Hydrogen Business Plan

Maas Hydrogen | Rotterdam

DOCUMENT GUIDE

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Proposed Rotterdam industrial hydrogen facility | 3 October 2026 | Model 1.0

A decision document for prospective founders and funders. Financial forecasts are conditional planning assumptions. No authorisation, quoted supplier terms or committed funding is claimed.

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01 / OVERVIEW

Executive summary

Maas Hydrogen is an illustrative Rotterdam industrial hydrogen producer. A Dutch BV would develop a 10 MW PEM electrolysis facility and sell accepted gas at the plant boundary. January 2029 commissioning follows 24 months of paid development and construction in the Base forecast. No site, operating company, founder credentials, permits, customer contracts, renewable power agreement or financing has been secured.

The investment decision depends on binding plant-gate demand, feasible electricity access, safe engineering and sufficient committed capital. Forecast gates are hypothetical assumptions, not evidence of approvals. This document is for prospective founders and capital providers. Release development in stages and do not issue an irreversible construction order from this illustrative forecast alone.

The active Base forecast reaches minimum cash of negative EUR 4,811,759 over 15 years and a reserve shortfall of EUR 6,811,759 against the EUR 2 million target. Year 3 sales are EUR 7,119,115 and net profit is negative EUR 1,809,816. The Base minimum occurs in 2037-02, when lifecycle cash obligations are exposed. The Base project is not fully funded by the proposed sources. Additional committed capital or materially improved quoted terms are required; adding equity alone does not establish an adequate investment return.

02 / OVERVIEW

Business details

The proposed BV holds the plant, contracts and liabilities. Rotterdam is selected for its process-industry and hydrogen ecosystem [S1], without claiming a specific plot or pipeline connection. Financial figures are EUR net of VAT unless identified as gross or cash. The model contains 180 monthly periods from January 2027 to December 2041, with the first 36 months prominent.

The commercial boundary is metered, quality-accepted hydrogen at an adjacent industrial delivery point. Customer-owned downstream distribution, tube trailers, road transport, liquefaction, ammonia production and refuelling stations are excluded. No oxygen, heat, subsidy, carbon credit or terminal disposal revenue is assumed.

Item	Planning scope
Legal form	Hypothetical Dutch BV
Site	Rotterdam industrial area subject to diligence
Name	Illustrative Maas Hydrogen
Boundary	Gas custody transfer at plant gate

03 / OVERVIEW

Business concept and objectives

Develop 10 MW of system electrolysis capacity with drying, plant-gate compression, utility infrastructure and an 800 kg buffer. The buffer smooths short interruptions and is not seasonal storage. Production follows the smaller of technical output and assumed offtake. There is no unlimited merchant demand or take-or-pay payment for undelivered gas.

Release milestones require suitable land, credible power and water supply, an accepted safety design, installed-price scopes and creditworthy delivery terms. Commissioning must include performance, purity, metering, emergency shutdown and leak tests. Measure achieved efficiency and specific cost before considering expansion.

Objective	Required decision evidence
Power and site	Firm connection capacity and compliant power plan
Safe construction	Permits detailed HAZOP and EPC scope
Commercial delivery	Signed volume quality price credit terms
Funded commissioning	Committed capital plus tested delay cash

04 / STRATEGY

Business model canvas

The proposed offer is traceable industrial gas with clear custody transfer and measured quality. Revenue is delivered accepted kilograms multiplied by a proposed indexed plant-gate fee. Buyers procure any downstream transport themselves. The model never recognises a subsidy or green premium separately.

Electricity, capital expenditure and paid technical cover dominate economics. Suppliers must support dynamic dispatch, quality measurement and maintenance. A power purchase agreement alone does not establish RFNBO compliance: additionality, temporal and geographical criteria and lifecycle emissions evidence need certification review [S5].

Business Model Canvas

Partners Power supplier EPC water service certification advisers industrial buyer	**Activities** Safe dispatch quality control maintenance metering contracting	**Resources** 10 MW plant site utility capacity paid operating team
Value Accepted industrial gas at a defined nearby boundary	**Relationships** Long-term process specification and incident responsibility	**Channels** Direct process-owner and procurement negotiation
Customers Creditworthy industrial users with compatible integration	**Costs** Power installed capex staff service and replacement	**Revenue** Delivered accepted hydrogen only. No grants oxygen heat

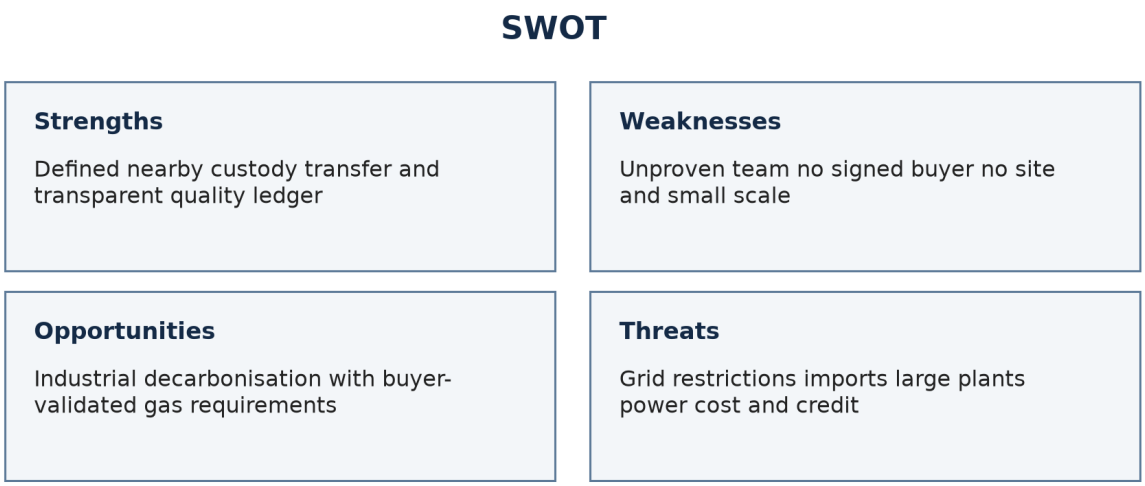
Nine blocks describe a proposed operating system. Partnerships and contracts are unconfirmed.

05 / STRATEGY

SWOT and longer term goals

Co-location could reduce downstream transport complexity and concentrate quality accountability. Weaknesses are small scale, no operating record, an unappointed team and material initial capital exposure. The Rotterdam industrial cluster is a location rationale rather than an observed customer pipeline.

Competing large plants, imports, fossil-based supply and grid congestion can undermine utilisation or price. Expand only after measured reliability, positive contracted contribution and funded replacement obligations. The model includes neither expansion nor a terminal valuation.



Qualitative project assessment without invented competitor scores.

06 / STRATEGY

TOWS strategy matrix

Use an adjacent industrial buyer and defined quality boundary to reduce logistic risk. Pair staged engineering with customer process tests before committing the full plant. Procure independent design and safety review to compensate for missing operating credentials.

Mitigate electricity exposure through a reviewed price-index mechanism, dispatch rules and contracts that can meet certification criteria. Refuse an unfunded delivery guarantee. If binding terms cannot support the forecasted costs and stress reserve, defer final investment approval.

TOWS Actions

Strength plus opportunity Co-design an adjacent buyer boundary and metered acceptance	**Weakness plus opportunity** Stage engineering and appoint proven safety/technical leads
Strength plus threat Define delivery limits pricing reopeners and audit evidence	**Weakness plus threat** No construction release without funds permits grid and buyer

Each action responds to the project's specific strengths weaknesses opportunities and threats.

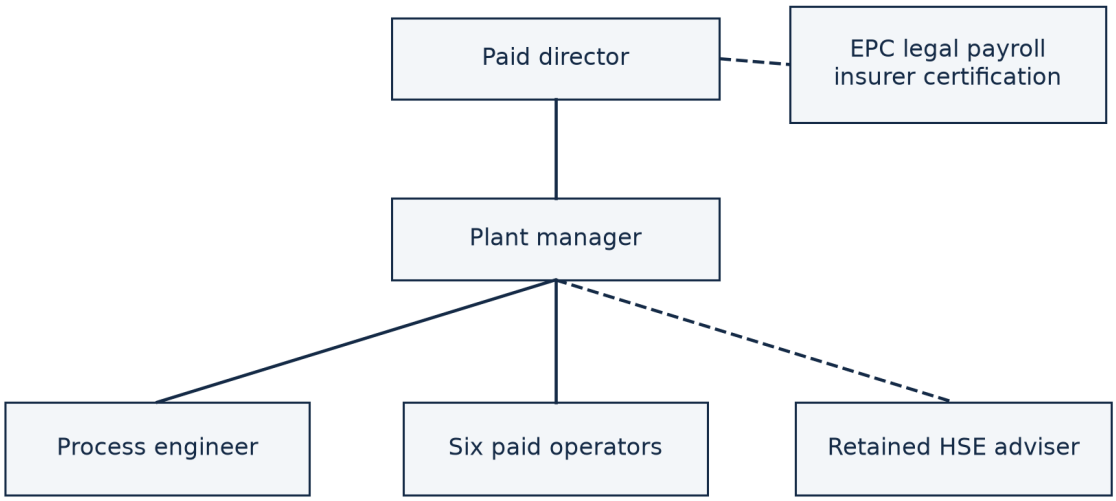
07 / PEOPLE

Owner and management

A paid director owns funding, contracting, governance and procurement release. The plant manager owns operations and permit compliance. A process engineer controls performance, instrumentation and maintenance plans. Six operators provide continuous monitoring with separately paid external relief. A retained HSE adviser supports competent staff.

Independent EPC, electrical, legal, insurance and certification advisers support the director under contracts. Outsourced specialists have dashed reporting lines and do not replace management accountability. Emergency shutdown authority must be explicit and tested.

Management and Contracted Support



Solid reporting lines indicate internal roles. Dashed lines show contracted external support.

08 / PEOPLE

Owner and key personnel profiles

No CVs or employment offers exist. Required evidence includes competence in industrial commissioning, electrical isolation, hydrogen safety, quality sampling and incident command. The director must demonstrate capital and contract control. The plant manager must have relevant operating responsibility before appointment.

