



RAMBOLL SELECTED REFERENCES

Selected References New Waste-to-Energy Facilities and Units

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
National Environment Agency	Singapore	Planning of WtE facility	2.500.000	Technical assistance to team of advisors. Planning and development of synergies between a wastewater treatment facility and waste-to-energy facility. Preliminary design, tender specifications and owners engineer for WtE, sludge incineration, food waste pre-processing and recycling sorting.	2014-2030
Isle of Man Government, Department of Local Government and Environment	UK	Green-field WtE facility	65,000 + 5,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision, commissioning, and project follow-up during 25-year operation contract	1997-2025
North London Waste Authority (NLWA), NEW	UK	New WtE facility, London	700.000	Technical advisor and owner's engineer for the procurement and initial operation of a new two line facility. Work includes initial engineering studies and design development, leading to production of technical specifications and support through the selected procurement process.	2009-2025
Aberdeen City Council	UK	New WtE facility, Aberdeen	150.000	Authority's Technical Advisor. Providing technical advice to the Joint Authorities in their development and delivery of a waste to energy plant.	2016-2022
FCC, Zero Waste, Edinburgh & Midlothian Residual Waste Treatment	UK	Green-field WtE facility	150,000	Technical Advisor to FCC Environment during the preparation and closure of WtE PFI (DBFO) contract. Ramboll work included bid support, supporting FCC with the development of technical specifications, Review of EPC proposals and supporting EPC contract negotiations,	2013-2021
LKS Ingenieurs S. Coop, Arrasate, Mondragon	Spain	New WtE facility, San Sebastian	200.000	New WtE facility, San Sebastian, with two oven lines. As owners engineer responsible for the full Waste-to-Energy scope: review of final layout, review of detailed design, risk assessment, factory acceptance tests and inspections during site acceptance tests and trial operation and performance test.	2017-2020

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Dial-A-Dump, Sydney	Australia	New WtE facility, Sydney	1.100.000	Dial-A-Dump-Industries are building Australia's first waste-to-energy facility in Eastern Creek, Sydney, New South Wales. The facility will recover resources and energy from commercial, industrial, construction and demolition waste. Furthermore, the facility will significantly reduce the amount of waste taken to landfill, hence reducing the emission of landfill gases. Technical Advisor including review of EPC contractor's proposal. Owner's Engineer. Input and assistance to Environmental Impact Statement.	2015-2019
Avertas Energy, Perth	Australia	New WtE facility, Perth	400.000	Technical Advisor including review of EPC contractor's proposal. Owner's Engineer	2015-2019
Urbaser S.A. Gloucestershire	UK	New WtE facility, Gloucestershire	185.000	Technical advisor to Urbaser during the preparation and closure of a WTE PFI (DBFO) contract including bid support, preparation of technical specifications, support in the contracting of suppliers, project management, advisor in the manufacturing and construction phase and the test and commissioning phase.	2009-2019
SAKO a.s., Brno	Czech Republic	Expansion of existing plant with new 132,000 tpa WtE line	132,000	Technical assistance and development of a pre-feasibility study of the new WtE line. The study covered a complete assesment of SAKO's existing WtE facility and and an evaluation and recommendation of an optimal WtE concept for the new line.	2019
Amager Ressource Center	Denmark	Green-field WtE facility (CHP)	560.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning.	2009-2018
Beirut Municipality	Lebanon	New Waste to Energy facility	350.000	Tender documents, project definition and tender procedure	2017-2018
CDR, Beirut	Lebanon	Green-field WtE facility	670.000	Feasibility Study, Preparation of pre-qualification documents and tender documents for solid waste management in Lebanon	2012-2018
Cenviro	Malaysia	New Hazardous Waste Treatment Facility, Johor	20.000	Owners engineer for tendering of a new hazardous waste incinerator to treat hazardous waste from origin of Johor	2017-2018
Dansk Retursystem A/S	Denmark	Machinery tender	-	EPCM contractor	2017-2018

