Engineering that inspires

Federica Fuligni - federicafuligni@exergy-global.com - Project Manager

Engineering a sustainable future

Cutting-edge, efficient, sustainable engineering services

Our Company

Our goal is a low carbon, sustainable future

We are a diverse team of skilled engineers, scientists and professionals who share the dream of building a low carbon, sustainable future.

Since 2011, we have participated in numerous and recognised initiatives in the built environment, sustainable process and circular economy sectors.

Recently, our company has expanded into new markets and we now have a presence in the UK, Netherlands, USA and Colombia.

Sustainability is no longer a choice, it is a need.

Are you ready to make a change?

Our areas of focus

Helping you to achieve the transition to

Green Buildings & Cities

Green Processes & Industries

Green & Innovative Organisations

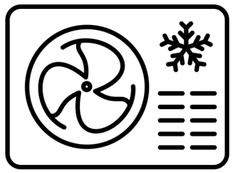
Our approach

- Our engineers and scientists use a collaborative, multidisciplinary approach.

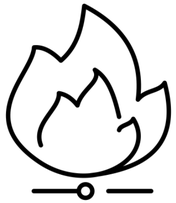
- We pay special attention to the needs of our clients and strive to deliver the most sustainable solutions that suit your business and make a meaningful contribution to society and the environment.

Our services

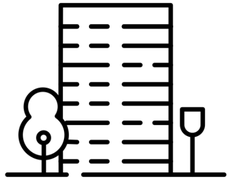
Green Buildings & Cities



HVAC Design & Engineering

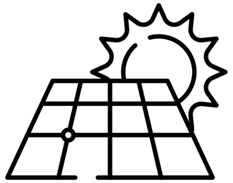


Exergy & Resource Efficiency

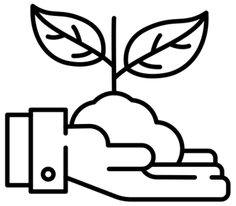


Building Physics & Modelling

Green Building Certification

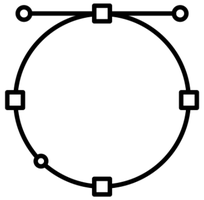


Renewable Energy & Low Carbon Systems

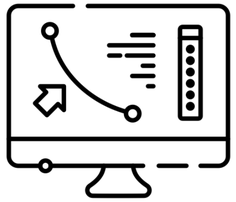


Carbon Strategy & Community Level Planning

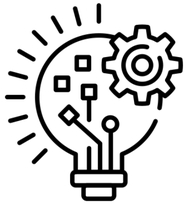
Energy Efficiency Retrofitting



Circular Strategies



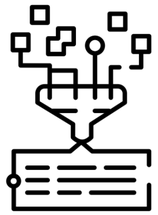
Digital Engineering & BIM



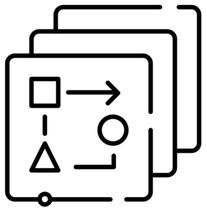
Research & Innovation Management

Our services

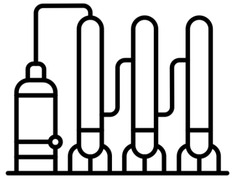
Green Processes & Industries



Process
Engineering

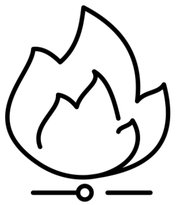


Process
Modelling

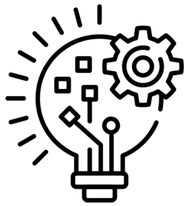


Scale-Up &
Plant Design

Technoeconomic
Evaluation



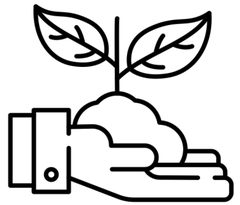
Exergy & Resource
Efficiency



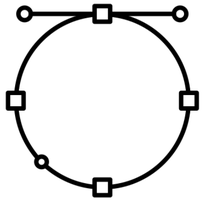
Research & Innovation
Management

Our services

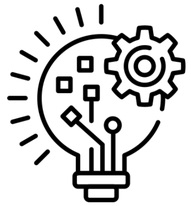
Green & Innovative Organisations



Carbon Strategy



Circular Strategies



Research & Innovation Management

HVAC Design & Engineering

Whether you are upgrading an existing space or planning a new build, quality HVAC design is essential to ensure internal comfort and compliance with regulations

What we can do for you

- Heating, Ventilation and Air Conditioning Design
- Heating and Cooling Load Calculations
- Project Cost Estimation
- Product Specification
- Independent Design Review
- Commissioning Management

Building Physics & Modelling

Through high standard accurate models you can maximise comfort and minimise the use of energy and materials

What we can do for you

- Dynamic Energy Modelling
- Microclimate Analysis
- Thermal Comfort and Overheating Assessments
- CFD Analysis
- Condensation Risk Assessments
- Climate Change Impact Assessment
- Post Occupancy Evaluations and Monitoring
- Compliance with National Standards

