



# Worldwide Consultant

in Biomass and Waste Projects

**DP CleanTech**  
Creating value from waste



# Worldwide Consultant in Biomass and Waste projects

DP CleanTech Ltd (DP) is an independent, global company specializing in the management and conversion of various waste streams to sustainable energy and products. DP owns the leading European technologies for Biomass to power, Anaerobic Digestion and Landfill Remediation and has completed over 300 projects around the world.

DP is headquartered in Europe and has 9 offices in 8 countries across Europe, Asia and the Middle East, employing ~100 employees worldwide.

DP is well recognised as experts in the design, manufacture and operation of biomass combustion and waste management solutions. DP offers a fully integrated product and services proposition, with capabilities in engineering design; equipment manufacturing and sourcing; installation; commissioning and servicing.

With our considerable experience and technical expertise in all aspects of project design and management, DP also offers an independent consultancy service to provide critical insights for project owners and developers seeking the best advice and information for their new or existing project, wherever it is located. Our operational experience adds a further dimension to our capabilities for troubleshooting problem projects.

DP's Consultancy division is an international team of highly experienced and globally mobile professionals who have worked on projects in all continents. They have unparalleled knowledge of commercial project design and implementation and are supported by Centres of Engineering Excellence in Denmark, Austria, Poland and the UK to provide technical advice and analysis.



## DP has experience and technologies in



**Advanced Combustion**



**Gasification**



**Anaerobic Digestion**



**Waste Sorting and Processing**



**Materials Recovery**



**Emissions Management**



**Landfill Mining**



**Landfill Remediation**

DP's technologies and service projects are referenced in over 300 projects in 42 countries around the world. Some projects have been operating successfully for over 20 years, and our depth and breadth of experience is key to the success of our consultancy business which include clients from all the industry segments: major utilities, governments and municipalities; independent power producers (IPP's); project developers; industrial users; private investors and EPC contractors.

DP technology is behind the first biomass plant in the world in 1996, and the first commercial plant in China in 2006. The technology and knowhow behind the first European waste collection and processing facilities originated with DP engineering experts in the 1990's; and has been further complemented with groundbreaking landfill mining and remediation technologies.



# DP Consultancy Services for Biomass and Waste to Power

DP offers services throughout the project development and implementation process across all waste and biomass projects.

## Project Development



- Conceptual study
- Pre-feasibility study
- Feasibility study
- Environmental impact assessment (EIA)
- Fuel analysis and feedstock plan
- Waste audits
- Waste management studies, concepts and strategies
- Investment studies and business plans
- Landfill gas surveys
- Landfill remediation studies
- Site selection and site development
- EPC contractor tendering, selection
- Economic impact analysis
- BAT (Best Available Technology)
- Technology due diligence

## Project Analysis, Design and Implementation



- Conceptual and Preliminary plant and technology design
- Capex/Opex modelling
- Risk Assessment
- RFQ
- Pre-qualification
- Bid evaluation and contract negotiation (FIDIC or Other)
- Owners Engineer support
  - Procurement
  - Progress
  - Installation
  - Commissioning
- Operation & Maintenance support

## Plant Consulting Services for Existing Projects



- Economic modelling
- Plant audits
  - Technical due diligence
  - Process review
  - Automation
- Plant optimisation review
- Plant upgrade
- Plant retrofits



# Project References Around the World

## Biomass Energy

Year	Project Location	Scope of Supply	Fuel
2011-2012	Poland	Pre-engineering and basic design	Straw and wood chips
2013	El Salvador	Fuel study and conceptual design	King grass
2013-2014	Chile	Conceptual design and pre-engineering	Straw and wood chips
2015	Nicaragua	Fuel study and conceptual design	Giant king Grass
2015	Ngodwana, South Africa	Pre-engineering and conceptual design	Wood chips
2017	Punjab, India	Conceptual design	Rice straw
2017	Australia	Pre feasibility study	Invasive native scrub
2017	UK	Fuel and design study	Chicken litter
2017	China	Project corrosion study	Waste wood
2017	Myanmar	Coal to biomass conversion study and conceptual design	PKS, EFB, fibre, woodchips
2017	Oahu Hawaii	Fuel study and conceptual study	Waste wood
2018	Hawaii, Maui	Fuel study and conceptual design	Sorghum
2018	Mauritius	Fuel study and conceptual design	Arundo donax
2019	Shinmoji, Japan	Pre-engineering	PKS

