

Complete Plant for the Manufacture of Ethylene Dichloride (EDC), New 2025

EDC is primarily used in the production of vinyl chloride monomer (VCM), which is essential for PVC production.

The Vynova Runcorn site operates a fully integrated ethylene dichloride (EDC) manufacturing plant, producing high-purity EDC for onward supply to Vynova's downstream vinyls operations, primarily in Germany but also the open market. The plant utilises ethylene delivered by pipeline and chlorine supplied cross-site, converting these feedstocks through a continuous direct chlorination process followed by downstream purification.

The EDC operation comprises a large, fixed chemical process installation including reaction, washing, distillation, residue treatment, storage and loading facilities, together with extensive utilities, pipe racks, control systems and environmental abatement infrastructure. The assets are predominantly static, site-specific plant, engineered for long-term operation within a highly regulated industrial environment.

Following completion of Project Summer, the new high-performance EDC plant has been almost fully commissioned and is now the sole operational EDC process on site, with the older EDC reactor units and associated legacy equipment permanently taken out of service. The commissioned plant includes new reactor vessels and reaction loops, modernised heat-exchange systems, and a new EDC wash and purification section incorporating large pressure vessels and upgraded separation equipment. Downstream, the plant feeds into multi-stage distillation columns, product storage tanks and road-loading facilities, enabling the production and export of EDC to the required purity specification.

Environmental control and compliance assets form a key part of the commissioned installation. Process residues and vents are routed through high-temperature incineration systems with downstream quench and scrubbing, while a new dedicated Effluent Treatment Plant (ETP) treats all process and area effluents on site in accordance with current BAT standards. The upgraded configuration also incorporates new and modified vent scrubbers, re-engineered vent routing, and enhanced monitoring and control systems integrated into the site DCS and safety-instrumented systems. Supporting assets include new civil foundations, structural steel, pipe racks, access platforms, electrical distribution and instrumentation installed as part of the project.

In asset terms, the EDC plant now comprises a modern, fully commissioned core process block, replacing older legacy reactors and materially improving energy efficiency, emissions performance and long-term operability. The resulting asset base is characterised by long-life, highly specialised chemical process equipment, with limited alternative use outside an integrated EDC manufacturing operation, but forming the central productive capability of the Runcorn site.

The operations team are knowledgeable and skilled in running the plant, which is now the most modern EDC plant in Europe.

Headline equipment:

- **Reactor trains (HPE Plant)**
 - Designed capacity 440ktes crude EDC annually, 335ktes pure EDC
 - Direct chlorination reactors (and associated mixing / reaction vessels, heat exchangers and temperature control).
 - The new configuration – now referred to as the HPE Plant – replaces older reactors and is designed to be larger, more energy-efficient and cleaner in emissions.

- **EDC purification and distillation**
 - EDC wash section with large pressure vessels and wash columns
 - Multiple distillation columns, condensers and reboilers to meet high-purity specs for export.
 - Product storage tanks and transfer pumps feeding site export facilities.
- **Residue and vent incineration**
 - Dedicated incinerator lines handling up to c. 30,000 t/yr of chlorinated residues, firing at ~1,200°C with 2-second residence time and then quench and scrubbing
 - Vent incinerator (with 60 m stack) combining process vents before final release, backed up by redesigned caustic scrubbers on key vent lines
- **Effluent and surface water systems**
 - Historically, process and area effluents went to the neighbouring INEOS/INOVYN effluent plant.
 - Under the current upgrade, Vynova is adding its own dedicated Effluent Treatment Plant (ETP) with neutralisation and stripping of organics before discharge, plus full monitoring at the new E1 discharge point.
- **Loading and logistics**
 - Road loading facilities for EDC and associated streams, including the upgraded “6th Avenue” dual-bay loading setup following rationalisation of older road-loading on the VDC plant.
 - EDC is exported by road to ship loading facilities for global customers.
- **General site infrastructure**
 - Steel pipe racks, access platforms, stair towers, control buildings, workshops and labs.
 - Power distribution, instrumentation, DCS/PLC process control systems and safety instrumented systems.

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