Energy Efficiency Retrofits

With energy prices rising, it makes more business sense than ever to implement energy efficiency retrofitting across all types of buildings

What we can do for you

- Opportunity Assessments and Scope Development
- Support with Upgrade Proposals
- Assistance with Project Financing
- Assistance with Government Support
- Project Management
- Measurement and Verification of Savings
- Ongoing Operational Support

Exergy and Resource Efficiency

Ensure the best use of all your scarce resources

What we can do for you

- Energy Audits and Efficiency Assessments
- Resource Audits and Assessment
- Social, Economic and Environmental Assessments
- Cost Benefit and Financial Return analysis
- Strategies for improvement and overall resource optimisation
- Monitoring and Performance Verification

Green Building Certification

Across a broad range of certification schemes, we provide compliance guidance backed up with technical engineering experience to help you achieve your goals

What we can do for you

- BREEAM, LEED, WELL Certification
- Energy Savings Opportunity Scheme (ESOS) Assessment and Compliance Guidance
- Energy Performance Certificates (EPC) and Minimum Energy Efficiency Standards (MEES) Compliance Guidance
- Site surveys and construction supervision
- Third-party design and compliance review

Renewable Energy Systems & Low Carbon Solutions

Helping you to reduce your carbon footprint and dependency on fossil fuels

What we can do for you

- Techno-economic Assessments
- Conceptual Design
- Project Cost Estimation
- Project Planning
- Product Specification
- Installation and Commissioning Support
- Monitoring and Performance Assessments

Carbon Strategy

Providing top level guidance and advice to portfolio holders and supporting organisational sustainability

What we can do for you

- Environmental Targeting and Policy
- Risks and Opportunities Identification
- Benchmarking
- Corporate Sustainability Strategy
- Community Level Sustainability Management
- Performance Monitoring and Reporting

Circular Strategy

Unlock circular economy opportunities around the design, construction, operation, retrofitting, repurposing and final end-of-life strategy of buildings and infrastructure assets

What we can do for you

- Circularity assessments
- Design thinking and Circular Design Strategies
- Value Chain Mapping
- Circular Business Models
- Industrial symbiosis and waste valorisation
- Monitoring and Performance Assessments
- Dilapidation Surveys

Digital Engineering and BIM

Improving the speed and efficiency of construction processes through the use of Building Information Modelling (BIM)

What we can do for you

- Project BIM implementation and COBie support
- Architectural and MEP BIM content creation and co-ordination
- HQ Rendering BIM visualisation and VR/AR walk-through set up
- BIM enabled asset management
- Client and facilities management BIM Awareness
- Contractor and supplier BIM awareness and capability assessment

Process Development

We are pioneers in designing and assessing novel engineering processes to produce added value components and products

What we can do for you

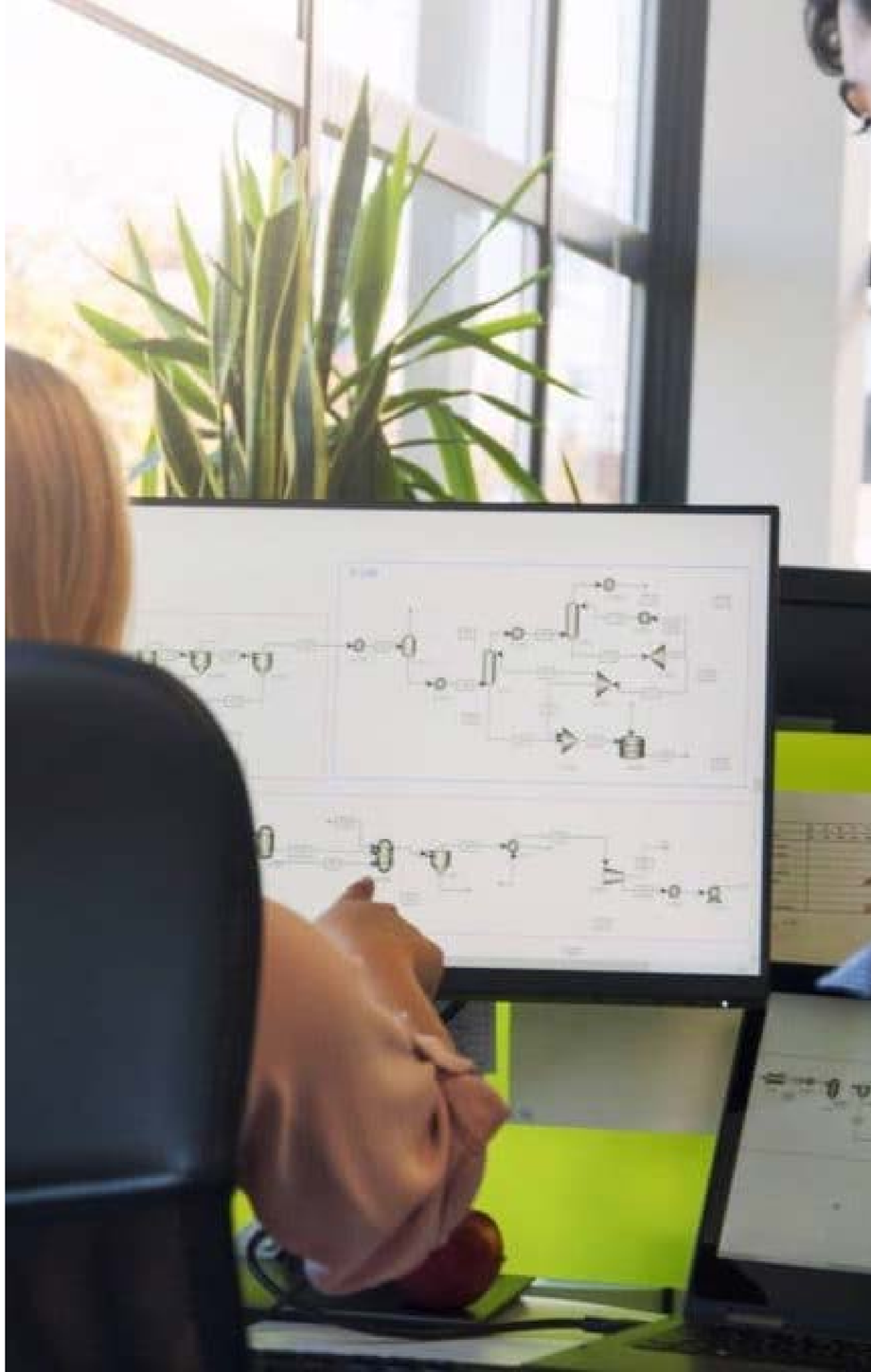
- Process Design
- Technology Integration
- Preparation of Process Flow Sheets, P&IDs and all technical documentation
- Mass and Energy Balances