## Straw Fired Plant in Winsko, Poland

In 2011-2012, Polish Energy Partners (PEP) started its straw fired power plant program in Poland, and the 29 MWe plant in Winsko was the first project, using straw as the primary fuel. DP's scope was the firstly the preparation of all plant pre-engineering and basic design in order to obtain the water, building and environmental permits required for the project; and secondly to provide the procurement package and BOQ.

### Assignment

Pre-engineering, basic design and BOQ

### Client

Polish Energy Partners SA

### Services

Technical assistance, procurement assistance

### Plant Information

29 MWe Straw fired plant with fuel consumption of 85 MW/h





## Biomass Fired Plant in Ngodwana, South Africa

In 2015 ELB and KCC were selected as the preferred bidder for a 25MW biomass project at Sappi Ngodwana Mill in Mpumalanga, South Africa. The project was selected in the 4th window of the South African Department of Energy's Renewable Independent Power Producers Procurement Programme (REIPPPP). The project partners are a global consortium of Sappi Southern Africa, KC Africa and Fusion Energy.

### Assignment

Pre-engineering, basic design and BOQ of boiler Island

### Client

KCC /ELB Engineering Services as EPC contractor

### Services

Pre-engineering, technical assistance, project management

### Plant Information

25 MWe biomass fired plant. Commercial operation to start in 2020



## Biomass Fired Plant in NSW, Australia

A 2-phase pre-feasibility study in late 2017 to evaluate the potential for developing Invasive Native Scrub (INS) 30 MWe biomass-fired power plant projects in New South Wales, Australia. The scope was to gather information for informed decision making; identify potential technology and other barriers and the recommended solutions; and establish the best business model and economic viability for development.

The first phase covered site identification and technology selection to support grid connection and permitting. The second phase covered the business and financial model (capex, fuel price, opex and electric power offtake price) .

### Assignment

Prefeasibility of 30 MWe biomass fired power plants in NSW, Australia using INS

### Client

ECO-Nexus

### Services

Technical assistance, commercial assistance

### Plant Information

10-30 MWe biomass fired plant. Project not started.



## Biomass Fired Plant in Jeongeup, Korea

A 3-phase pre engineering Consultancy project to support the permitting for a 23 MWe wood chip fired power plant in Jeongeup, Korea. The pre-engineering was done for the whole power plant, and was conducted in 3 phases: Technology selection; site identification and the business and financial model (capex, fuel price, opex and electric power offtake price).

### Assignment

Pre-engineering and basic design of a 23 MWe biomass fired power plants

### Client

Dong Yang P&F, Korea

### Services

Technical assistance, commercial assistance

### Plant Information

23 MWe biomass fired plant.  
Project not started – permitting ongoing



## MSW/MRF Solid Waste Treatment

1992-1999

24 Projects in Austria, Canada, Germany, Czech Republic and Greece

Year	Project Location	Scope of Supply	Fuel
2000	Lens, France	Consultancy and design services, delivery of special equipment	100 tpd sorting plant for recyclables
2000	Paris, France	Consultancy and design services, delivery of special equipment	220 tpd sorting plant for recyclables
2000	La Coruna, Spain	Consultancy and design services, delivery of special equipment	650 tpd MSW treatment plant in front of AD plant with RDF production
2000	Lucknow, India	Consultancy and design services, delivery of special equipment	500 tpd MSW treatment plant in front of AD plant with RDF production