Verify certificates, references and jurisdiction-specific authorisations. Commissioning contractors need named technical responsibility and insured scope. Recruitment success is a project gate rather than an invented founder qualification.

Role	Evidence before appointment
Director	Contract and capital-control record
Manager and engineer	Industrial gas commissioning competence
Operators	Isolation gas detection emergency training
External HSE adviser	Hydrogen hazard and permit experience

09 / CUSTOMER

Target customers

Target creditworthy Rotterdam chemical, refining and other process users that can accept a variable or buffered local gas stream within a reviewed specification. Qualify purity, pressure, maximum daily flow, outage tolerance and renewable attribute requirements before pricing.

Do not assume any named industrial company will buy this project’s gas. Small fuel-cell refuelling, distant road deliveries and bulk export are outside the first offer. An adjacent customer must fund or contract downstream connection and backup supply separately.

Segment	Qualification
Existing industrial hydrogen user	Process-compatible purity pressure and volume
New process project	FID timing and hydrogen requirement verified
Renewable attribute buyer	Certification evidence and premium willingness
Excluded first phase	Retail refuelling and distant trailer delivery

10 / CUSTOMER

Segmentation targeting and positioning

Segment by process specification, electricity-linked delivery flexibility and willingness to contract for local custody transfer. The primary target is a buyer with an established process need and manageable credit risk; no customer count is asserted.

Position on transparent specification, metering and contract responsibility. Do not claim lower cost than incumbent reforming or better sustainability than certified imported gas without comparable lifecycle data. The strategy narrows commercial promises to what the plant can measure and fund.



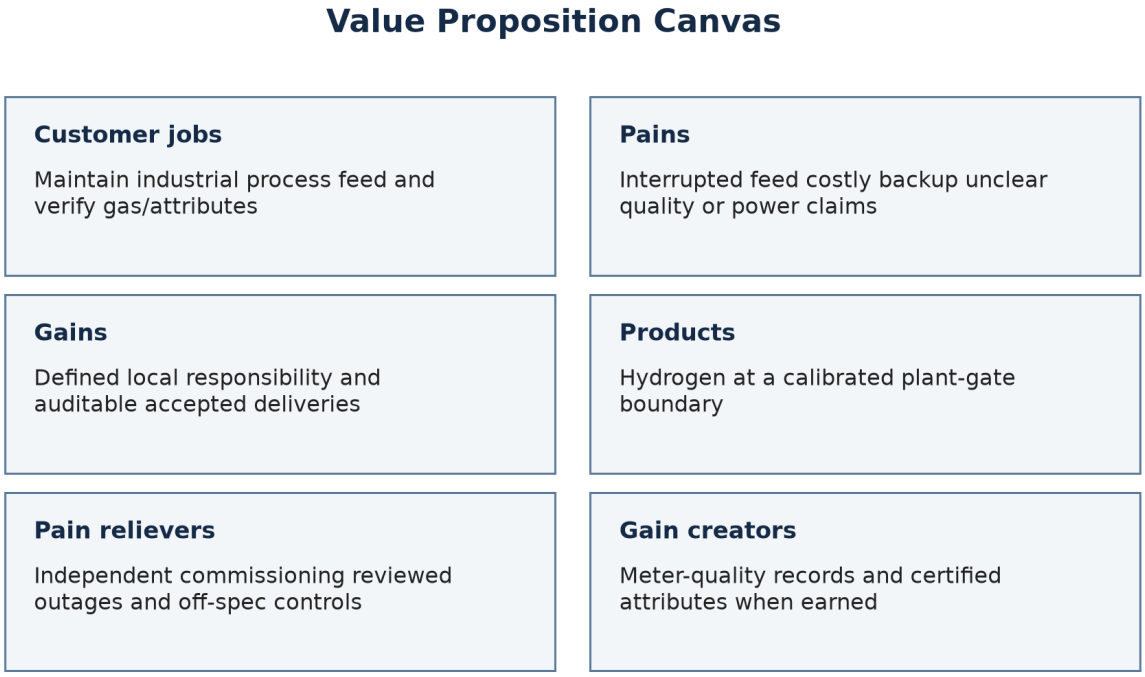
Segmentation and targeting use operational and contracting needs rather than fabricated demographics.

11 / CUSTOMER

Value proposition canvas

Industrial buyers need predictable accepted gas, clear failure responsibility and auditable attributes. Their costs include process interruption, backup procurement, integration engineering and credit exposure. The proposed gains are a nearby boundary and transparent meter-quality records.

Provide trial specification reviews, independent commissioning results and a reviewed supply contract. Benefits remain hypotheses until a buyer validates the required gas and pays for delivered product. No customer interview or survey is claimed.



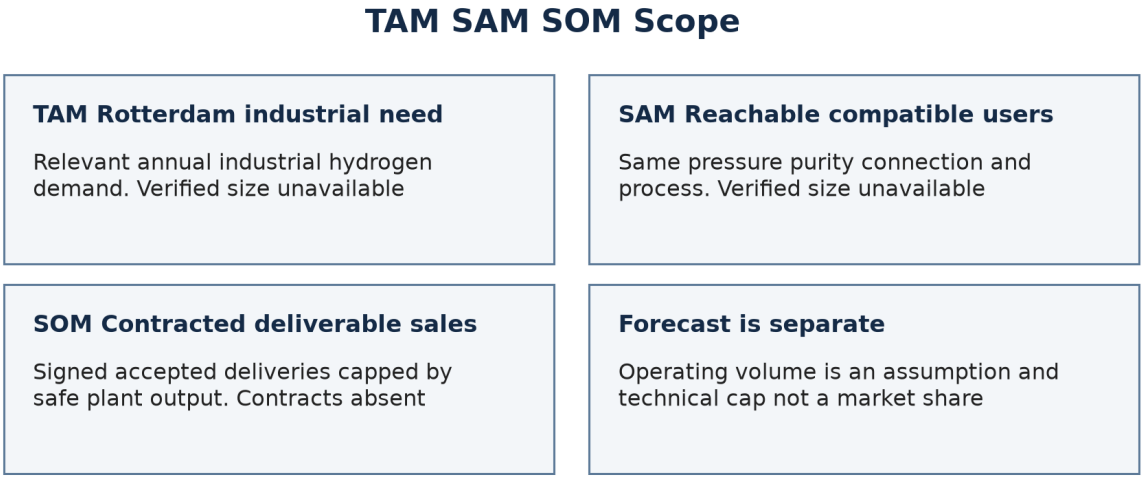
Customer tasks pains gains and proposed product responses remain testable assumptions.

12 / MARKET

Market size and trends

Port sources describe an industrial hydrogen ecosystem and major production and infrastructure projects [S1]. Such activity does not quantify addressable gas sales for a 10 MW newcomer. A verified Rotterdam plant-gate market estimate is unavailable.

TAM means all relevant industrial hydrogen demand in Rotterdam for the chosen year. SAM means demand reachable with this site's pressure quality and connection. SOM requires signed deliverable demand and available plant capacity. Values remain unknown until diligence; the operating forecast is shown separately as a technical sales ceiling, not market share.



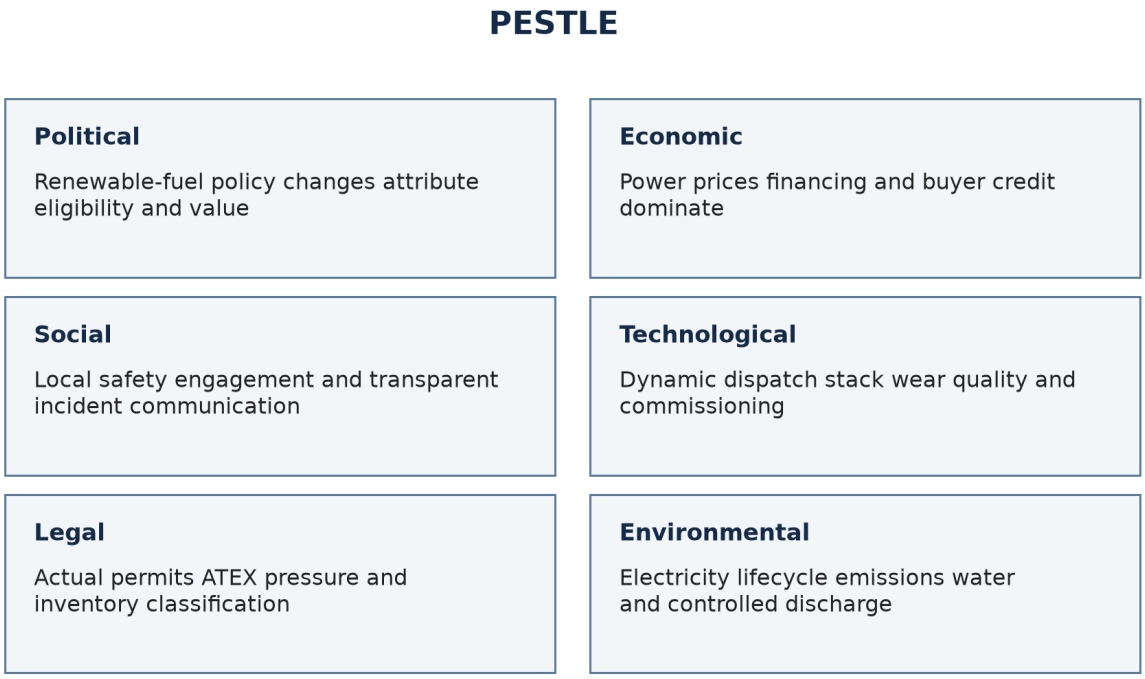
TAM SAM SOM scope definitions. No unsupported market totals or market-share percentages.

13 / MARKET

PESTLE analysis

Policy and renewable-fuel rules affect attribute value. Economic exposure centres on power prices, finance and customer credit. Social expectations require credible safety engagement and transparent incident communication. Technology risk includes dynamic operation, degradation and commissioning.