Process Modelling

Predict the behaviour of chemical, physical and other technical processes and unit operations in a simulated environment, providing insight into how a process will behave in reality

What we can do for you

- Process Simulation
- Process Optimisation
- Energy Optimisation (Exergy / Pinch Analysis)
- Virtual Scale-Up



Scale-Up and Plant Design

We take technologies or conceptual designs and scale them up into pilot or demonstration plants

What we can do for you

- Pilot Plant and Demonstration-Scale Design
- Equipment Sizing and Specifications
- Preparation of Tender Documentation
- Vendor/Contractor Selection

Techno-Economic Assessment

Robust economic models that generate accurate and reliable estimates to determine the feasibility of your novel process

What we can do for you

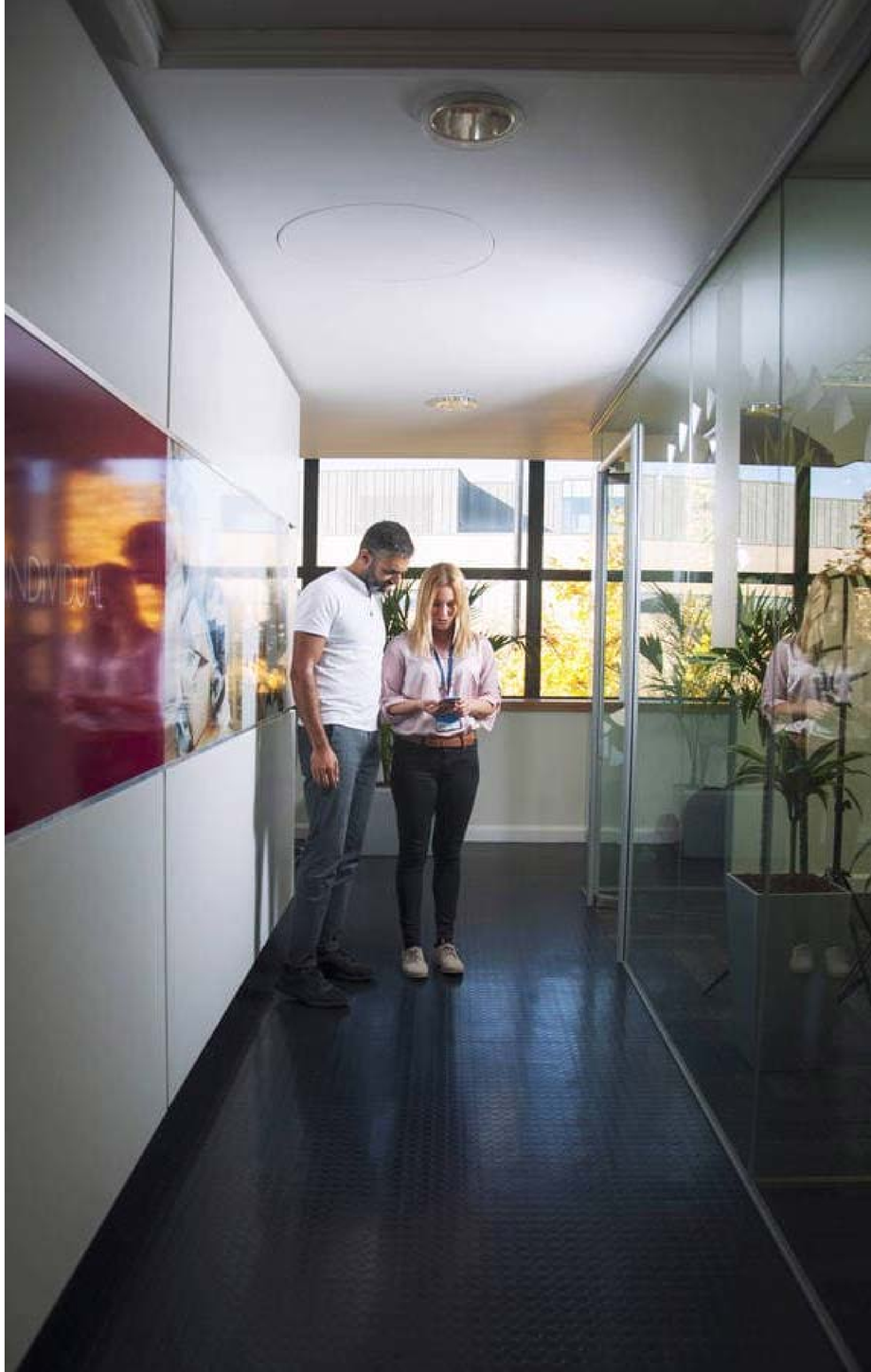
- Estimation of capital and operational costs
- Sales and Price Forecasting
- Estimation of Financial Returns
- Economic Modelling
- Sensitivity Analysis