Year	Project Location	Scope of Supply	Fuel
2004	Sharjah, UAE	Consultancy and design services, delivery of all equipment, EPC	2 treatment plants with each 6.000 tpd of excavated dump material
2004-2005	Al Ain, UAE	Consultancy and design services, delivery of all equipment, EPC	1,200 tpd MRF treatment plant with RDF production and compost plant
2006	Sharjah, UAE	Consultancy and design services, delivery of all equipment, EPC	2,200 tpd recycling plant for C&D waste
2007	Czech republic	Design of a 100 tpd food waste treatment plant inside an existing plant.	MSW
2008-2015	Al Ain, UAE	Operation management for 1,200 tpd MRF, compost and plastic recycling plant	MSW
2009	Ras Al Khaimah, UAE	Consultancy and design services, Basic and detail design	800 tpd MBA plant for MSW
2010	Al Ain, UAE	Consultancy and design services, delivery of all equipment, EPC, supervision of operation	Upgrade of existing compost plant, installation of fully automatic packing plant and installation of 50 tpd automatic plastic recycling plant for HDPE, LDPE, PP, PS
2012	Cebu, Philippines	Consultancy and design services, Basic and detail design	250 tpd sorting plant for MSW with the production of RDF and AD plant for the organic fraction
2012	Addis Ababa, Ethiopia	Conceptual and Basic design	MSW
2012-2017	Saudi Arabia	Biyearly waste audit at 5000 tpd MSW plant	MSW
2012-2017	Riyadh, KSA	Supervision and guidance of operation	5.000 tpd MRF plant
2013-2017	Riyadh, KSA	Quarterly waste audits	5.000 tpd MRF plant
2013	Sibiu, Romania	Consultancy and design services, delivery of all equipment, EPC, supervision of operation	100 tpd sorting plant for separate collected recyclables and two 100 tpd MBA plants for the collected rejects



Year	Project Location	Scope of Supply	Fuel
2014	Sibiu, Romania	Design and delivery of special parts	MRF and BMT for 250 tpd MSW
2017	Sri Lanka	Fuel study and EIA support	MSW
2017	United Arab Emirates	Technical due diligence	MSW
2017	Saudi Arabia	Improvement study on existing 5000 tpd MRF plant	MSW
2017	United Arab Emirates	Improvement study on existing 1000 tpd MRF plant	MSW
2017	United Arab Emirates	Preparation of technical proposal for an integrated waste management facility	MSW
2017	Northern Emirates, UAE	Basic design, CAPEX and OPEX estimations, preparation of the documents for public tender	Integrated waste management facility (incl. sorting station, RDF plant and ADOS plant) for 1,000 tpd
2017	Dubai, UAE	Technical Due Dilligence with improvemens and cost estimations	800 tpd "dirty" MRF
2017	Riyadh, KSA	Study with basic design	Improvement of existitng MRF to 7,500 tpd with fully automatic stations and a 500 tpd AD plant
2017	Dubai, UAE	Technical Due Dilligence with improvemens and cost estimations	1,000 tpd MRF plant
2017	Naga,Cebu, Philippines	Design and delivery of special parts	Extension of the existitng MRF/RDF plant to 500 tpd

## Waste to Energy Power Plant in Addis Ababa, Ethiopia

2012, design on the 1,400 tpd waste plant began.

The Reppie Waste-to-Energy plant in Addis Abbaba receives 1,400 tonnes of municipal waste a day, representing an annual waste-disposal capacity of 420,000 tonnes. This project was an important showcase for other cities and countries across Africa, and DP was involved from the outset in 2012. The consultancy was for the design and supply of the combustion plant, with some specific requirements for a redundant energy generation and evacuation system.

Commercial operation started in 2018 and continues to be successful.

### Assignment

Design and supply of 2 x 700 tpd grate, boiler and flue gas cleaning system

### Client

Ethiopian Electric Power (EEP)

### Services

Design, engineering and procurement of grate, boiler and flue gas cleaning system

### Plant Information

2 x 700 tpd Waste to Energy lines with 25 MWe output





## Waste to Energy power plant in Colombo, Sri Lanka

The consultancy project was commissioned after a deadly landslide at the vast dumpsite outside Colombo, Sri Lanka.