Legal obligations depend on installation configuration, permits and hazardous inventories. Environmental performance depends on the electricity source and complete lifecycle assessment. The six panels translate these considerations into evidence and operating responses.



Six aligned business-specific panels. Legal classification must be confirmed for the actual installation.

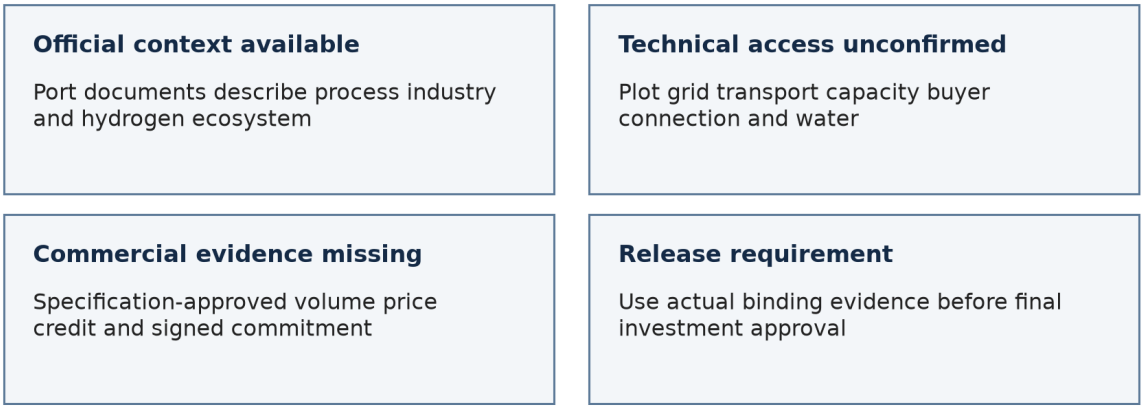
14 / MARKET

Local demand and evidence

Official port material identifies established refining and chemical activity and ongoing hydrogen infrastructure [S1]. It confirms a plausible location context but supplies no executed demand for Maas Hydrogen. No buyer interview, price quote, letter of intent or allocation has been collected.

Diligence should map accessible users, process specifications, integration cost and backup requirements. Record signed commitments separately from expressions of interest. The forecast offtake cap is editable and unvalidated; setting it to zero must remove sales while preparation and operating costs continue.

Demand Evidence Ladder



Evidence ladder separates official industrial context from missing site-specific paid commitments.

15 / MARKET

Competitors and positioning

Large Rotterdam electrolysis projects, existing gas suppliers, imports and conventional hydrogen are substitutes or competitors. Port material names projects within its ecosystem [S1]; project scale or an announced FID is not evidence of this proposal's customer terms.

Compare boundary, purity, reliability, delivery flexibility, certification and whole delivered cost with buyer-approved specifications. A small facility may offer local accountability but loses purchasing scale. No competitor satisfaction rating, availability guarantee or price advantage is invented.

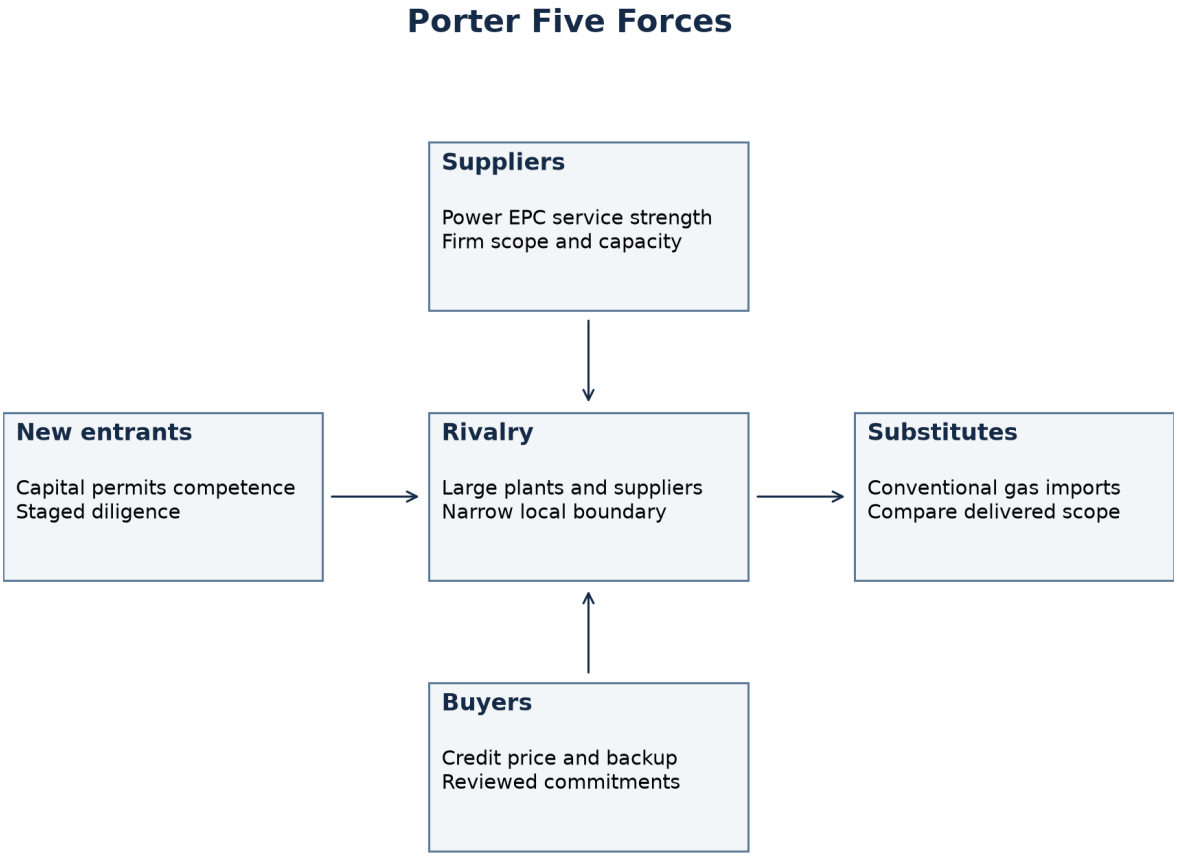
Alternative	Commercial implication
Incumbent industrial gas supply	Established backup and reliability
Large electrolysis projects	Scale may reduce unit costs
Imports and carriers	Conversion and transport change boundary
Conventional hydrogen	Carbon cost and specification comparison needed

16 / MARKET

Porter five forces

Rivalry and substitutes constrain the proposed EUR/kg fee. Industrial buyers can demand warranties, backup and price indexation. Power and EPC suppliers have bargaining strength when connection capacity and skilled contractors are scarce.

Entry is constrained by capital, engineering competence, permits and creditworthy commitments. Responses are staged diligence, narrow custody transfer and explicit paid support. The diagram records mechanisms rather than unsupported numerical ratings.



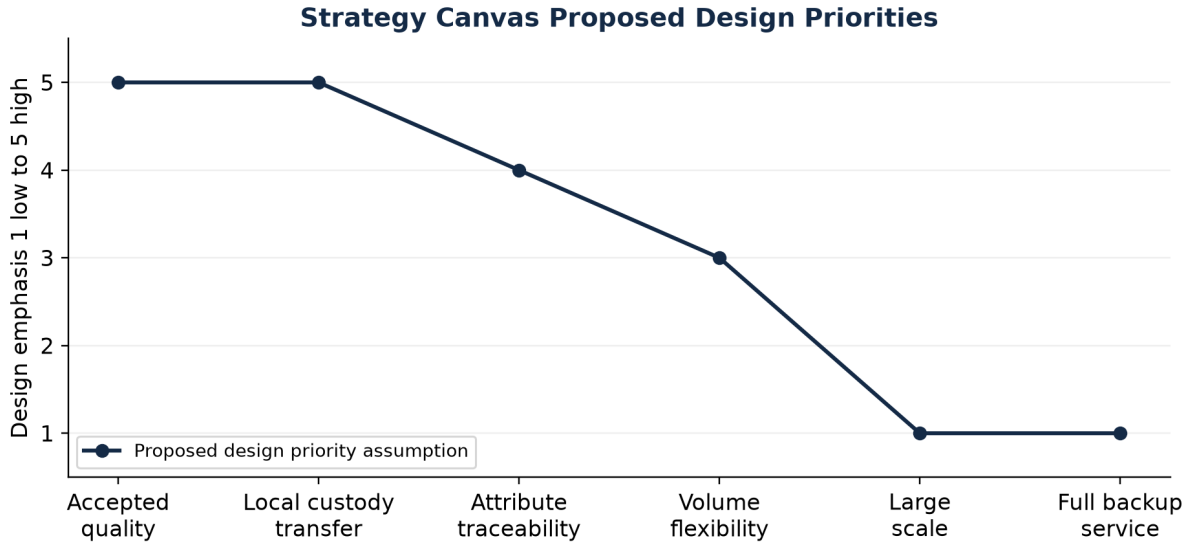
Rivalry at the centre with buyer supplier entrant and substitute forces around it.

17 / STRATEGY

Strategy canvas

Compare local custody transfer, published boundaries, capacity flexibility and integration effort qualitatively. Incumbent industrial supply and a small proposed plant have different capabilities. No validated survey exists to justify a numeric competitor score.

The intended emphasis is measured product acceptance, explicit grid limits and certified attributes where earned. The curve shows assumed design priorities on a one-to-five ordinal scale, not measured service performance. Competitor curves are unavailable. Obtain comparable quotes before asserting superiority.



Proposed one-to-five design emphasis only. Competitor ratings and measured performance are unavailable.

18 / OPERATIONS

Location and premises

A Rotterdam industrial plot is a hypothesis. Validate legal use, utility routing, flood and drainage issues, noise, vehicle access, hazardous separation, fire-service access and neighbouring inventories. An adjacent buyer is preferred but not identified.

A lease must allow the specified plant and restoration obligations. The forecast rent is unquoted and assumes a taxable site-service arrangement for VAT budgeting. No pipeline connection or transport right is inferred from regional network announcements.

