Full scale demonstration of energy positive sewage treatment plant concepts towards market penetration

Fact Sheet

Project Information

POWERSTEP
Grant agreement ID: 641661
DOI
10.3030/641661

Funded under
SOCIAL CHALLENGES - Climate action, Environment, Resource Efficiency and Raw Materials

Total cost
€ 5 173 854,75

EU contribution
€ 3 997 125,99

Closed project

EC signature date
26 May 2015

Start date
1 July 2015
End date
30 June 2018

Coordinated by
KWB KOMPENTENZZENTRUM WASSER BERLIN GEMEINNUTZIGE GMBH

Germany

This project is featured in...
Objective

The municipal wastewater in Europe contains a potential chemical energy of 87,500 GWh per year in its organic fraction, which is equivalent to the output of 12 large power stations. Due to the currently applied technologies and related energy loss at each process step, wastewater treatment in Europe today consumes instead the equivalent of more than 2 power stations. Many operators are thus targeting incremental energy efficiency towards energy neutrality, but recent studies have shown that with novel process schemes using existing technologies, sewage treatment plants could actually become a new source of renewable energy, without compromising the treatment performance.

The project POWERSTEP aims at demonstrating such innovative concepts in first full scale references for each essential process step in order to design energy positive wastewater treatment plants with currently available technologies. The following processes will be demonstrated in 6 full-scale case studies located in 4 European countries: enhanced carbon extraction (pre-filtration), innovative nitrogen removal processes (advanced control, main-stream deammonification, duckweed reactor), power-to-gas (biogas upgrade) with smart grid approach, heat-to-power concepts (thermoelectric recovery in CHP unit, steam rankine cycle, heat storage concepts), and innovative process water treatment (nitritation, membrane ammonia stripping). These individual technology assessments will merge into integrative activities such as treatment scheme modelling and design, global energy and heat management, carbon footprinting, integrated design options, as well as extensive dissemination activities.

POWERSTEP will demonstrate the novel concepts and design treatment schemes of wastewater treatment plants that will be net energy producers, paving the way towards large implementation of such approaches and quick market penetration and supporting the business plans of participating technology providers.

Fields of science
Programme(s)

H2020-EU.3.5. - SOCIETAL CHALLENGES - Climate action, Environment, Resource Efficiency and Raw Materials

H2020-EU.3.5.4. - Enabling the transition towards a green economy and society through eco-innovation

Topic(s)

WATER-1a-2014 - First application and market replication

Call for proposal

H2020-WATER-2014-2015

See other projects for this call

Sub call

H2020-WATER-2014-two-stage

Funding Scheme

IA - Innovation action

Coordinator

KWB KOMPENTENTZZENTRUM WASSER BERLIN GEMEINNUTZIGE GMBH

Net EU contribution
Participants (15)

TECHNISCHE UNIVERSITAET WIEN
Austria

Net EU contribution
€ 445 855,00

Address
Karlsplatz 13
1040 Wien

Region
Ostösterreich > Wien > Wien

Activity type
Higher or Secondary Education Establishments

Links
Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Other funding
€ 0,00
EIDGENOESSISCHE ANSTALT FUER WASSERVERSORGUNG
ABWASSERREINIGUNG UND GEWAESSERSCHUTZ

Net EU contribution
€ 0,00

Address
Uberlandstrasse 133
8600 Dubendorf
Region
Schweiz/Suisse/Svizzera > Zürich > Zürich
Activity type
Other

Other funding
€ 249 221,25

FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN
FORSCHUNG EV

Net EU contribution
€ 319 022,50

Address
Hansastrasse 27c
80686 München
Region
Bayern > Oberbayern > München, Kreisfreie Stadt
Activity type
Research Organisations

Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network
VEOLIA DEUTSCHLAND GMBH

Germany

Net EU contribution
€ 151,543.88

Address
Unter den linden 21
10117 Berlin

Region
Berlin > Berlin > Berlin

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links
Contact the organisation
Participation in EU R&I programmes
HORIZON collaboration network

Other funding
€ 64,947.37

VEOLIA WATER TECHNOLOGIES AB

Sweden

Net EU contribution
€ 1,023,934.28

Address
Klosterangsvagen 11a
226 47 Lund

Region
Södra Sverige > Sydsverige > Skåne län

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Other funding

€ 438 828,97

THIRD-PARTY

KRUEGER A/S

Denmark

Net EU contribution

€ 62 300,00

Address

Gladsaxevej 363
2860 Soeborg

Region

Danmark > Hovedstaden > Københavns omegn

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

Contact the organisation Website Participation in EU R&I programmes HORIZON collaboration network

Other funding

€ 26 700,00

NEAS ENERGY AS

Denmark

Net EU contribution

€ 140 000,00

Address

Skelagervej 1
9000 Aalborg

Region

Danmark > Nordjylland > Nordjylland
BIOFOS AS

Denmark

Net EU contribution

€ 119,787,50

Address

Refshalevej 250
1432 København k

Region

Danmark > Hovedstaden > Byen København

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links

Contact the organisation
Participation in EU R&I programmes
HORIZON collaboration network

Other funding

€ 51,337,50

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BERLINER WASSERBETRIEBE

Germany

Net EU contribution

€ 69,913,00

Address

Neue judenstrasse 1
10179 Berlin
Berlin > Berlin > Berlin

Activity type
Public bodies (excluding Research Organisations and Secondary or Higher Education Establishments)

Links
Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Other funding
€ 0,00

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**UMWELTBUNDESAMT**

Germany
Net EU contribution
€ 150 203,75

Address
Woerlitzer platz 1
06844 Dessau-rosslau

Region
Sachsen-Anhalt > Sachsen-Anhalt > Dessau-Roßlau, Kreisfreie Stadt

Activity type
Research Organisations

Links
Contact the organisation  Website  Participation in EU R&I programmes  HORIZON collaboration network

Other funding
€ 0,00

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**ELECTROCHAEA DK APS**

Denmark
Net EU contribution
€ 108 765,13
APS AQUA PLANT SOLUTIONS GMBH

Germany

Net EU contribution
€ 175 145,95

Address
Schmiedestrasse, 15
26629 Grossefehn

SME
Yes

Region
Niedersachsen > Weser-Ems > Aurich

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links
Contact the organisation
Participation in EU R&I programmes
HORIZON collaboration network

Other funding
€ 75 062,55
SUSTEC CONSULTING & CONTRACTING BV

Netherlands
Net EU contribution
€ 115 500,00

Address
Agro business park 7a
6708 PW Wageningen

SME Yes

Region
Oost-Nederland > Gelderland > Veluwe

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Links
Contact the organisation
Participation in EU R&I programmes
HORIZON collaboration network

Other funding
€ 49 500,00

Atemis GmbH ingenieurburo fur abwassertechnik energie management und innovative systementwicklung

Germany
Net EU contribution
€ 61 425,00

Address
Dennewartstrasse 25-27
52068 Aachen

SME Yes

Region
Nordrhein-Westfalen > Köln > Städteregion Aachen

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
ARCTIK SRL
Belgium

Net EU contribution
€ 205 782,50

Address
Avenue de broqueville 12 - 1st floor
1150 Woluwe-saint-pierre

SME
Yes

Region
Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest > Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest > Arr. de Bruxelles-Capitale/Arr. Brussel-Hoofdstad

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Other funding
€ 88 192,50

Last update: 5 April 2023

Permalink: https://cordis.europa.eu/project/id/641661

European Union, 2023