Research & Innovation Management

Using our wealth of experience in R&D projects, we help our clients in a full spectrum of ways across the project life cycle

What we can do for you

- Innovation Strategy Review
- Advice on Securing Innovation Grants and other Funding Mechanisms
- Technical Support on Proposal/Bid Writing
- Technology Prototyping and Demonstration Guidance
- Technology Validation and Monitoring Support
- Stakeholder Identification and Matchmaking
- Project Management and Technical Coordination Support

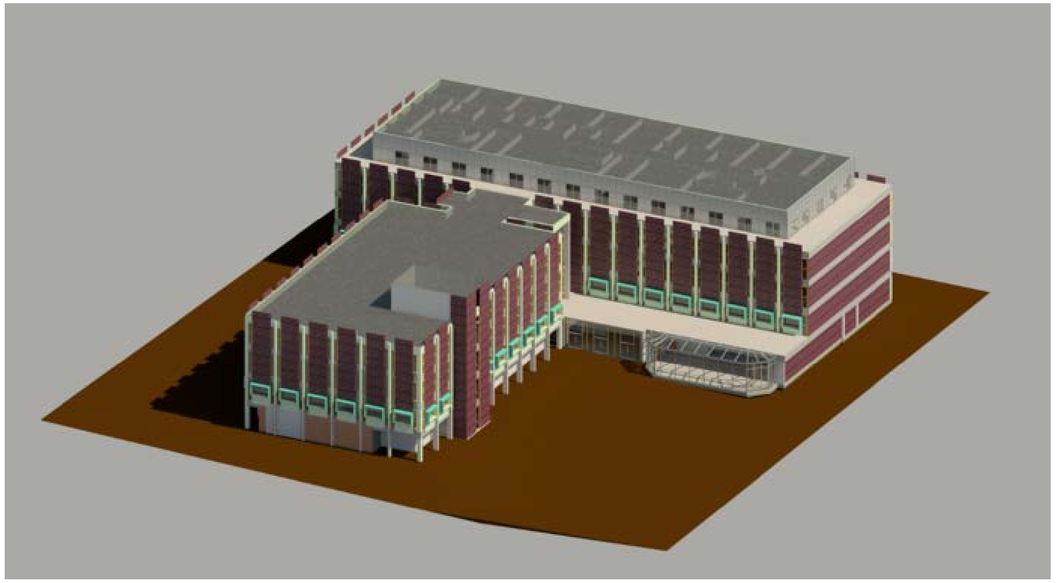


Projects

Sustainable Buildings

Retrofitting of Coventry University, UK

Exergy provided energy efficiency consultancy and engineering services to Coventry University.
Innovative technologies installed in the campus buildings:



Richard Crossman Building BIM
Delivered by using Autodesk Revit Architecture

- Phase Changing Material (PCM) integrated passive cooling
- Aerogel insulation mortar
- Vacuum Insulated Panels (VIP)
- Building Integrated PV panels
- Ventilated Façade