The project scope was to study the waste profile and conduct a technical and business feasibility study in order to propose a solution. The recommended solution was a combined incineration and Anaerobic Digestion plant with recycling facility, and is the first of its kind in Sri Lanka. The current inputs to the landfill are 640 tonnes of municipal waste a day, 500 tpd to Incineration providing 12 MWe gross; and 160 tpd to the AD plant providing 1.5 MWe gross.

### Assignment

Project development, design and supply of 1 x 500 tpd grate, boiler and flue gas cleaning system and AD plant

### Client

Fairway Waste Management

### Services

Project development, fuel study, technical assistance for permitting. Design, engineering and procurement of grate, boiler, flue gas cleaning system and AD plant.

### Plant Information

1 x 500 tpd Waste to Energy lines with 12 MWe output.  
1 x 160 tpd AD plant with 1.5 MWe output.  
Commercial operation is expected in 2020.



## Waste to Energy power plant in Bornholm, Denmark

DP was the engineering consultant for 2 stages of upgrade development for a waste to energy plant in Bornholm, Denmark. In 2010 DP was requested to redesign the plant to improve the waste throughput from 20,000 TPY to 26,000 TPY. DP designed a Water Tube boiler to replace the Smoke Tube boilers; a freestanding economiser as 3<sup>rd</sup> pass after the boiler and installed a new chute and pusher system on the boiler/grate.

In 2018 a further increase in throughput from 26,000 TPY to 31,000 TPY was required. DP designed a new 3<sup>rd</sup> pass with water tubes connected to the boiler and a new, enlarged freestanding economiser.

### Assignment

Project development  
2010 Upgrade the plant from 20,000 to 26,000 TPY of waste throughput.  
2018 Upgrade the plant from 26,000 to 31,000 TPY of waste throughput.

### Client

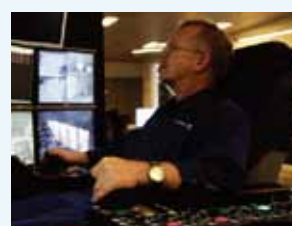
BOFA

### Services

Project development, engineering, project management, supply of equipment

### Plant Information

1 x 100 tpd Waste to Energy line



# Biogas

Year	Project Location	Scope of Supply	Fuel
2006	Benešov, Czech Republic	Consultancy and design services, delivery of all equipment, EPC, supervision of operation	105 tpd AD plant with ADOS system for separate collected organic waste
2006-2011	Singapore	Consultancy and design services, delivery of all equipment, EPC, supervision of operation	300 tpd AD plant with ADOS system for separate collected organic waste
2007	Mimon, Czech Republic	Consultancy and design services, Basic and detail design	100 tpd AD plant with ADOS system for separate collected organic waste
2013	Zhengzhou, China	Consultancy and design services, basic and detail design	300 tpd AD plant with ADOS system for separate collected organic waste
2014-2016	Cebu, Philippines	Consultancy and design services, delivery of all equipment, EPC, supervision of operation	130 tpd dry anaerobic digestion plant (DAD System) for organic waste
2014	Benešov, Czechia	Monitoring of technology and economics with monthly reports	100 tpd Anaerobic Digesting plant
2017	Benešov, Czechia	Detail design and tender documentation	Extension of the plant with a buffer tank
2017	Benešov, Czechia	Supervision of construction	Extension of the plant with a buffer tank
2017	Bratislava	Basic and detail design for a biogas plant	200 tpd AD plant with ADOS system for OFMSW
2017-2018	Czech Republic	Design of a refurbishing of an existing biogas plant	Biological treatment
2017-2018	Philippines	Basic & detailed design of extension of MRF, RDF and DAD plant in Naga	MSW
2018	Naga, Cebu, Philippines	Design and delivery of special parts	Extension of the existing anaerobic digestion plant with an ADOS system
2019	Benešov, Czechia	Design of the extension of the plant with a digestate storage tank	
2019	Malta	Design and delivery of special parts for the upgrade of an existing Biogas plant	250 tpd separate collected kitchen waste