Stedin reports congestion in the Rotterdam port area and location-dependent access [S9]. A January 2029 grid date is a conditional hypothesis, not a credible connection promise without a site-specific offer.

Release gate	Evidence
Site use	Landlord planning and environmental approvals
Utilities	Firm power capacity water wastewater terms
Safety layout	Separation inventory fire access analysis
Buyer interface	Connection agreement and metering boundary

19 / OPERATIONS

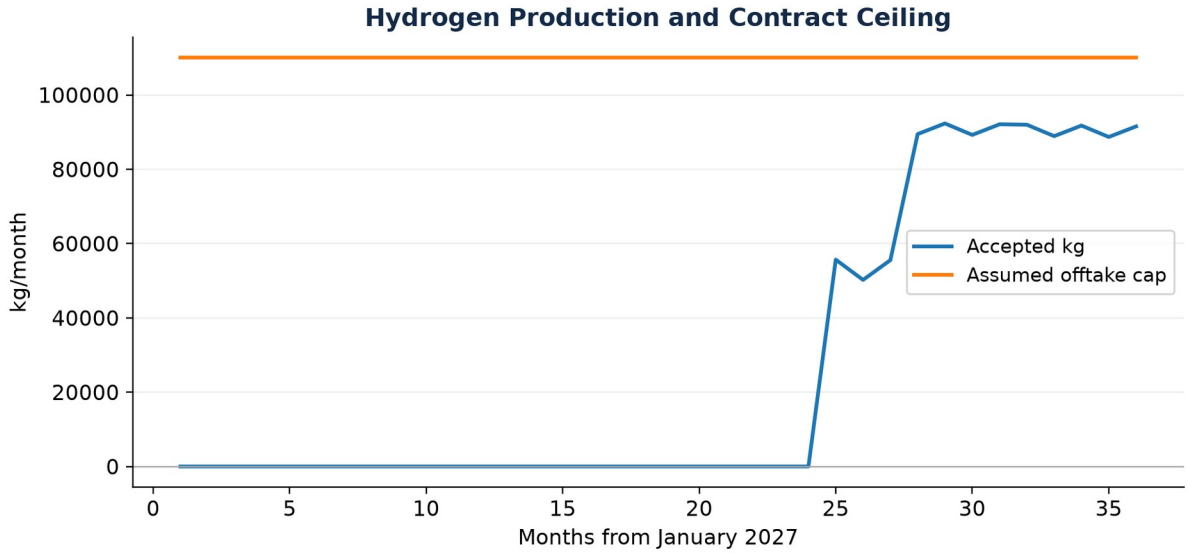
Equipment and resource plan

The system scope includes 10 MW electrolysis, rectification, water treatment, drying, instrumentation, plant-gate compression and an 800 kg buffer. Installed net capex includes civil and utility infrastructure plus contingency. No supplier quotation supports the EUR 24 million Base allowance.

The model separates initial stacks and balance of plant, holds construction spend as CIP until COD and caps each depreciation cohort. Stack ageing worsens specific electricity demand; a replacement incurs cash capex and a dispatch outage. Performance and lifecycle must be warranted by an actual vendor before underwriting.

Assumed total grid capacity is 11 MW including compression and 80 kW online auxiliaries. Preparation uses 10 kW fixed load. The productive ceiling reserves capacity for all these loads. The model disallows a renewal interval shorter than stack book life; earlier retirement needs an explicit NBV disposal extension.

A separate 180-month physical plant service assumption limits operating output. Book depreciation life does not establish engineering service permission. The native expiry test stops sales after an edited 24-month life while retaining paid staffing. Held assets continue finite book depreciation after output ceases; impairment and site restoration require adviser review, with no disposal proceeds assumed.



Forecast technical output is limited by electrical dispatch efficiency quality acceptance and offtake.

20 / OPERATIONS

Product and delivery strategy

Sell only metered accepted industrial hydrogen at the contracted boundary. The required purity, pressure, dew point and permitted impurities must be set by the buyer's process and tested independently. The forecast assumes a 98% retained quality fraction Base; rejected product consumes energy and water without sales.

No fuel-cell-grade or RFNBO status is automatic. Claims require traceable power, emissions and certification evidence. Oxygen venting and heat rejection require safe engineering; neither is monetised. The buyer owns downstream transport and backup arrangements.

Sales Mix

Hydrogen	Excluded income
100% revenue from accepted delivered kilograms	No oxygen heat subsidy carbon credit transport or salvage

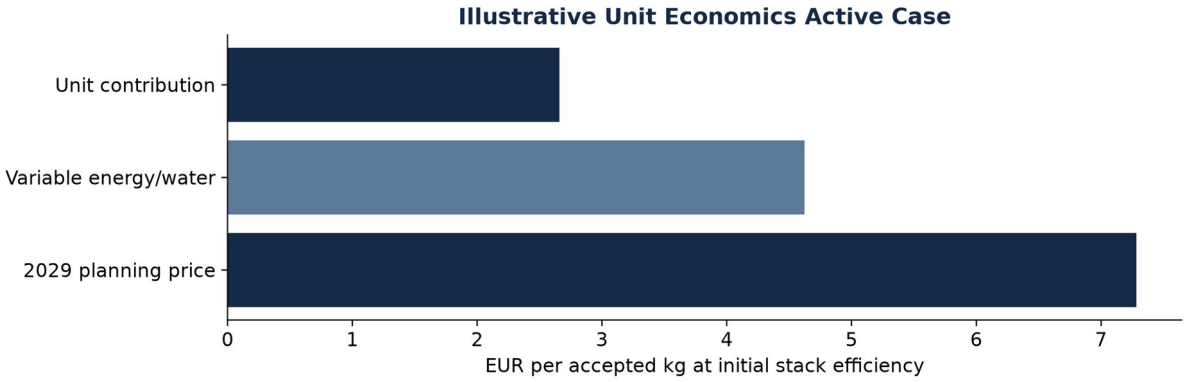
Single hydrogen revenue stream. No byproduct subsidy or transport income.

21 / COMMERCIAL

Pricing and delivery economics

The Base EUR 7 per accepted kg is an unquoted plant-gate assumption. Electricity uses an assumed EUR 75/MWh all-in procurement cost and 55 kWh/kg system input plus 2.5 kWh/kg compression. Quality losses raise cost per sold kg. Fixed utility loads and staffed cover remain additional burdens.

Propose contract indexation with defined power references and reopeners, without assuming it is signed. The model escalates power and sales independently. It recognises delivered kilograms only, so an offtake ceiling is not take-or-pay revenue. Break even must include the fixed energy load.



Illustrative unit contribution excludes fixed costs and auxiliary baseload. Break-even and cash schedules include them.

22 / COMMERCIAL

Competitor price comparison

Comparable industrial hydrogen prices depend on gas specification, pressure, delivery point, volume, backup and attribute evidence. Public project announcements are not signed offers and are not used to manufacture a benchmark.

Obtain contemporaneous competing bids for the same boundary and evaluate net price plus customer connection, reserve and backup costs. The proposal's fee is an assumption. A useful comparison must show the source date and all excluded costs.

Offer	Price evidence
Maas Hydrogen	EUR 7/kg Base assumption unquoted
Incumbent supply	No comparable quote obtained
Imported or other renewable gas	No comparable boundary quote
Buyer backup supply	Separate cost not supplied

23 / COMMERCIAL

Brand and customer experience

Use an accountable industrial supplier identity with plain specification and incident reporting. Buyers should receive quality certificates, custody-transfer data, attribute evidence if certified and invoice calculations. Do not brand uncertified output as automatically green.

Customer experience centres on predictable responsibility during interruption: alarm contact, affected batches, restoration estimates and dispute resolution. The contract should identify backup obligations and insured liability. No service-level guarantee is promised by this draft.

Touchpoint	Controlled record
Specification approval	Buyer signed technical annex
Delivery	Calibrated meter and accepted batch data
Attributes	Certification and power evidence
Incident	Duty contact scope and restoration log

24 / COMMERCIAL

Sales channels and process

Use direct business development to process owners and procurement teams. Qualification precedes engineering integration and term-sheet negotiation. Confirm credit, specification, monthly ceiling, flexibility, minimum commitment, indexation and counterparty security.

The model uses a volume cap and dispatch rate, not an invented funnel conversion percentage. No revenue is recognised for a nonbinding letter. Require credit-approved long-term terms before final investment approval and legal review of failure obligations.

Stage	Decision record
Qualify	Process need specification and credit
Engineer	Integration boundary and connection cost
Negotiate	Price volume delivery flexibility
Approve	Binding terms and funded liabilities

25 / COMMERCIAL

Launch commercial programme

During preparation, the recurring advice and admin budgets pay for technical prospect qualification, legal terms and procurement work. Industrial gas is sold through negotiations rather than retail advertising. No launch promotion volume is assumed.

Commissioning sales depend on accepted testing and process integration. The first three operating months use a reduced dispatch factor. Trial deliveries require insured scope and authorisation; unaccepted product earns no revenue.

Workstream	Release condition
Technical prospect review	Buyer process data
Contract negotiation	Reviewed pricing quality security
Commissioning trial	Safe accepted testing
Commercial start	COD and forecast gates all satisfied

26 / COMMERCIAL

Retention and ongoing sales

Retain buyers through specification performance, defensible billing, safe incident response and auditable attributes. Review buyer concentration and renewal dates. A long-term offtake contract is still a credit and volume risk.

Use a monthly ledger of accepted kg, energy intensity, incidents and payment ageing. The model's sale cap is fixed within each case and is not an assertion of long-term demand. Explicitly model a lost customer or reduced cap before underwriting.

Measure	Action
Accepted gas quality	Isolate off-spec batches
Payment ageing	Apply security and stop rules
Energy and price	Review procurement and index clause
Renewal risk	Track process need and alternate buyers

27 / OPERATIONS

Daily operations and suppliers

Dispatch within the safe electrical envelope and the smaller of plant output and delivery demand. Review power availability, water treatment, meter calibration, purity, buffer inventory and leak alarms each shift. Record controlled shutdown and maintenance work.