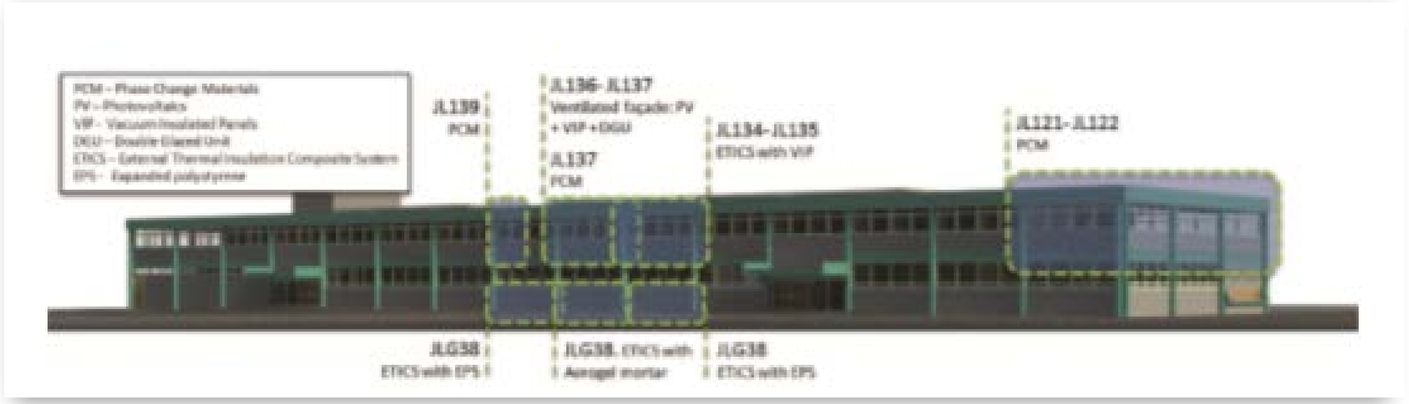
Energy efficiency improved by **73%**

Carbon emissions reduced by **64%**

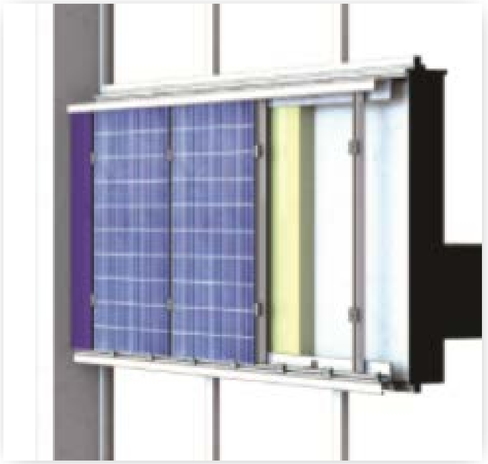
Annual operation costs reduced by **65%**

Sustainable Buildings

Retrofitting of Coventry University, UK



Aerogel insulation mortar



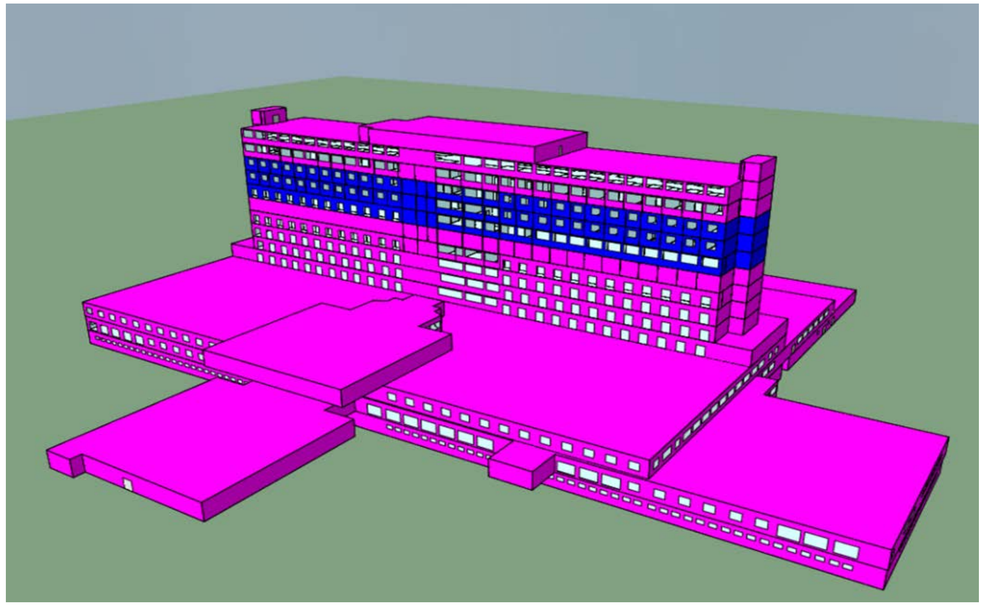
Building Integrated PV – Ventilated Building Façade system

Phase Changing Material (**PCM**) Passive Cooling

Sustainable Buildings

Terrassa Hospital, Barcelona (Spain)

Exergy provided energy efficiency consultancy and engineering services to the Terrassa Hospital in Barcelona, Spain. The following innovative technologies were designed and installed in the hospital:



Hospital de Terrassa

Energy simulations were delivered by using IES VE

- Indoor and outdoor LED lighting
- High efficiency double-glazing
- Aerogel insulation
- HVAC system optimization

Energy efficiency improved by **58%**

Carbon emissions reduced by **54%**

Annual operation costs reduced by **52%**

HVAC Engineering & Low Carbon Design

Oneida High-Rise, Minnesota, USA

In 2017, Exergy was appointed by Oneida Realty to undertake an energy efficiency retrofit assessment.

