hyperion robotics

DESIGN, MANUFACTURING AND DELIVERY OF LOW-CARBON 3D PRINTED CONCRETE PRODUCTS

CAPABILITY PRESENTATION

New Civil Engineer AWARDS WINNER

2024 Winner Technology Solutions Provider of the Year

Co-funded by the European Union

EXECUTIVE SUMMARY

Hyperion deploys Modern Methods of Construction to optimise carbon reduction within concrete structures.

- Utilising Modern Methods of Construction in designing and manufacturing low-carbon concrete infrastructure, Hyperion leverages advanced automated manufacturing systems combining parametric software, robotics and code compliant sustainable materials.
- Hyperion's solutions are in service with clients and deliver up to a 90% reduction in CO2 emissions, 75% less material, accelerated production times and construction efficiency.
- Our solutions are applicable to most infrastructure, including utilities, renewables, transport and datacentres.

- Hyperion's R&D facility is located in Finland with the larger UK manufacturing facilities opening in Q1 2025.
- Hyperion brings a multi-disciplinary expert team with significant experience across construction, engineering, automation and material science.
- **Hyperion has raised investment from** leading Venture Capital Funds and has received grants from the European Union for high profile R&D.

Co-funded by the European Union

Up to 90%
Reduced CO2 emissions

3x
Faster delivery

Up to 30%
Cost savings

Up to 75%
Less material

Example Clients & Partners

IBERDROLA, ScottishPower, MMB MOTT MACDONALD BENTLEY, peikko group, OMEXOM, United Utilities, YorkshireWater, SEVERN TRENT WATER, nationalgrid, FINGRID, love every drop anglianwater

EVOLVING THE WAY WE CONSTRUCT

Our parametric design platform, automated manufacturing and materials science bring efficiencies and reduced carbon emissions.

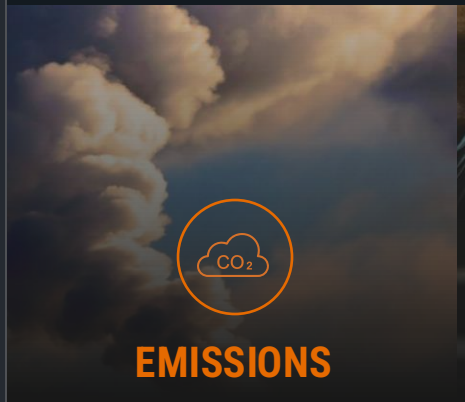
Our solutions

Up to 90%
Reduced CO2 emissions

3x
Faster delivery

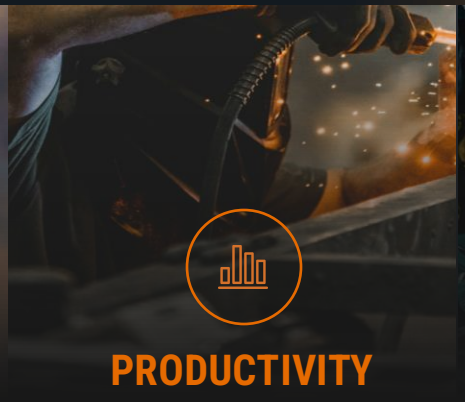
Up to 75%
Less material

50-70%
Less time spent on-site



EMISSIONS

Concrete alone generates 8% of the worlds CO2 emissions.



PRODUCTIVITY

Between 2000- 22, construction productivity increased by only 10%, versus 90% for the overall economy.

WASTE

Consumes 40% of the world's raw resources and accounts for over 40% of landfill waste.

HEALTH & SAFETY

In 2021, over a fifth of all fatal accidents at work in the EU happened within the construction sector.

WHO WE ARE

Hyperion Robotics is a design and manufacturing business specialising in infrastructure services.

Our purpose is to rethink how infrastructure products are designed and manufactured in a more sustainable way.

We work to design products for complex built environments and infrastructure, reducing waste and carbon content whilst increasing automation.

> Hyperion is working closely with contractors and clients to resolve their construction challenges. We listen to our clients' needs, assist with their Net Zero targets, and provide innovative designs and solutions for them to deliver highly sustainable and efficient concrete structures.