## Landfill Remediation

**1992-1999**

**12 Landfill remediation projects in Germany, Czech Republic, Austria and South Korea**

Year	Project Location	Scope of Supply	Fuel
1997-2001	Landfill Krizne Cesty Buchlovice, Czech Republic	General contractor	LFG degassing system
1997-2002	Landfill Chodov, Czech Republic	General contractor	LFG degassing system
1997-2002	Landfill Seninka, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
1997-2004	Landfill Pribysice, Czech Republic	General contractor	LFG degassing system
1997-2004	Landfill Bopo, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
1997-2004	Landfill Solecka, Czech Republic	Consultancy and design services	Monitoring of landfill
1997-2004	Landfill Zdounky, Czech Republic	Consultancy and design services	Closing and recultivation
1998-2004	Landfill Grygov, Czech Republic	Consultancy and design services	Closing of landfill, leachate and LFG solution
1998-2006	Benešov, Czech Republic	General contractor	280,000 m <sup>3</sup> landfill remediation project. SWS and treatment.
1999-2001	Landfill Praksice, Czech Republic	General contractor	LFG degassing system
2000	Landfill Zivotice, Czech Republic	Consultancy and design services	Closing of landfill, leachate and LFG solution
2000	Landfill Doubrava, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2000	Sita di Fungaia, Italy	General contractor	50,000 m <sup>3</sup> landfill remediation project. SWS and treatment
2000	Santa Fiora, Italy	General contractor	220,000 m <sup>3</sup> landfill remediation project. SWS and treatment
2000	Braambergen, The Netherlands	General contractor	460,000 m <sup>3</sup> landfill aeration project with SWS
2000	Omuta City, Japan	General contractor	60,000 m <sup>3</sup> landfill remediation project. SWS and treatment



Year	Project Location	Scope of Supply	Fuel
2000-2004	Landfill Petruvky, Czech Republic	General contractor	LFG degassing system
2000-2004	Landfill Békéscsabai / H	General contractor	Closing of landfill, leachate and LFG solution
2000-2004	Landfill Brezova	Consultancy and design services	LFG pumping test and prognosis
2000-2004	Landfill Temice	Consultancy and design services	LFG pumping test and prognosis
2001	Landfill Babica, Slovakia	Consultancy and design services	LFG pumping test and prognosis
2001	Landfill Mrsklesy, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2001	Landfill Bohumin, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2001	Landfill Vestin, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2001-2002	Landfill Ticha, Czech Republic	General contractor	Closing of landfill, leachate and LFG solution
2001-2004	Landfil Sovinec, Czech Republic	General contractor	LFG degassing system
2002	Landfill Getini, Estland	General contractor	LFG degassing system
2002	Landfill Senec, Slovakia	Consultancy and design services	LFG monitoring
2002	Landfill Rejchartice, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2002	Landfill Orlik, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2002-2004	Landfill Kozlany, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2002-2004	Landfill TKO Pravetin, Czech Republic	Consultancy and design services	LFG monitoring





<b>Year</b>	<b>Project Location</b>	<b>Scope of Supply</b>	<b>Fuel</b>
2003	Landfill Nová Role, Czech Republic	Consultancy and design services	LFG monitoring
2003	Landfill Jílové, Czech Republic	Consultancy and design services	LFG monitoring
2003	Landfill Hradec u Pacova, Czech Republic	Consultancy and design services	LFG monitoring
2003-2004	Landfill Nemečice na Hane, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2004	Landfill Suchy důl, Czech Republic	Consultancy and design services	LFG pumping test and prognosis
2004-2010	United Arab Emirates	Project management of a 7.5 Mio m <sup>3</sup> landfill mining project.	Landfill remediation
2004-2010	Sharjah, UAE	General contractor	7.5 Mio m <sup>3</sup> landfill remediation project, SWS system and treatment
2006-2010	UAE	Operation supervision for the Sajja landfill management and CDW recycling plant operation.	MSW
2006-2010	Sharjah, UAE	O & M Contract	Sajja landfill and CDW plant operation and management
2007	Québec, Canada	General contractor	3.5 Mio m <sup>3</sup> landfill remediation project. SWS and treatment
2007-2008	Beograd, Serbia	Consultancy and design services	400,000 m <sup>3</sup> landfill remediation project. SWS and treatment
2007-2010	Sharjah, UAE	General contractor	Construction of a new landfill cell with a volume of 3.5 mill m <sup>3</sup> , upgrade of existing landfill with new infrastructure