The ageing nature of technology in the buildings led to relatively high operation costs prompting investigation into possible improvements.

Final designs and figures were presented to Oneida, supporting a business case for initiating improvements to the building including:

- Building automation system
- High efficiency low temperature central heating system
- Combined Heat and Power (CHP) plant
- Improved air tightness
- Solar PV Panels

Annual operational savings of **50%**

Carbon emissions reduced by **60%**

Energy efficiency improved by **38%**

Solar PV Design

CBN Military Academy, Nigeria

Exergy was appointed to develop, design and install a solar PV system for the military facilities in Kaduna, Nigeria.

3D RENDERS
Site View

Exergy delivered the following items:

- BIM (Revit model of the existing building)
- Enhanced 3D visualisation
- Solar PV feasibility study and design

Annual operation costs reduced by **48%**

Carbon emissions reduced by **42%**

Achieved peak power output of **430 kW**

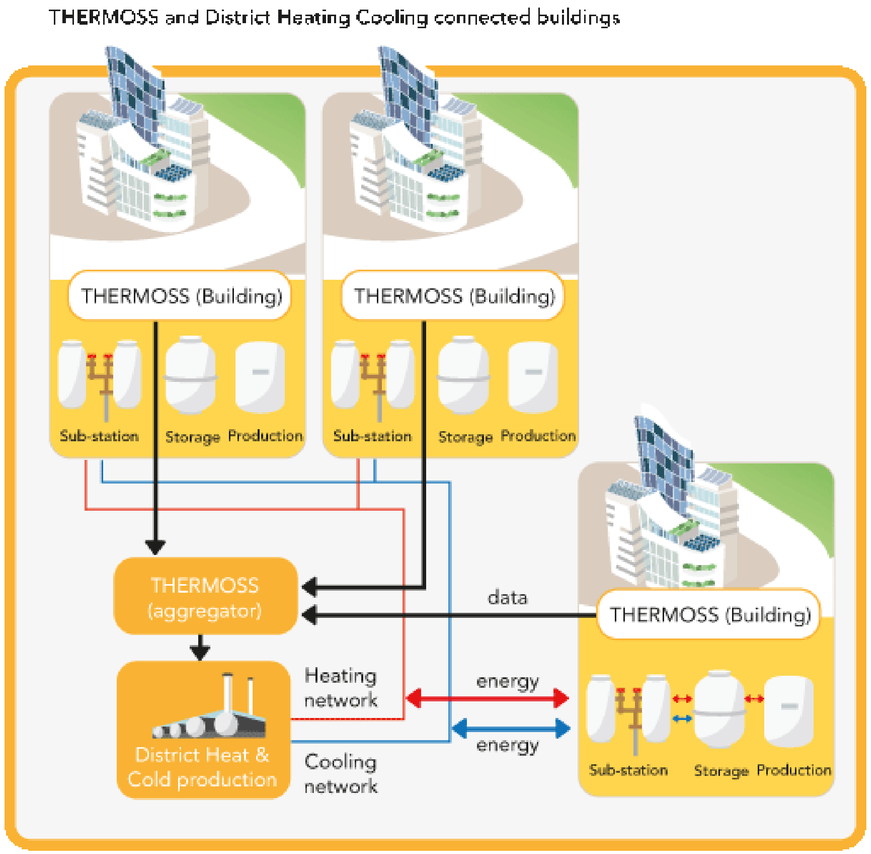
District Energy

Energy System Upgrades, UK and Latvia

In collaboration with leading heating and cooling technology manufacturers, Exergy is developing innovative methods and tools to effectively **match energy supply with energy demand** through real-time management of thermal energy at building and community level.

Innovative technologies are being designed and tested within several different communities in Europe, including University of Southampton:

- High efficiency air-source heat pumps
- Micro CHP Fuel Cells
- High efficiency solar energy systems
- District Heating and Cooling control systems