Qualified vendors provide electrolyser service, instrumentation, water treatment and emergency support. The director pays before COD even if approvals are delayed. No speculative merchant inventory accumulation is assumed. The 800 kg buffer is a safety-design quantity and not a financed sales asset.

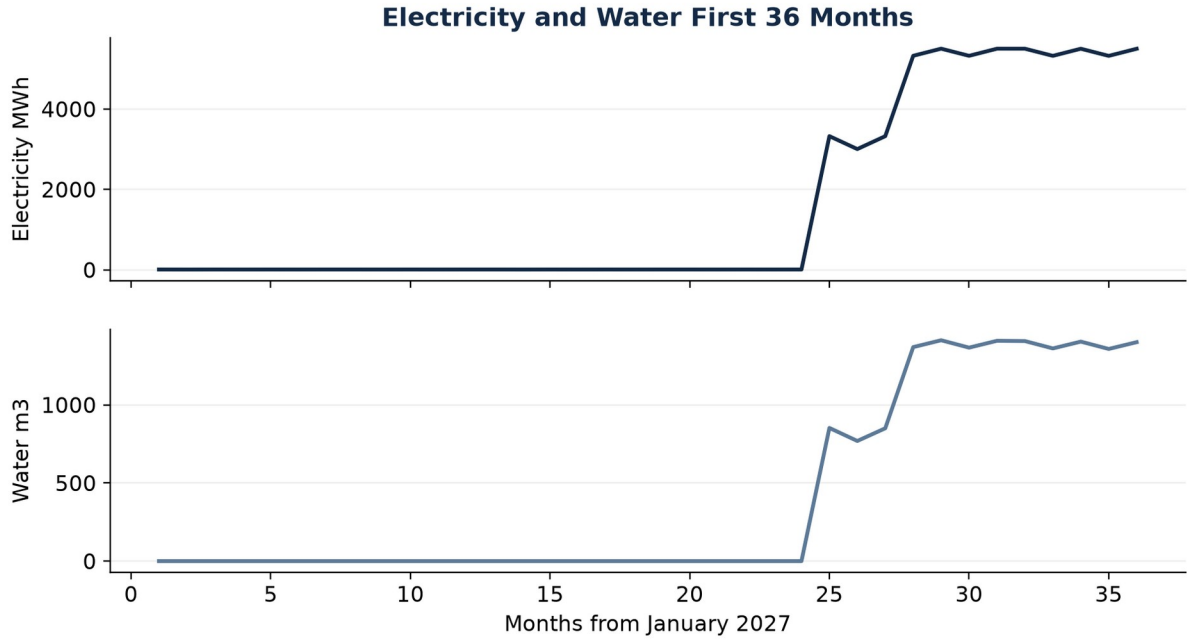
Daily control	Responsible role
Dispatch and buyer boundary	Plant manager
Gas quality and meters	Process engineer
Isolation alarms buffer	Trained operators
Supplier and cash approval	Director

28 / OPERATIONS

Sustainability practices

Electrolysis emissions depend on electricity sourcing [S2 S5]. The project cannot claim renewable certification solely from a certificate purchase or a PPA label. Review additionality, temporal and geographic correlation and lifecycle greenhouse-gas rules with a certification body. Hourly power evidence becomes especially relevant from 2030 under the delegated framework.

The model uses 15 litres/kg water allowance for process treatment and cooling, rather than the nine-litre stoichiometric minimum. Confirm actual cooling and discharge design, raw-water availability and permits. Track actual metered MWh per accepted kilogram.



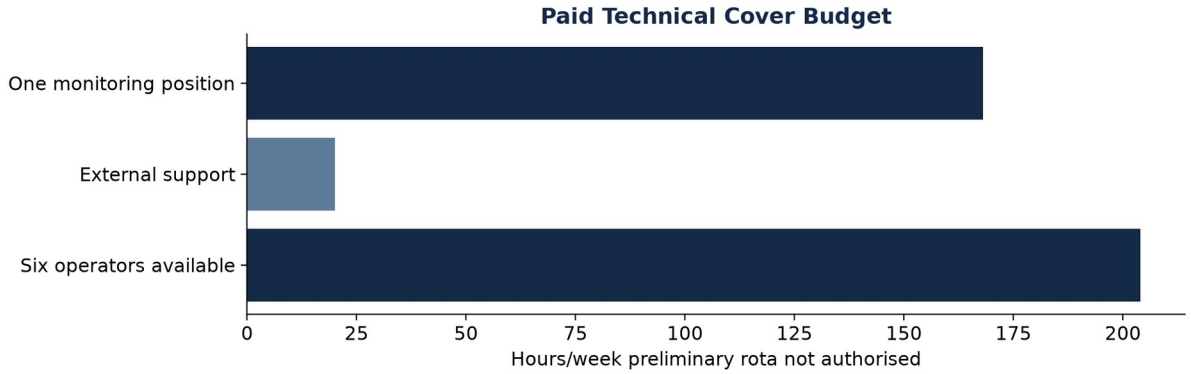
Forecast electricity and water use. No measured operational efficiency or certified emissions claim.

29 / PEOPLE

Staffing and training

The full operating team budget pays the director EUR 7000, manager 6000, engineer 6000, six operators 4000 each and an HSE adviser 1000 monthly gross/retainer proxy. A 30% employer-cost allowance applies to the budget for conservatism. Before COD, 40% of nonowner gross budget is retained Base and the owner remains fully paid.

Six operators at 40 hours with 15% absence/training allowance supply 204 hours/week. Twenty external relief hours supplement one 168-hour monitoring position. This is a preliminary budget, not an approved rota or permission for lone hazardous work. Engineering and manager work are not double-counted as shift cover.



Model roles and paid cover agree. Employment adviser must validate rota rest night work and relief scope.

30 / PEOPLE

Staff skills and fair work

Appoint competent hydrogen and electrical duty holders. Pay training and verify authorisation for isolation, maintenance, confined space where applicable, alarm response and quality sampling. Design work controls around hazard analysis rather than the smallest headcount.

The 40-hour planning basis and 30% load need Dutch employment and payroll review. Distinguish statutory contributions from benefits and contracted HSE cost. No free founder labour, undocumented unpaid standby or invented qualification supports the forecast.

Skill	Validation
Hydrogen hazards	Gas leak ventilation ignition response
Electrical authority	Isolation and safe switching
Quality control	Sampling calibration acceptance
Shift practice	Rest absence relief and escalation

31 / COMPLIANCE

Legal and insurance requirements

Review the actual project under the Omgevingswet, environmental activity rules and competent-authority requirements. IPLO describes electrolysis changes under the industrial emissions framework [S6]; size thresholds do not eliminate local permissions or safety obligations. Obtain classification advice for the final installation, not just electrolyser nameplate.

PGS 40:2025 version 1.0 was published April 2026 [S8]. Confirm current adoption and applicability with the authority. Perform HAZOP, hazardous-area/ATEX and emergency planning [S10], pressure-equipment review, inventory aggregation and insurer diligence. The 800 kg buffer is not a conclusion that Seveso or other obligations are absent.

Gate	Evidence before release
Authority classification	Written applicable-permit route
Engineering safety	HAZOP ATEX pressure separation review
Construction	Landlord permissions and approved scope
Operation	Bound liability interruption property cover

32 / IMPLEMENTATION

Opening roadmap

Months 1–6 fund feasibility, land and power diligence, safety scoping and buyer negotiations. Construction payments begin month 7 and run evenly through month 24 in Base. Capital stays in CIP until forecast commissioning month 25. Delay changes the build payment spread and continues paid preparation, rent and interest.

Final investment approval requires committed capital, firm connection capacity, reviewed installed quotes, permits, competent staff and creditworthy commercial terms. COD requires independent performance and safety acceptance. The forecast gates can be switched off to demonstrate that sales cease without suppressing ongoing costs.

Period	Conditional work
Months 1–6	Paid engineering site grid customer diligence
Months 7–24	Procurement construction milestone acceptance
Month 25 onward	Conditional tests ramp and accepted delivery
Operating month 97	Base replacement stack and outage allowance

33 / RISK

Risks and management actions

Power price and availability, gas sales price, certification eligibility, construction overruns and customer concentration threaten the cash case. Large competitors and imports may constrain premium pricing. A grid refusal or missing permit can leave CIP and preparation costs without revenue.

Use stage gates, fixed reviewed commitments and a weekly gross-VAT cash schedule. Review stack conditions and replacement reserves annually. Negative model cash is an unfunded requirement and does not imply an available overdraft. Financing must be renegotiated rather than hidden in a balancing cell.

Risk	Management action
Power cost or matching	Firm capacity and audited dispatch strategy
Offtake absence	Binding credit-approved delivery terms
Build delay or overrun	Independent scopes and funded delay reserve
Safety or off-spec	Stop isolate investigate and insured response
Replacement funding	Track condition and cash before ordering

34 / EVIDENCE

Research and evidence

Official port, EU, Dutch tax, IPLO and DOE material was reviewed 3 October 2026. Sources support location context, tax parameters and technical/regulatory considerations. They do not prove this project's site, rate, demand, construction costs, vendor efficiency, staffing rota or finance.

The actual accepted café Word file and 48-topic blank template were inspected. The actual hydrogen reference workbook contains construction operations depreciation debt financials and sensitivity schedules; its concepts informed a new EUR monthly build. Subsidies, automatic debt sizing, restrictive assumed financing and terminal value were not copied.

