AXOVENTRA MOTION SYSTEMS

CEX-120 technical specification

Cold-end expander reference package for continuous cryogenic refrigeration studies.

Illustrative engineering visualization. Final production geometry may differ.

DOCUMENT CODE	AXO-CEX-120-TDS-R02
REVISION / DATE	R02 / 23 OCTOBER 2026
STATUS	ENGINEERING REVIEW
PUBLICATION CLASS	Uncontrolled public review copy
INTENDED USE	Preliminary technical orientation and enquiry preparation only

PRE-RELEASE TECHNICAL INFORMATION

Do not use this document for procurement, fabrication, installation, operation, maintenance, or safety decisions. Final values require approved project data and controlled engineering release.

01 / DOCUMENT CONTROL

Purpose, authority, and limits

This issue improves technical clarity and document control while preserving a strict boundary between a draft reference platform and released equipment.

Document purpose

CEX-120 is presented as a reference configuration for preliminary duty review. It does not establish guaranteed performance, approved dimensions, pressure-temperature rating, material grade, certification, code compliance, manufacturing completion, or fitness for a particular service.

Authority hierarchy

Priority	Authority
1	Client-controlled product master, approved drawings, certificates, and test records
2	Project requisition, approved datasheet, specifications, and purchase order
3	Released calculations, drawings, inspection/test records, and manuals
4	This public engineering-review document

Visual and content status

Item	R02 status
Product identity	Client draft; approval pending
Numeric ranges	Reference only; conditions and evidence pending
Image	Illustrative; provenance and public-use approval pending
Standards	Applicability pathway only; no conformance claim
Contact/facility claims	Not published until client-confirmed

02 / REFERENCE CONFIGURATION

What the model currently means

Cold-end expander reference package for continuous cryogenic refrigeration studies.

Published draft facts

Attribute	R02 reference basis
Draft reference flow	120-2,400 Nm3/h; client draft, not approved
Temperature basis	Selected from process and materials review
Integration	Cold-box or skid interface by project
Protection	Speed, vibration, temperature, and process monitoring

Intended study contexts

Application	Qualification boundary
Air separation cold box	Suitability depends on approved fluid, operating cases, interfaces, hazards, and project requirements.
LNG studies	Suitability depends on approved fluid, operating cases, interfaces, hazards, and project requirements.
Industrial gas production	Suitability depends on approved fluid, operating cases, interfaces, hazards, and project requirements.
Hydrogen liquefaction studies	Suitability depends on approved fluid, operating cases, interfaces, hazards, and project requirements.

Configuration boundary

Cold-end expansion platform for preliminary cryogenic process and integration studies. Equipment scope, geometry, materials, auxiliaries, controls, dimensions, ratings, and tests remain project-specific.

03 / SELECTION INPUTS

Data required before selection

Selection must use the complete operating envelope. A nominal model, flow, size, or pressure class cannot replace the approved project basis.

01 Fluid composition, purity, phase envelope, contaminants, and cleaning limits

02 Pressure-temperature-flow cases including thermal transients and trips

03 Minimum design metal temperature and expected thermal cycles

04 Cold-box, skid, insulation, purge, drainage, instrumentation, and removal interfaces

05 Containment, leak testing, materials evidence, preservation, and document scope

Operating-case matrix

Case	Minimum data to record
Normal / rated	Composition, phase, flow, pressure, temperature, utilities, control state
Minimum / turndown	Stable operating requirement, recycle/bypass, control margin
Maximum	Maximum continuous conditions and duration
Start-up / shutdown	Sequence, ramp rates, thermal state, utilities, permissives
Trip / upset	Initiating event, transient conditions, safe state, relief interfaces

Enquiry output

Engineering should return a data-gap register, preliminary selection basis, responsibility boundary, standards list, proposed verification plan, and controlled document schedule.

04 / ENGINEERING VERIFICATION

Work required to close the release gate

The following checks are not optional marketing detail. They are the evidence required to convert a reference platform into a project configuration.

01 Gas/material compatibility and low-temperature mechanical-property review

02 Materials, joining, seals, cleanliness, containment, and leakage basis

03 Thermal movement, nozzle loads, supports, insulation, and cold-end integration

04 Rotor system, monitoring, control, start-up, shutdown, and trip review

05 Leak, functional, mechanical, and performance-test scope

Open model checks

01 Validate the draft flow range at model/configuration level.

02 Confirm minimum design temperature, materials, cleaning, and containment.

Release evidence

Discipline	Expected controlled output
Process / application	Approved duty cases, calculations, operating envelope, assumptions
Mechanical / materials	Configuration, ratings, materials, interfaces, drawings, design reviews
Controls / instrumentation	Narrative, cause-and-effect, alarms, trips, set points, interfaces
Quality / testing	ITP, procedures, results, deviations, traceability, release status
Lifecycle	Installation, commissioning, operation, maintenance, spares, preservation

05 / STANDARDS PATHWAY

Applicability, edition, and evidence

A standards reference identifies a review path. It is not a statement that this model is certified, stamped, licensed, monogrammed, or compliant.

Reference	R02 use
ISO 21010:2017	Addresses gas/material compatibility for cryogenic vessels; it does not establish low-temperature mechanical properties.
API 617	Potential machinery scope pathway when the selected architecture falls within the standard.

Standards review questions

01 Does the selected equipment type fall inside the standard scope?

02 Which edition, addenda, errata, purchaser supplements, and jurisdiction apply?

03 Which optional or supplemental requirements are invoked by the project?

04 What design, manufacturing, examination, testing, marking, and documentation evidence is required?

05 Who has authority to approve exceptions and issue the conformance statement?

Source identifiers

CLIENT-DRAFT-001; ISO-21010-2017; API-617-SCOPE

06 / RELEASE CHECKLIST & SOURCES

Before this document can become approved product data

Release item	Required evidence
Identity	Approved product master and variant/model mapping
Performance / rating	Calculations, curves/tables, conditions, tolerances, and test basis
Materials / dimensions	Controlled material schedule and approved drawings
Quality / certification	Applicable ITP, reports, certificates, approvals, and release authority
Media / rights	Confirmed ownership, licence, or approved illustrative-use basis
Approval	Named engineering, quality, legal, and document-control sign-off

Sources used for R02

Source ID	Publisher / location	Use
CLIENT-DRAFT-001	Existing Axoventra workspace product and document draft	Client-controlled draft; engineering approval not provided
API-617-SCOPE	American Petroleum Institute - API Standard 617 scope	https://www.api.org/~/media/%20files/publications/whats%20new/617_e8%20pa.pdf
ISO-21010-2017	ISO 21010:2017 product page	https://www.iso.org/standard/70957.html

END OF DOCUMENT

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