Annual operation costs reduced by **39%**

Carbon emissions reduced by **32%**

Energy efficiency improved by **38%**

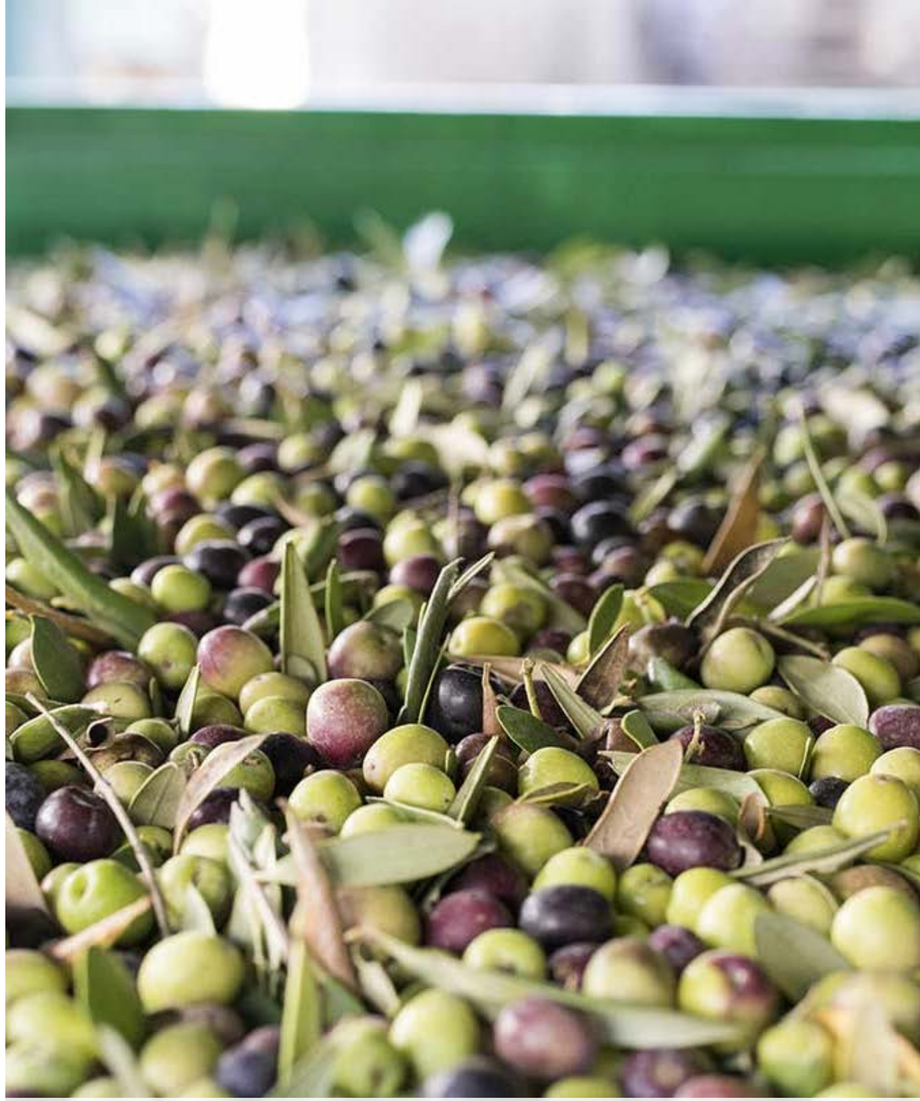
Process Design and Scale-Up

Olive Waste Valorisation Technologies, Europe

Exergy, along with a consortium of European partners assessed the viability of implementing a process for conversion of olive oil industry waste to fuels based around the **Fischer-Tropsch** process.

Exergy provided a range of process design including:

- Conceptual design of the entire waste to fuel process
- Overall process design including modelling and optimisation of pilot-plant gasifier
- Scale-up of lab scale processes and design of pilot-scale process plant equipment
- Simulation and optimisation of the process at an industrially relevant scale to facilitate evaluation of economic and environmental credentials
- Undertaking of case studies to evaluate alternative industrial scale production processes



Efficiency of chemical pre-treatment **78%**

Efficiency in downstream processing

Agrowaste Process Plant Design

Lleida (Spain) and Palma (Italy)

Exergy was responsible for the design and set up of two biorefineries, in Italy and Spain for the production of high-value bio-compounds with application in packaging, ingredients for the food industry and manufacturing of agricultural materials.

The project integrated a range of technologies, into a fully flexible and efficient biorefineries, some of the technologies utilised included:

- Mechanical pre-processing of biomass
- Thermal and chemical treatments
- Ultrasound-assisted extraction
- Solvent extraction
- Ion-exchange resin
- Filtration, ultrafiltration and diafiltration

Some of our R&D Projects

Exergy's key advantage in comparison with our competitors is our active engagement in local and international innovation projects and long-term partnerships with world-leading universities and research institutions

TriGen

Modular trigeneration system for the production of heating, cooling and electricity, integrating high efficiency heat pump technology and solar energy units

SMARTGEMS energy network

A new holistic approach for the delivery of smart cities and smart grids

ECWIN

Affordable, durable, and large area multilayer coatings for lean manufacturing of energy efficient smart windows

THERMOSS

Development of building and district level energy generation, optimisation and management solutions