Fernando De los Rios
Co-Founder & CEO

TEAM WITH UNIQUE DOMAIN EXPERTISE

With 26 professionals from 16 nationalities, the team has deep experience across construction, engineering, automation and material science as founders, senior corporate executives and academics

Fernando De los Rios
Co-Founder & CEO

Fernando is a serial entrepreneur as founder and CEO of 2 previous start-ups in Silicon Valley. With 9 years'+ of experience across finance construction and 3D printing, Fernando has led several business optimisation and auditing projects with industrial clients at EY.

Ashish Mohite
Co-Founder & CTO

Ashish is one of Europe's foremost robotics and 3D printing experts, with a PhD in 3D printing and construction. He uniquely blends his architectural site experience with advanced technology and materials science, driving innovation in the field for over 10 years.

Henry Unterreiner
Co-Founder & Chief of Engineering

Henry is a chartered structural engineer with 8+ years designing and delivering world-class projects with leading engineering firm Arup. As a serial founder (2x) and a top-notch structural designer, he combines his engineering expertise with a passion for innovation and product creation

Mariia Kochneva
Chief of R&D

10+ years of experience in 3D printing and construction across software and hardware as a founder and academic research. With two Masters, Mariia has published several leading academic papers on Architecture and 3D printing.

John Price
VP of Operations - UK & Europe

40 years of experience in construction leading projects such as The Shard, Crossrail and the London Olympics. Former Group MD (CEO) at £600m UK-based contractor, Keltbray and Director at Costain.

David Beaty
Chief Commercial Officer

Seasoned strategist and business developer in UK utilities, infrastructure, transport, and aerospace at firms like Keltbray Group and Kier Group.

Juan Carlos Sanchez
COO/CFO

Finance professional with 12 years' experience in venture capital, M&A and start-ups operations. Former Head of Ventures at £2.5bn+ Investment Firm, Noe Group.

Serial entrepreneurs | Domain experts | Academics | Senior executives

TARGET MARKET

We work with developers, engineering consultants, general contractors, subcontractors involved in infrastructure projects related to water and waste-water, energy & renewables, data centres and transportation

Client type

Industrial developers
Asset owner of the project

General Contractors
Construction project lead

Engineering consultants
Advisers to owners of the project and programme

Infrastructure type

- Data centres
- Water treatment
- Energy & Renewables
- Transportation

Location

Initial focus
Finland

Core current focus
UK

Next target
EU

Our system is designed to build most of the structures required in an infrastructure project

Water Sector Application

LARGE DRAWPITS

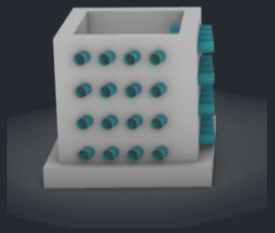
Dimensions (LWH): 2200 x 2200 x 2200 mm

Hyperion was commissioned by MMB (one of the largest water infrastructure contractors in the UK) to design, engineer and manufacture inspection chambers (draw pits) for its Yorkshire Water Services project in Esholt against a challenging programme.

YorkshireWater | MMB MOTT MACDONALD BENTLEY

The project benefited from:

- **50% less material = 10 m³ of concrete saved** by "thinking outside the box" and manufacturing a cylinder which is more complex to build, but more efficient in resisting soil loads.
- **40% eCO2 saved = 2,630 kg** by using less concrete, less steel reinforcement and no formwork.
- **30% cost reduction** by automating the production offsite, reducing the amount of onsite labour required.
- **70% accelerated program** by shortening what typically takes 6 months to design, engineer and manufacture to just 2 months.
- **A late design change** was requested by the client. Hyperion's parametric software generated the toolpath in a matter of minutes to be ready for production next day.



50%
material savings

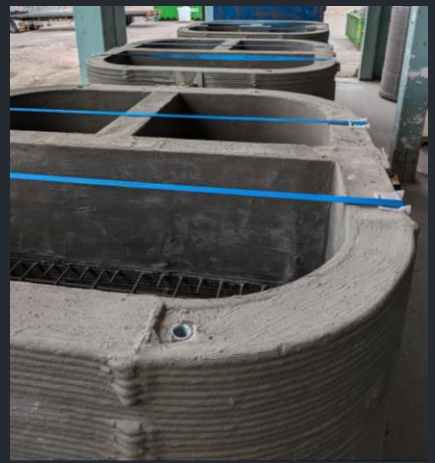
Water Sector Application

DISTRIBUTION CHAMBERS

Dimensions (LWH): 2600 x 2600 x 2600 mm

Hyperion produced water distribution chambers for Yorkshire Water Services and United Utilities' sites in collaboration with MMB. Two different designs, a rectangular chamber with rounded corners and a cylindrical form demonstrated benefits of a modular approach.