Reference	Use and limitation
S1	Port context no named buyer commitment
S2 S7	Technical benchmarks not vendor quote
S3 S4	2026 tax reference future rates assumed
S5 S6 S8	Regulatory context actual approvals absent

S1 Port industrial hydrogen ecosystem https://www.portofrotterdam.com/en/port-future/energy-transition/ongoing-projects/hydrogen-rotterdam

S2 DOE PEM technical status targets https://www.energy.gov/cmei/fuels/technical-targets-proton-exchange-membrane-electrolysis

S3 Dutch VAT tariffs https://www.belastingdienst.nl/wps/wcm/connect/bldcontenten/belastingdienst/business/vat/vat_in_the_netherlands/calculating_vat/vat_tariffs

S4 Dutch tax2026 parameters https://open.overheid.nl/documenten/c3d48c04-1009-4ffe-a54b-cebf13427ab5/file

S5 EU renewable hydrogen rules https://eur-lex.europa.eu/eli/reg_del/2023/1184/oj/eng

S6 IPLO electrolysis permit context https://iplo.nl/actueel/overzicht-iplo-uitgelicht/iplo-uitgelicht-december-2024/

S7 DOE water use https://www.energy.gov/cmei/fuels/can-water-usage-electrolysis-pose-problems-parts-united-states-currently-facing-water

S8 PGS40 publication and guidance https://publicatiereeksgevaarlijkestoffen.nl/

S9 Stedin grid capacity context https://www.stedin.net/over-stedin/update-netcapaciteit

S10 Labour Authority ATEX obligations https://www.nllabourauthority.nl/topics/working-conditions-act-hazardous-substances/explosive-atmospheres

S11 Commission renewable hydrogen https://energy.ec.europa.eu/topics/eus-energy-system/hydrogen/renewable-hydrogen_en

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Quotes and assumptions

No installed-price quotes, PPA, insurance binders, buyer contracts, connection offers or permit approvals have been supplied. Request defined EPC scope, performance warranty, power capacity and tariff, water and wastewater terms, lease and restoration obligations, gas specification, credit security and replacement pricing.

Blue workbook inputs are assumptions. Active case formulas link these inputs throughout the build. Saved Excel edits are imported by ordinary rebuilds and preserved; case snapshots must be refreshed when assumptions change. Changes to the model require regenerated Word figures and narrative.

Missing evidence	Owner
EPC and safety scopes	Director and independent engineer
Power water land permits	Director and authority advisers
Buyer specification price security	Director and legal advisers
Payroll insurance taxes finance	Qualified advisers and funders

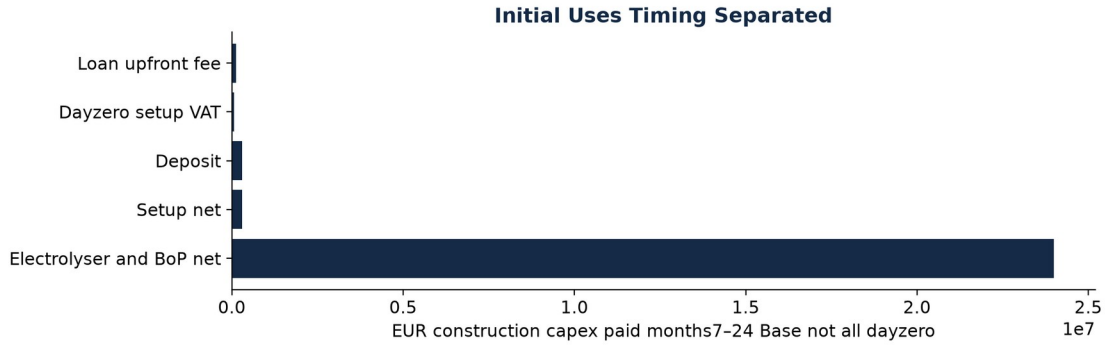
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Startup costs and funding

Proposed fixed equity of EUR 26 million at day zero and an EUR 8 million debt facility are uncommitted assumptions. Debt is drawn alongside initial construction invoices. Initial capex is spread through the pre-COD construction period; paid advice payroll rent and interest continue during development.

Day zero cash equals equity less net setup expense, VAT paid, the upfront debt fee and refundable deposits. VAT credits are assets until assumed settlement, not cash already available. The reserve target does not inject funds. The project must secure cash for the chosen stress case before construction.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.



Funding assumptions remain uncommitted. Construction payments and operating deficits occur after day zero.

Source or use	EUR
Proposed fixed paid equity	26,000,000
Proposed total debt	8,000,000
Initial installed capex net	24,000,000
Day zero setup net	300,000
Day zero setup VAT	63,000
Day zero loan upfront fee	120,000
Refundable deposits	300,000
Day zero cash	25,217,000
15 year minimum cash	(4,811,759)
Reserve shortfall	6,811,759

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Itemized startup costs

The initial installed allowance includes stacks EUR 7.2 million and balance of plant EUR 16.8 million. That balance includes civil, utilities, water treatment, drying, compression, metering, buffer and contingency. The allocation is a cost-planning assumption rather than a vendor bill.

In addition to capital, six feasibility months and subsequent preparation pay staff, rent, advice, insurance and other costs. Construction VAT is paid and later settled under an explicit lag assumption. It must be financed while outstanding. No grant or supplier credit finances capex.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

Installed cost or preparation	Treatment
Stacks 30% initial capex	CIP then finite depreciation
Balance of plant 70%	CIP then finite depreciation
Advice legal studies	Operating expense during preparation
Paid owner and staff	Operating expense throughout
VAT and deposit	Receivable asset separate cash timing

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Owner personal survival budget

The owner receives EUR 7000 gross monthly Base from the beginning of preparation, escalating annually. Employer allowance belongs to the company budget. Estimated household cash uses 65% retention for planning, not a Dutch personal-tax calculation.

Household spending is EUR 4000 monthly: housing 1800, living 1300, transport 500 and other 400. The starting estimate of EUR 4550 net leaves 550. Owner savings and dividends are not used as company funding. If personal net pay differs, change the model and obtain payroll advice.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

Household item	EUR per month
Estimated net salary	4,550
Housing	1,800
Living	1,300
Transport	500
Other	400
Estimated surplus	**550**

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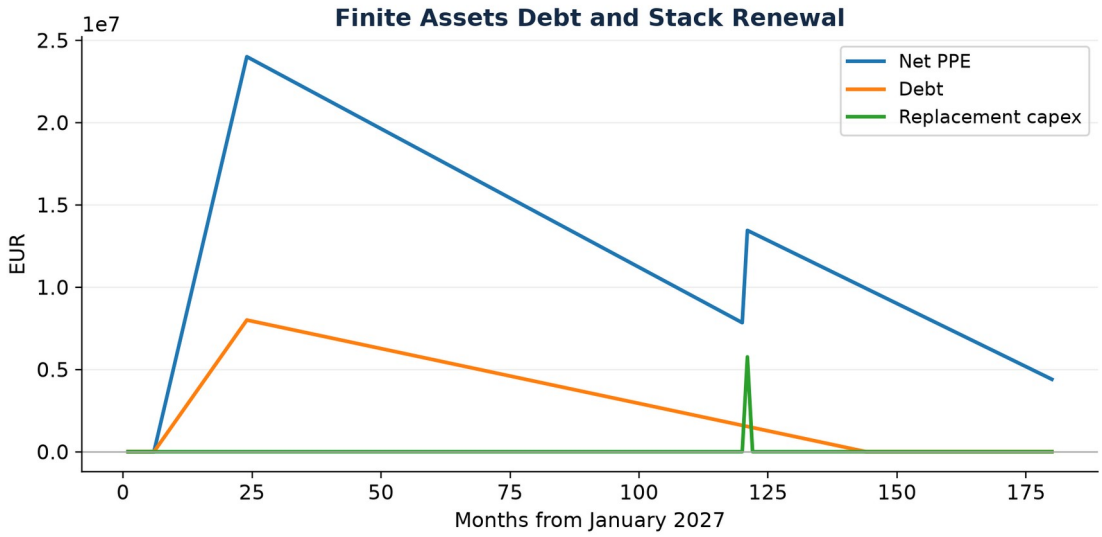
Financing terms and security

The proposed debt is EUR 8 million with 7% annual cash interest and 24 calendar months of principal grace, then 120 monthly equal principal payments capped at actual outstanding debt. Draws follow initial build payments and interest uses opening balance plus half current draws. No debt service suspension occurs because COD is delayed.

A lender may require fees, reserve accounts, warranties, collateral, completion guarantees or lower gearing. Those terms are not agreed. No distributions or terminal sale are assumed. The model's cover ratio is an indicative EBITDA less replacement and tax allowance measure; final lender CFADS and covenants need a negotiated definition.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

An upfront 1.5% fee on the proposed EUR 8 million facility is paid and expensed at day zero (EUR 120000 Base), with no input VAT assumed. Its terms are unquoted.



Finite commissioned PPE and outstanding debt over 15 years. No terminal sale proceeds.

Financing assumption	Status
Equity and debt	Not committed
Draws	Alongside initial construction payments
Interest	Cash expense paid throughout
Principal	Grace 24 months then 120 months
Collateral and covenants	No term sheet supplied

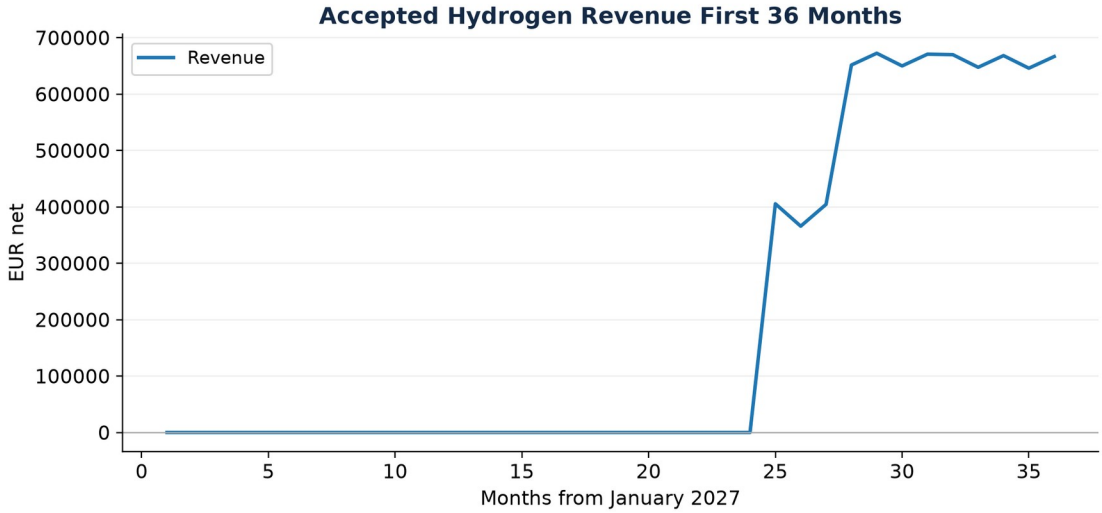
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Revenue forecast and capacity

Revenue equals accepted delivered kilograms times the active EUR/kg fee. Output is constrained by calendar hours, electrical dispatch, system efficiency, gas quality and offtake ceiling. Commissioning requires all forecast gates, and the first three operating months ramp at 60% Base.

