

DeltaV Architecture for a Greenfield HEFA SAF Facility

A concise engineering and procurement brief for mapping HEFA process areas to DeltaV control, safety, I/O and lifecycle-support layers.

100,000 t/y	35,000 t/y	2028	HEFA
Target SAF capacity	Target by-products	Target first fuel	Conversion pathway

Project context

The referenced European greenfield project is designed around hydroprocessed esters and fatty acids (HEFA), using residual fats and greases as feedstock. The publicly described automation scope includes the DeltaV distributed control system, DeltaV safety instrumented system, fire-and-gas functions, AMS Device Manager and distributed CHARMS.

Public project information does not disclose a final hardware bill of material. Every model in this brief is therefore a procurement reference only. Exact assemblies, system release, firmware, redundancy, carriers, I/O termination and certification must be verified against the approved project documentation.

Four operating areas and their automation layers

01 Hydrotreating and deoxygenation

Signal: 4-20 mA/HART, RTD and thermocouple loops

DeltaV layer: AI, AO and TC/RTD CHARMS

Engineering focus: High-pressure control and catalyst-bed temperature profiles

02 Residual-fat pretreatment

Signal: Pump status, tank level and flow

DeltaV layer: DI CHARM plus conventional AI/DO

Engineering focus: Feedstock conditioning, dosing and stable flow to hydroprocessing

03 Hydrogen production

Signal: Critical pressure loops and package communications

DeltaV layer: PROFIBUS or Ethernet with PK, SQ or SX nodes

Engineering focus: Package integration and continuous hydrogen circulation

04 Emergency shutdown and F&G;

Signal: Safety-rated trips, detectors and solenoids

DeltaV layer: DeltaV SIS, safety I/O and F&G; architecture

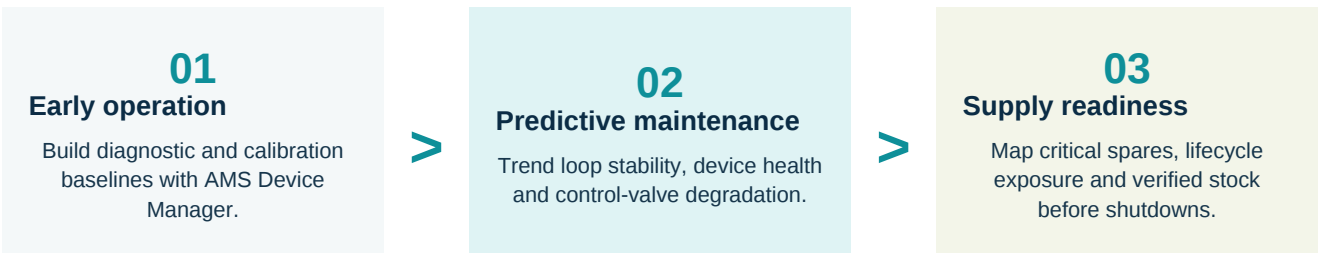
Engineering focus: Independent shutdown logic, voting and final-element action

Control-node selection is an engineering decision

SX, SQ and PK controllers serve different capacity and integration roles. The family name is never sufficient evidence for interchangeability.

SX High-capacity enterprise node Reference: KJ2005X1-BK1 / 12P4688X052 / SE3007 Verify assembly, release, firmware, carrier and redundant partner.	SQ Scaled S-series process node Reference: KJ2005X1-SQ1 / 12P6383X052 Verify capacity, licensing, backplane position and redundancy.	PK Standalone modular-skid node Reference: DeltaV PK Controller family Verify protocols, local I/O, database synchronization and plant integration.
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Post-commissioning lifecycle model



Procurement reference matrix

DCS CONTROLLERS KJ2005X1-BK1 SX; KJ2005X1-SQ1 SQ Verify: Assembly, firmware, DeltaV release, carrier and redundancy	CHARM I/O KL2101X1-BA1; KL2101X1-BB1 Verify: CIOC generation, carrier, revision and system release
DISTRIBUTED CHARMS KL2103X1-BA1; KL4202X1-BC1 Verify: Housing, terminal type, IS or non-IS application	TEMPERATURE I/O KJ3224X1-BA2 Verify: Input type, terminal block, carrier and channel configuration
SIS AND POWER SLS1508 / CSLS; KJ4110X1-EA1 Verify: Safety architecture, firmware, certification, voltage and load	FIELD MAINTENANCE TREXLHPNAWS1S AMS Trex Verify: Communication module, licensing, accessories and service condition

ABOUT THE AUTHOR	TECHNICAL PARTS ENQUIRY
Frida supports end users, distributors, contractors and system integrators with hard-to-find industrial automation spare parts. She helps plants build stronger RFQs with verified part numbers, stock, lead times, technical documents, product photos and pre-shipment inspection.	Contact: Frida Email: sales5@mooreplc.com WhatsApp: +86 153 5940 8275 Website: www.mooredcs.com