YorkshireWater | United Utilities | MMB MOTT MACDONALD BENTLEY



The projects benefited from:

- **30-50% material reduction**
  Rounded corners and a cylindrical shape enabled by 3D printing technology increase load resistance, allowing for thinner walls.
- **Modularised approach**
  The chambers range from 3x to 5x elements manufactured in the Hyperion Factory, to be assembled and connected on-site, enabling the height to exceed 3 metres.
- **Letterbox**
  A reinforced opening for external piping connection through the letterbox was incorporated in the DMFA for efficient on-site installation.
- **Watertightness**
  Joints between the elements are sealed using a bituminous strip a watertight bar and mastic. The application of the coating ensures additional watertight properties of the structures.
- **Smooth Finish**
  Smooth internal surfaces of the chambers eliminate the possibility of accumulation of biomatter.

Data Centre Case Study

MV & LV CHAMBERS

Dimensions (LWH): 1800 x 1800 x 1500 mm

LV Chambers have been developed to replace rigid manhole designs, offering a flexible solution that adapts to the specific needs of data centres such as long-term protection for the sensitive infrastructure within data centres.

Potential benefits include:

- **30% less material** thanks to rounded corners making the shape more efficient.
- **Accelerated program** with high production rate and shortened lead time.
- **Health & Safety:** Minimal human intervention, less exposure to risks and less works in excavations.
- **Strength and robustness.** High resistance, watertight and durable 3D printed walls as per EN 206 with reinforcement to EN1992.

Energy and Transportation Case Study

PAD FOUNDATIONS

Dimensions (LWH): 500 x 500 x 500 mm

Iberdrola collaborated with Hyperion to understand how to improve the sustainability of its green energy infrastructures. Large concrete foundations are typically used to support Iberdrola's electrical equipment and 70% of the concrete they produce is used for these foundations.

IBERDROLA

The project benefited from:

- **75% material savings** compared to the traditional block foundation, and **80% less excavated soil** to be removed from site.
- **60% less eCO2**, by placing material where it is most needed. Less concrete, means less reinforcement needed, and lighter elements to transport.
- **4X stronger than traditional methods** as on-site structural tests on printed specimens have shown a much higher resistance compared to traditional foundations.
- **50% reduction in site operative hours** decreasing the amount of potentially dangerous manual work carried out.