Technical production is not market share or a signed sale. The model reduces production to offtake instead of building an unlimited unsold inventory. Specific energy degrades until stack replacement, which reduces dispatch in its month. No revenue exists before COD.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.



Active case annual physical production and net sales.

EUR or physical unit	2027	2028	2029
Revenue	–	–	7,119,115
Hydrogen sold kg	–	–	977,524
Electricity MWh	88	88	58,466
Water m3	–	–	14,962

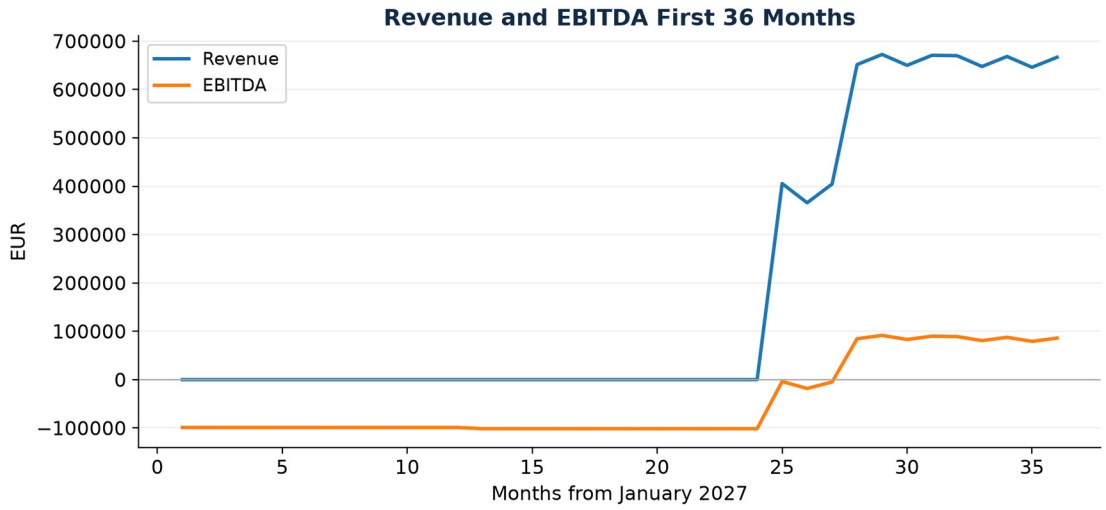
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Costs and projected profit

Power procurement, water, paid staffing, site rent, engineering advice, routine service, insurance and compliance are distinct costs. Rejected gas incurs energy and water without sales. Routine service is an expense and stack renewal is separate cash capex.

Depreciation starts only when assets enter service, is capped by cohort and cannot continue forever. Interest is paid rather than hidden in capex. A conservative 25.8% positive monthly profit tax allowance excludes loss relief and the lower tax band; it is a forecast convention rather than a tax filing.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.



The model allows losses and funding shortfalls.

EUR	2027	2028	2029
Variable costs	6,570	6,720	4,607,026
Payroll	340,080	348,582	721,149
Other fixed costs	840,000	861,000	1,046,422
EBITDA	**(1,186,650)**	**(1,216,302)**	**744,517**

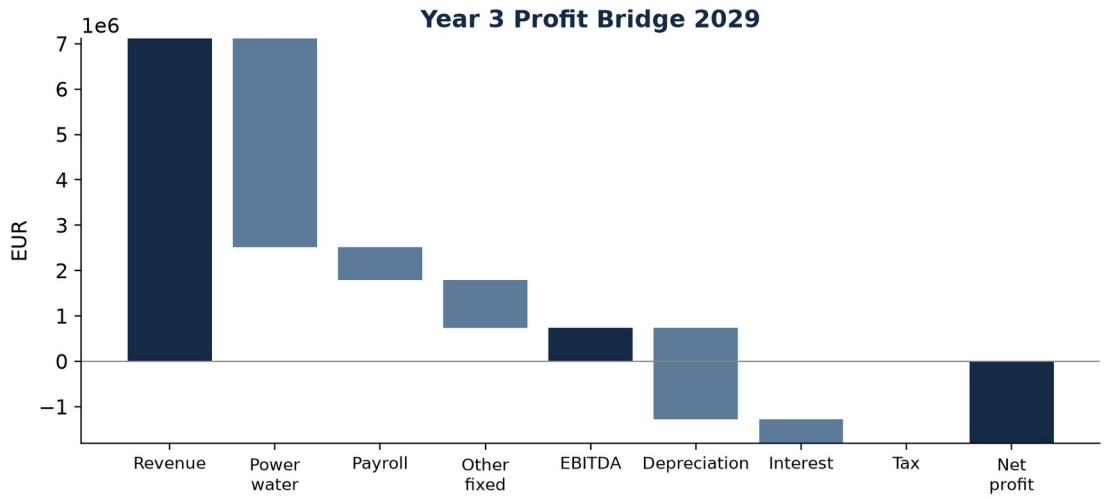
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Profit and loss forecast

The linked profit forecast recognises delivered gas net of 21% VAT. Cost lines are positive expense amounts, subtracted to obtain contribution EBITDA and net profit. Paid preparation losses remain visible.

Tax is a conservative cash-paid allowance on positive monthly profit before tax. Future statutory rates, loss relief and interest limitations require adviser review. The model does not create a deferred-tax asset to support funding.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.



Net profit includes finite book depreciation and cash interest.

EUR	2027	2028	2029
Revenue	–	–	7,119,115
Variable costs	6,570	6,720	4,607,026
Contribution	**(6,570)**	**(6,720)**	**2,512,089**
Payroll	340,080	348,582	721,149
Other fixed costs	840,000	861,000	1,046,422
EBITDA	**(1,186,650)**	**(1,216,302)**	**744,517**
Depreciation	–	–	2,020,000
Interest	46,667	373,333	534,333
Profit before tax	**(1,233,317)**	**(1,589,635)**	**(1,809,816)**
Tax allowance	–	–	–
Net profit	**(1,233,317)**	**(1,589,635)**	**(1,809,816)**

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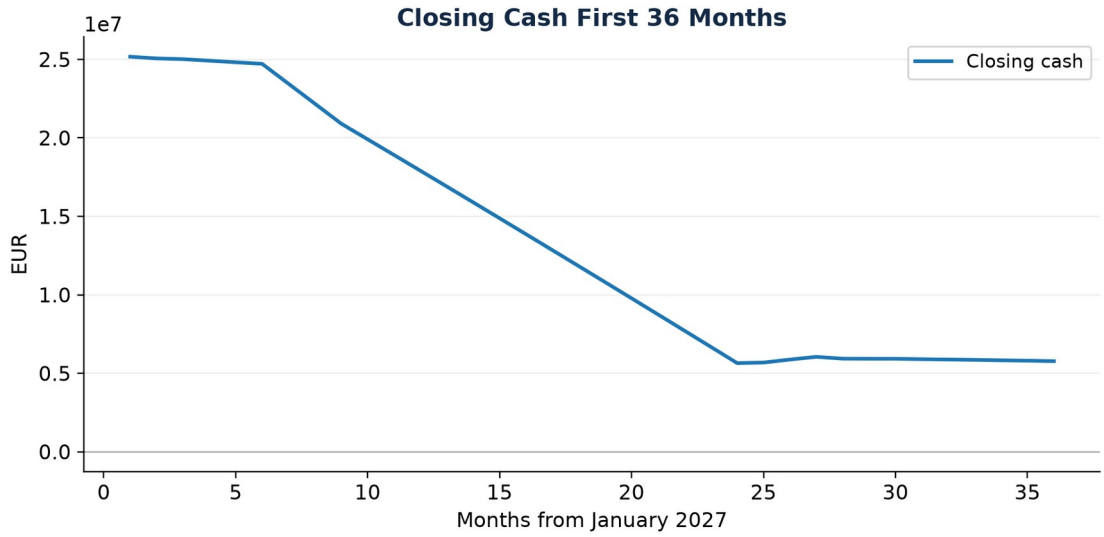
Cash flow and financial position

Cash flow starts from net profit, adds back depreciation and includes gross receivable/payable changes and VAT asset/liability changes. Net capex and principal repayments are cash outflows and scheduled debt draws are inflows.

VAT settlements are lagged forecast cash payments or refunds. Refund eligibility and timing need validation; extending the lag exposes additional financing need. No revolving loan automatically fills negative cash. Each annual cash line uses opening plus the displayed net change to equal closing exactly after rounding.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

A lag of 3 means three elapsed months: day zero input VAT settles in March 2027 and January invoices settle in April 2027. Refunds remain unconfirmed cash-timing assumptions.



Cash includes VAT cash timing and the fixed proposed funding sources.

EUR	2027	2028	2029
Opening cash	**25,217,000**	**17,903,837**	**5,648,296**
Operating cash flow	**(1,979,830)**	**(1,588,874)**	**922,201**
Capital expenditure	(8,000,000)	(16,000,000)	–
Debt drawn	2,666,667	5,333,333	–
Principal repayments	–	–	(800,000)
Net cash change	**(7,313,163)**	**(12,255,541)**	**122,201**
Closing cash	**17,903,837**	**5,648,296**	**5,770,497**

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Cash flow forecast months one to six

These months are paid preparation and early build periods. There are no hydrogen sales before commissioning. Payroll, advice, rent, insurance and financing cash continue.