Year	Project Location	Scope of Supply	Fuel
2008	Minsk, Belarus	General contractor	3 MW LFG collection and co-generation plant
2013	Bacau, Romania	General contractor	LFG collection and flaring system
2014	Sibiu, Romania	Consultancy and design services, pumping tests, delivery of equipment	Closing of Remeta landfill with LFG collection and flaring system
2016	Dubai, UAE	Design of the extension of an existing LFG collection plant with 4 MW cogeneration	
2017	Braambergen, NL	General contractor	Long time aeration of 450.000 landfill with SWS system
2017	Weeringermeer, NL	General contractor	Long time aeration of 430.000 landfill with SWS system

## Sanitary Landfill Zdounky, Czech Republic

In 1995 the new sanitary landfill Cell I was designed and constructed by IUT Group company Dekont Umwelttechnik spol.s.r.o. Zlín . in Czech Republic.

The landfill was further developed with new Cells II and III. Environmental and operational monitoring was provided from 1995 till 2006.

The scope of the consultancy included the entire design of the new phases of non-hazardous landfill, including related facilities (landfill gas collection, leachate collection, operations building, access roads, storm water system design, monitoring system design and operation, weighbridge etc). and closure design for older parts of the landfill. This was preceded by a hydro-geological survey, environmental studies for new sanitary landfill, and was followed up with the annual environmental monitoring of the LFG, leachate, ground water and the capacity and stability of the landfill.

### Assignment

General designer, authorized supervision, consultancy

### Client

DEPOZ Zdounky

### Services

Pre-engineering  
Technical assistance  
Project management

### Plant Information

Sanitary landfill for Non Hazardous waste



## Landfill Remediation in Sibiu, Romania

The Remetea landfill in the eastern part of Sibiu had been operating from 1983 to 2004, during which time an estimated 239,000m<sup>3</sup> of waste was deposited.

IUT was called in to review the landfill and provide the required data needed to decide on the design for landfill closure and degassing technology. The scope included an initial landfill gas extraction test to obtain actual gas production data and its intensity within the waste. This data was to be used to decide on a proposal of a degassing system - gas treatment technology.

### Assignment

Basic and detail design for landfill closure, LFG (landfill gas) sucking test and gas production prognosis

### Client

SC FINARA CONSULT SRL

### Services

Technical assistance and testing



# Contact Us

DP has 9 offices around the world in 8 countries – Austria, China, Czech Republic, Denmark, Poland, Thailand, UAE and UK.

To ensure that we can address your needs appropriately, please email [info@dpcleantech.com](mailto:info@dpcleantech.com) for enquiries or further information.

## About DP CleanTech

- ✓ Founded in 2004, DP CleanTech Group designs, engineers, manufactures and commissions complete solutions for managing waste materials; and for conversion of waste materials into clean energy.
- ✓ DP's core technologies originate in Europe and are behind over 300 biomass and waste-related projects around the world.
- ✓ DP's has a broad portfolio of innovative Waste-to-Energy and environmental management technologies with which to lead the advancement of renewable energy and environmental protection.
- ✓ DP technology was behind the first biomass power plant in both Denmark and the first commercial power plant in China.
- ✓ DP has facilities and multiple references across Europe and Asia; and has projects under development in Africa and South America.

