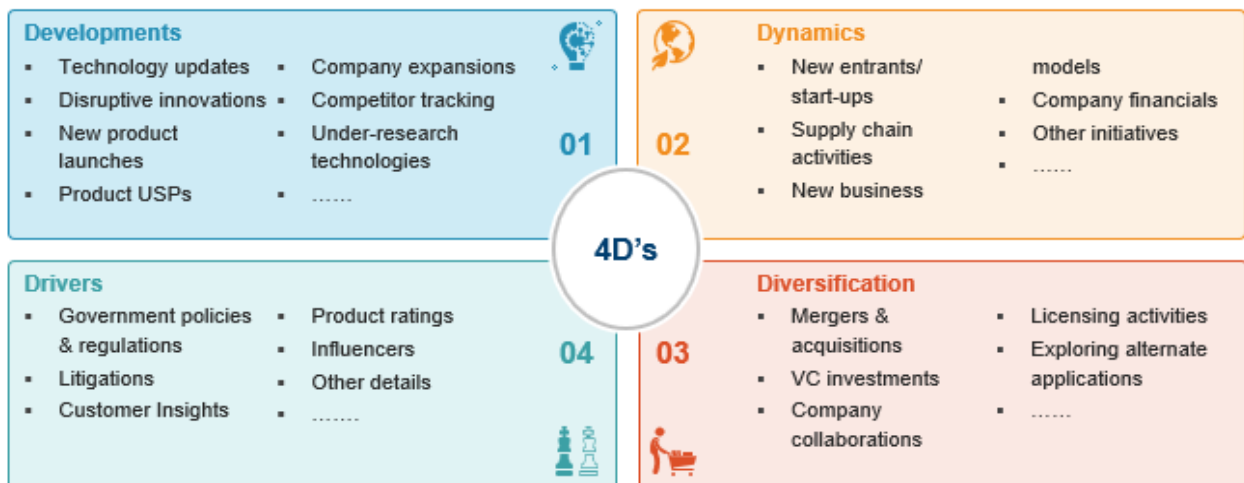
INTELLOTRACKER

E – FUELS

May 2023



ARANCA'S QUARTERLY SECTORIAL UPDATE ACROSS FOUR DIMENSIONS....





DEVELOPMENTS

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| Company Expansions | | Porsche has invested \$100 million into the development of e-fuels. Three-quarters of the \$100 million went to HIF Global, a synthetic fuels research company that turned around and built a prototype factory called Haru Oni near Punta Arenas, Chile. Source: Road and Track |
| New Product Launch | | A new platform will be established by the German Aerospace Research Centre DLR with the goal of accelerating the creation of aircraft power-to-liquid (PtL) e-fuels. A first grant of €12.7 million from the German Federal Ministry for Digital and Transport has been given to DLR to cover the planning phase of the new platform. Source: Flight Global |
| Technology/Innovations | | Honda recently announced to extend a lifeline to the internal combustion engine (ICE) for its performance cars. The automaker is presently doing feasibility studies on low-carbon e-fuels that could prolong the use of the combustion engine in its high-performance automobiles, trucks, and aircraft at least until 2040. Source: Autocar |
| Technology/Innovations | | The first 2,600 liters of e-gasoline manufactured from captured CO2 and green hydrogen from the Haru Oni project in southern Chile is now on its way to eastern England, where it will be tested by Porsche. Source: Hydrogen insight |



DIVERSIFICATION

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| Company Collaboration | | To accelerate the development of low carbon e-methanol fuel for the marine sector, Carbon Clean collaborated with Ørsted. The technology developed by Carbon Clean will be used to capture carbon and use it as a feedstock to create e-methanol. Source: Business Green |
| Company Collaboration | | Liquid Wind has partnered with Umeå Energi to build Sweden's third e-methanol plant for shipping fuel. The partners have decided to establish a facility at the Däva cogeneration plant in Umeå capable of producing 100,000 tons of green e-methanol per year and capturing 230,000 tons of carbon dioxide annually. Source: Splash247 |
| Company Collaboration | | Siemens Energy has been selected by Houston-based electro fuel (eFuel) startup HIF Global to provide electrolyzers to a new e-fuel facility in Matagorda County, Texas. Source: Offshore Energy |
| Company Collaboration | | NTPC and Tecnimont have signed a non-binding memorandum of understanding (MoU) to jointly evaluate and explore the possibility of developing a commercial-scale green methanol production facility at NTPC project in India. The green methanol project involves capturing carbon from NTPC power plants and converting it into green fuel for various applications. Source: Offshore Energy |
| Company Collaboration | | A Memorandum of Understanding (MoU) was signed between Norsk e-Fuel and Gen2 Energy to work together on making Mosjøen as a key location and workplace for Norway's green sector. Source: Offshore Energy |
| Company Collaboration | | Ørsted has partnered with Siemens Energy to build Europe's largest commercial production facility for carbon-neutral marine fuels. The plant is expected to produce up to 50,000 metric tonnes of e-methanol per year from renewable energy and biogenic carbon dioxide from 2025. Source: Offshore Energy |



DRIVERS

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| Government policies | | The European Commission devised a plan to permit the sale of new automobiles with internal combustion engines after 2035, provided that they solely use climate-neutral e-fuels. The plan might allow automakers to continue offering combustion-engine automobiles after 2035. Source: Reuters |
| Government policies | | Germany welcomed the EU executive's plans to allow sales of combustion engine vehicles running on e-fuels. The German Ministry of Transport has requested legislation permitting their registration after 2035. Source: Economic Times |
| Other details | | Japanese automakers applauded a last-minute agreement that will exempt cars running on e-fuels from the European Union's landmark law to end sales of CO2-emitting new vehicles in 2035. Toyota Motor officials said the exemption marks a significant step for the survival of combustion-engine cars. Source: The Asahi Shimbun |

SOLUTION PORTFOLIO – TECHNOLOGY RESEARCH & ADVISORY

| IP Strategy | Technology Intelligence | Growth & Strategy |
|---|--|--|
| <p>How best can we proactively manage and monetise our technical knowhow / intellectual property?</p> | <p>How best can we keep abreast of technology trends, competitor activity and headwinds / tailwinds in our domain?</p> | <p>Which technologies do we invest in? How do we ensure quick wins? Speed to market?</p> |
| <ul style="list-style-type: none"> IP Portfolio Analysis | <ul style="list-style-type: none"> Competitor Benchmarking | <ul style="list-style-type: none"> R&D Strategy Roadmaps |
| <ul style="list-style-type: none"> IP Monetisation | <ul style="list-style-type: none"> Tech / IP Landscapes | <ul style="list-style-type: none"> Technology Scouting |
| <ul style="list-style-type: none"> IP Valuation | <ul style="list-style-type: none"> Technology Watch | <ul style="list-style-type: none"> Open Innovation |
| <ul style="list-style-type: none"> Prior Art Searches | <ul style="list-style-type: none"> Market Analysis / Trends | <ul style="list-style-type: none"> Product Development |



GROWTH ADVISORY



INVESTMENT RESEARCH & ANALYTICS



VALUATION & FINANCIAL ADVISORY



TECHNOLOGY RESEARCH & ADVISORY



PROCUREMENT & SUPPLY CHAIN INTELLIGENCE

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