The table uses the active model's exact cash rollforward. Capital payments and VAT credits cannot be treated as financing proceeds. Negative cash indicates an unfunded requirement.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

2027-01 to 2027-03

EUR	2027-01	2027-02	2027-03
Opening cash	**25,217,000**	**25,170,660**	**25,060,725**
Operating cash flow	**(46,340)**	**(109,935)**	**(46,870)**
Capital expenditure	–	–	–
Debt drawn	–	–	–
Principal repayments	–	–	–
Net cash change	**(46,340)**	**(109,935)**	**(46,870)**
Closing cash	**25,170,660**	**25,060,725**	**25,013,855**

2027-04 to 2027-06

EUR	2027-04	2027-05	2027-06
Opening cash	**25,013,855**	**24,914,957**	**24,816,069**
Operating cash flow	**(98,898)**	**(98,888)**	**(98,898)**
Capital expenditure	–	–	–
Debt drawn	–	–	–
Principal repayments	–	–	–
Net cash change	**(98,898)**	**(98,888)**	**(98,898)**
Closing cash	**24,914,957**	**24,816,069**	**24,717,171**

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Cash flow forecast months seven to twelve

These months are paid preparation and early build periods. There are no hydrogen sales before commissioning. Payroll, advice, rent, insurance and financing cash continue.

The table uses the active model's exact cash rollforward. Capital payments and VAT credits cannot be treated as financing proceeds. Negative cash indicates an unfunded requirement.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

2027-07 to 2027-09

EUR	2027-07	2027-08	2027-09
Opening cash	**24,717,171**	**23,448,106**	**22,176,430**
Operating cash flow	**(380,176)**	**(382,787)**	**(385,383)**
Capital expenditure	(1,333,333)	(1,333,333)	(1,333,333)
Debt drawn	444,444	444,444	444,444
Principal repayments	–	–	–
Net cash change	**(1,269,065)**	**(1,271,676)**	**(1,274,272)**
Closing cash	**23,448,106**	**22,176,430**	**20,902,158**

2027-10 to 2027-12

EUR	2027-10	2027-11	2027-12
Opening cash	**20,902,158**	**19,905,319**	**18,905,866**
Operating cash flow	**(107,950)**	**(110,564)**	**(113,140)**
Capital expenditure	(1,333,333)	(1,333,333)	(1,333,333)
Debt drawn	444,444	444,444	444,444
Principal repayments	–	–	–
Net cash change	**(996,839)**	**(999,453)**	**(1,002,029)**
Closing cash	**19,905,319**	**18,905,866**	**17,903,837**

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Financial position summary

Assets include gross customer receivables, unsettled VAT credits, refundable utility deposits and net PPE including uncommissioned CIP. Liabilities include scheduled debt, gross operating payables and unsettled positive VAT.

Equity equals the proposed fixed paid equity plus accumulated earnings after the day zero expense. Cash is the residual of actual scheduled cash flows, not a balance-sheet plug. No salvage disposal income or valuation uplift is used.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

EUR	2027	2028	2029
Cash	17,903,837	5,648,296	5,770,497
Receivables gross	–	–	806,661
VAT credit	873,108	873,934	–
Refundable deposit	300,000	300,000	300,000
Net PPE including CIP	8,000,000	24,000,000	21,980,000
Total assets	**27,076,945**	**30,822,230**	**28,857,157**
Debt	2,666,667	8,000,000	7,200,000
Trade payables	63,595	65,182	607,105
VAT liability	–	–	102,820
Total liabilities	**2,730,262**	**8,065,182**	**7,909,925**
Paid equity	26,000,000	26,000,000	26,000,000
Retained earnings	(1,653,317)	(3,242,952)	(5,052,768)
Total equity	**24,346,683**	**22,757,048**	**20,947,232**
Total liabilities and equity	**27,076,945**	**30,822,230**	**28,857,157**
Balance sheet difference	–	–	–

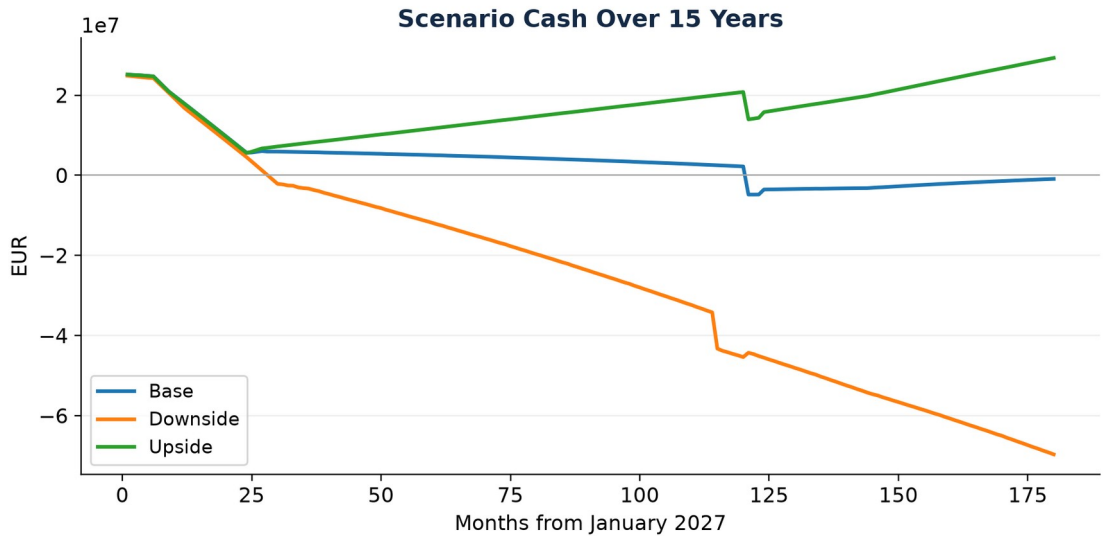
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Break even and scenarios

EBITDA break even divides fixed operating cost plus fixed auxiliary electricity by contribution per sold kilogram. It excludes depreciation, debt service and replacement, so meeting this threshold does not prove investment viability. Compare it against feasible monthly output and offtake.

Base Downside and Upside use the same integrated build. Downside delays COD six months raises electricity and capex reduces dispatch and customer terms. Upside improves price dispatch and efficiency. Captures are dated model snapshots with a dynamic stale-input warning. Refresh the ordinary build and document after saved Excel changes.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

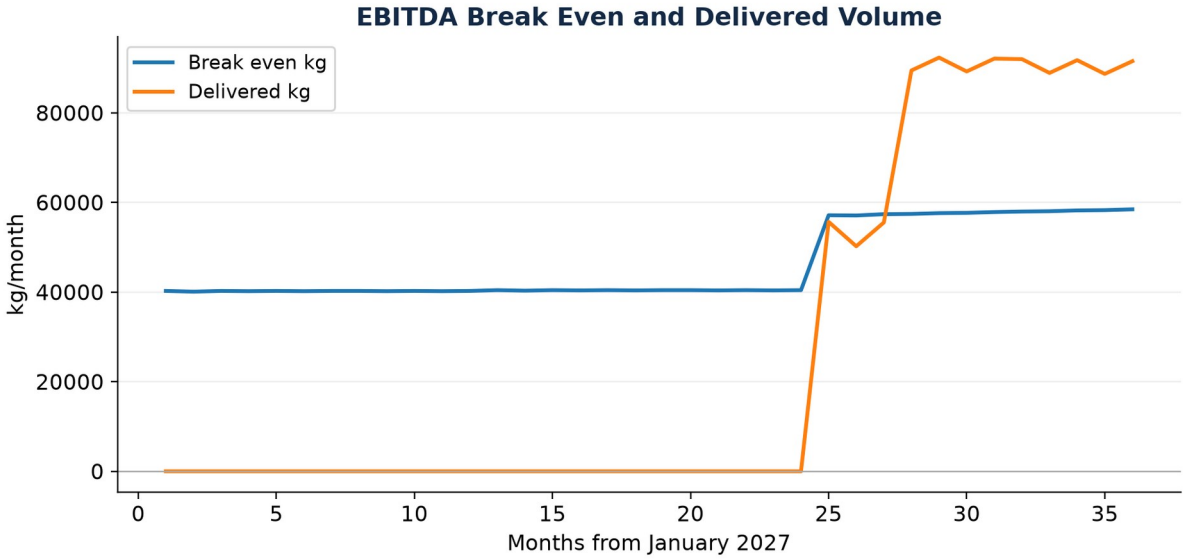


Scenario captures use the same model mechanics. None is a secured commercial outcome.

EUR	Minimum cash 15 years	Reserve shortfall	Year 3 revenue
Base	(4,811,759)	6,811,759	7,119,115
Downside	(69,671,644)	72,171,644	1,687,515
Upside	5,582,069	–	9,664,486

Capacity and EBITDA break even

This threshold compares accepted monthly kilograms with the kilograms required to pay recurring fixed costs and fixed auxiliary electricity. A month with no technical or commercial availability cannot meet it. Even a delivery level above this line does not fund principal repayments or the future replacement stack. Use the cash and reserve shortfall tests for financing decisions.



Same active case. EBITDA threshold excludes debt replacement and depreciation.

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Model guide and completion

Edit blue case-specific assumptions on Inputs and select 1 = Base, 2 = Downside or 3 = Upside. Formulas drive Operations Costs Assets Debt VAT and Working Capital Statements and Summary. Data validation and the active validity guard expose invalid or blank required inputs.

Ordinary builds import saved Excel assumptions before rebuilding and refresh all captures and native range-backed charts. Re-run native recalculation and meaningful input tests, export model-results.json, regenerate this Word plan and inspect every page/sheet. The 15 year horizon includes initial 36 months and replacement/debt maturity. It has no terminal sale dividends expansion or invented grant.

Financial snapshot: Base case, model 1.0, 3 October 2026. Cash tables reconcile displayed whole euros; rounding can allocate a one-euro difference.

The current Base funding proposal fails the cash/reserve test. Completion of document QA is not investment approval.

Completion gate	Evidence required
Commercial technical legal	Actual site power safety offtake and permits
Funding	Binding funds sufficient for stress case
Model	Saved-engine recalculation and arithmetic checks
Document	Same active case figures and complete visual review