Green INSTRUCT

Development of an innovative green wall using construction and demolition waste

agrimax

Green Construction INNOBITE

W2B Waste2Bio

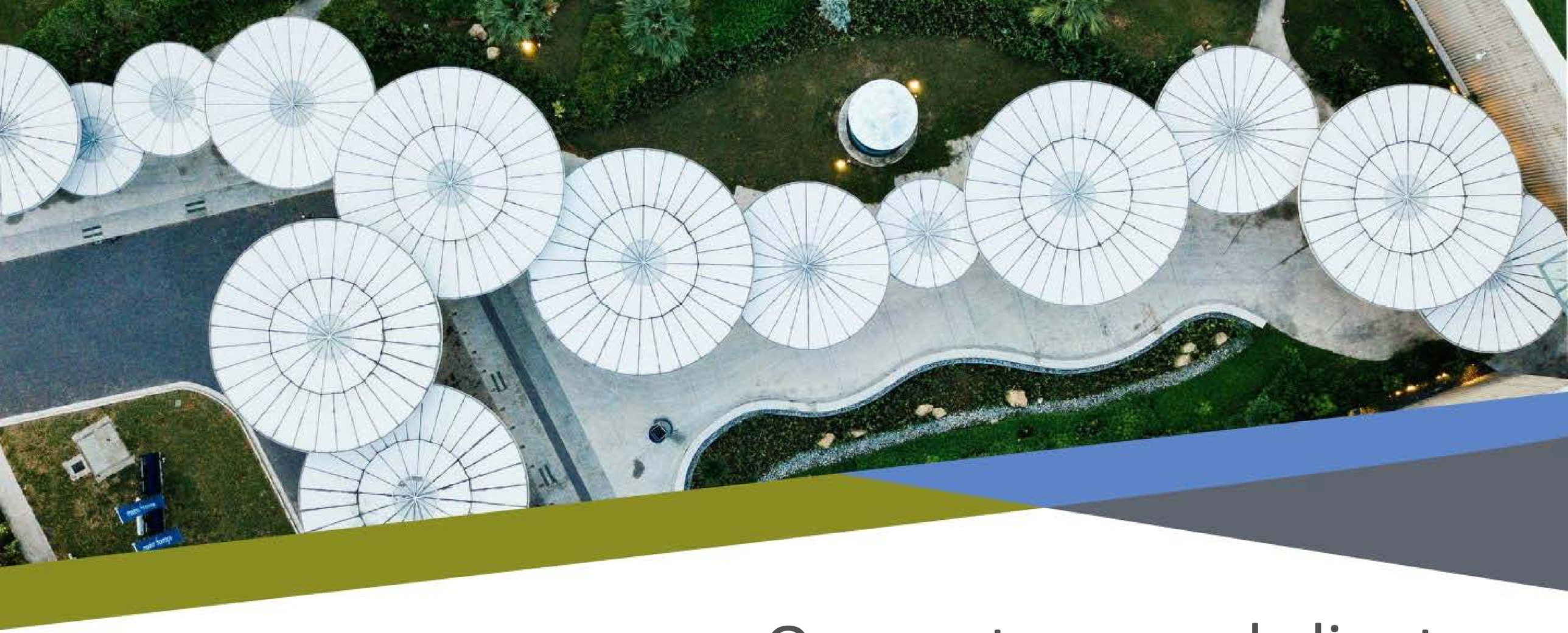
WASTE2FUELS

FFW Fuel From Waste

CLOSEWEE

AGROCYCLE for a circular economy

PENTAGON



Our partners and clients

Exergy works with world-leading research institutions, universities, technology developers and real estate owners


Coolrec


acciona
Construction


CSTB
le futur en construction


AIMPLAS
INSTITUTO TECNOLÓGICO
DEL PLÁSTICO


GIROA
VEOLIA


Schneider
Electric


tbw
RESEARCH


ATB
Leibniz-Institut für
Agrartechnik und Bioökonomie


YPAREX


UNIVERSITY OF
CAMBRIDGE


IFIXIT EUROPE


CAUDAL
Extruline Systems


ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE


KTH
VETENSKAP
OCH KONST


Hennepin


PHILIPS


BOSCH


VERTECH
GROUP


Fraunhofer


ARGOS


DE LA RECHERCHE À L'INDUSTRIE
cea


IMECAL


UBeG
Umwelt Baugrund Geothermie Geotechnik


covestro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HAYAT


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EIA
Ser, Saber y Servir
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POLITÈCNICA
DE VALÈNCIA


CARDIFF
UNIVERSITY


Brunel
University
London


TOMRA


Coventry
University

Count on us to support your sustainability decisions all the way from engineering planning to commissioning

Together, we can make businesses more prosperous and sustainable

www.exergy-global.com

United Kingdom
First Floor, Building 7,
Coventry Innovation Village,
CUTP, Cheetah Road,
Coventry CV1 2TL
+44 (0) 24 7623 6151

Netherlands
Poortweg 4
2612PA
Delft
+31 (0) 852 085 741

United States
Suite 401M
Fueled Collective
400 South 4th Street
Minneapolis MN 55415
+1 612 888 8012

Colombia
Office 1080, Ruta N,
Street 67, #52-20,
Medellín, Antioquia
+57 (0) 516 7770

Federica Fuligni - federicafuligni@exergy-global.com - Project Manager

@exergyltd Exergy