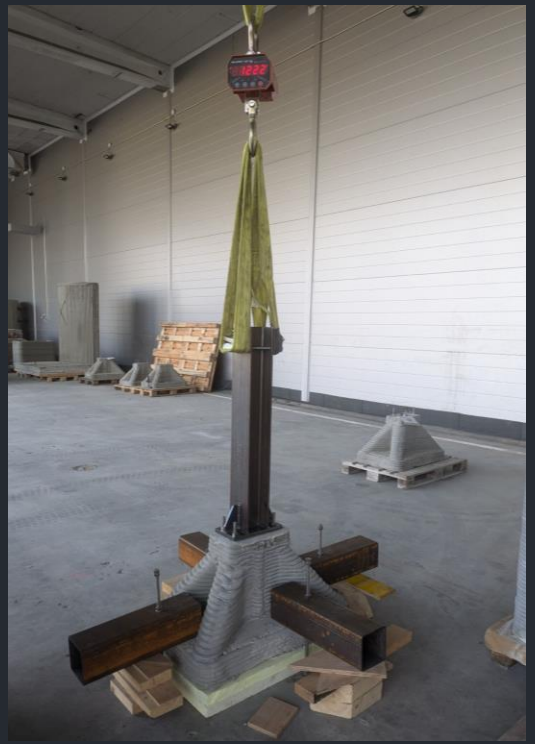
Case Study

PIPE SUPPORTS

Dimensions (LWH): 900 x 525 x 500 mm

SEVERN TRENT WATER

MMB MOTT MACDONALD BENTLEY



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Case Study

SUBSTATION FOUNDATIONS

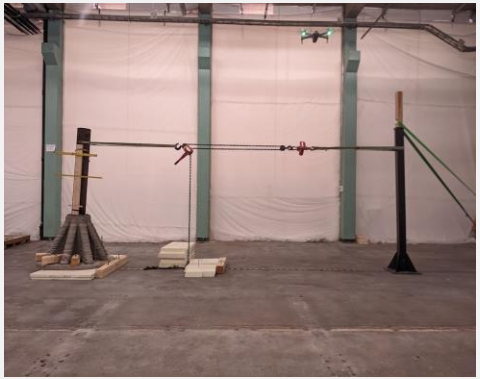
OMEXOM FINGRID

Dimensions (LWH): 1460 x 1460x 1300 mm

CODE COMPLIANCE & DESTRUCTIVE TESTING

Code compliance is the DNA of our technology - we design structures that comply to Eurocodes **EN 1990** and **EN 1992** and our material complies with **EN 206**. In addition, we follow a rigorous quality control procedure which ensures that the structures being printed are complying with our clients' specifications.

The hybrid approach of casting traditional self-compacting concrete into the 3D printed structural formwork enables us to comply with EN1992 for the design of our reinforced concrete structures.



CHARACTERISATION OF HYPERION MORTAR

	3D printed mortar (Permanent Formwork)		Self-compacting Concrete (Structure)	
Compressive strength (x, y, z)	**49.9 / 53.4 / 51.53**	MPa	**40**	MPa
Bending Tensile strength (y / z)	**7.05 / 5.67**	MPa	**3.2**	MPa
Density	**2,079**	kg/m^3	**2,350**	kg/m^3
Maximum w/c ratio	**0.37**	-	**0.5**	-
Minimum binder content	**656**	kg/m^3	**360**	kg/m^3

Typical Design Life	**100 years**	
Nominal Cover to reinforcement	**35mm (+10/-5)**	
Exposure Classes:	**XF1, XF2, XF3 XC3/XC4 AC-1, AC-2, AC-3 DC-1, DC-2, DC-3**	As per project requirements

GOVERNANCE, ACCREDITATIONS & COMPLIANCE

We have documentation delivering statements on the following:

Governance

All design, engineering, and production is compliant with quality standards ISA/SDTM 52939:2023 and are working towards securing ISO 9001, 14001 and 45001 accreditation for the opening of our UK Manufacturing Facility Q1 2025.

Our ISO accreditations will be in place in Q1 2025 as we transition to a new UK facility dedicated to high-volume production.

To mobilise an order, we require a valid purchase order from our clients, approved by our CEO.

Our Investors and Advisers assist the Board by providing challenges and advice to our policies and governance.

Accreditations & Compliance

Health and Safety Policy	Risk Assessment for Health and Safety	Environmental Preservation Guidelines
Machine Safety Certification (SGS)	Production Insurance	Anti-corruption Policy
Anti-slavery Policy	DEI Policy	Professional Indemnity Insurance

INVESTORS & ADVISORS

Hyperion Robotics has raised funding from leading investors and from public institutions such as the European Union and Business Finland.

Venture Capital Investors

LIFE LINE VENTURES

ÜBERMORGEN

PC RETTIG & CO

Katapult

NOÉ GROUP

Public Institutions

European Innovation Council

FINNVERA

BUSINESS FINLAND

Lex Hartman | Energy & Renewables
Board member of TenneT TSO B.V. and managing director of TenneT TSO GmbH, the largest transmission systems operator in Germany and the Netherlands.

Barry McNicholas | Construction & Strategy
Former CEO of McNicholas Group and Group MD at Kier plc, with over 30 year experience in construction and infrastructure with 17 years at executive leadership level.

Elina Holkko | Board member| Finance strategy
Investor and board member with 15+ years of experience in finance and business development, specializing in strategy, performance management, and financial modelling.

Max Von Rettig | Corporate Development
9th generation member of a Nordic family business, currently spearheading sustainability and decarbonization initiatives and directing investments into early-stage deep tech startups.

Leo Rifkind | Legal, Governance
Qualified M&A attorney (former Freshfields Bruckhaus Deringer) based in London. Growth equity investor with experience advising large cap PE funds on rights and transactions.

THANK YOU