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Ethiopian Electric Power, Addis Ababa	Ethiopia	Green-field WtE facility	400,000	Owner's engineer, design review and supervision, site supervision, quality control and FAT supervision, contract management	2014-2018
Hyundai-HEC Joint Venture	Singapore	Steam performance test at Sakra WtE	-	Testing steam production at Sakra WtE	2017-2018
Abu Dhabi Future Energy Company PJSC - Masdar	United Arab Emirates	Masdar Pre Feasibility	360.000	Pre-Feasibility study and tender documents for new Waste-to-Energy facility in the Emirate of Sharjah	2016-2017
Biogas Facility, Singapore	Singapore	Technical Review of green field AD/Biogas Facility	163.000	Technical review of design and supervision of construction for new biogas facility based on anaerobic digestion of chicken litter	2015-2017
CNIM, GIC and AMG, Kabd WtE	Kuwait	Green field waste treatment plant		Lender's supervisor/independent certifier	2017
I/S Norfors, Hørsholm	Denmark	New WtE line 5 replacing the three existing lines	96.000	Ramboll was the consultant of Norfors for the planning and implementation of a new oven line. The new line was commissioned in 2016. Clients main advisor. Financial follow up on complete project, follow up and coordination of civil engineering advisors. Technical advisor. Project planning and definition, conceptual design, tendering, procurement, project/contract management, supervision, commissioning, warranty period. Site management. HSE management.	2008-2017
ISVAG, Antwerp	Belgium	Green-field WtE facility (CHP)	200.000	Technical Advisor. Conceptual design, basic design and preparation of tender documents.	2016-2017
Masdar, Bee'ah, Sharjah	United Arab Emirates	Green-field WtE facility	300.000	Project analysis and planning, conceptual design, preparation of tender documents, bid evaluation, contract negotiations	2016-2017
Ramboll Middle East / Abu - Dhabi Future Energy Company PISC	United Arab Emirates	Masdar Pre Feasibility, Tender	-	Technology evaluation of alternative process. Scope for project continuation	2016-2017
Renergia, Lucerne	Switzerland	Green-field WtE facility	2x100,000	EPCM contractor (Owner's Engineer) / Technical Advisor, project planning, conceptual design, tendering, procurement, project/contract management, supervision, commissioning	2011-2017
Alarko-Cengiz JV, Istanbul	Turkey	Bid support	730.000	Technical assistance to the EPC contractor during the bid phase. Review of subcontractors design, layout coordination and basic design of balance of plant.	2016
Be'ah, Muscat	Oman	Green-field WtE facility	660.000	Technical Advisor. Feasibility study and conceptual development of WtE facility.	2015-2016

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Cenviro	Malaysia	Green-field WtE facility	350.000	Project Definition Brief and feasibility, Pre-qualification, Tender Specifications and Tendering	2015-2016
Nature Energy Korskro A/S	Denmark	Bid support, biogas facility	750.000	Technical Advisor	2016
Cypark Resources Berhad, Kuala Lumpur	Malaysia	Green-field Waste Segregation Facility and AD Facility	300.000	Analysis of potential technical solutions.	2013-2015
Cypark Resources Berhad, Kuala Lumpur	Malaysia	Green-field WtE facility	200	Analysis of Cost and Benefit in regard to investment and OM cost establishing new solutions.	2013-2015
FCC, Buckinghamshire	UK	Green-field WtE facility	300,000	Owner's Engineer to FCC on PFI bid and contract implementation. Specification to suppliers and supplier information management to proposal. Bid technical support. Supervision of design, erection and commissioning	2010-2015
Hertfordshire County Council	UK	Green-field residual waste treatment facility including WTE.	345.000	Technical advisor. Procurement and supervision of PFI contract for the design, build, finance and operation of the new facility.	2009-2015
Mott MacDonald Hong Kong Ltd.	Hong Kong	Sewage Sludge Incineration	650,000	Design review and certification, procurement, testing and commissioning validation	2009-2015
West Palm Beach, Florida	USA	Green-field WtE facility	3x300,000	Assistance to the preparation of technical specifications and contract negotiations.	2008-2015
Follo Ren, Oslo	Norway	Green-field WtE AD facility	15.000	Project planning, conceptual design of household waste based biogas facility based on Anaerobic Digestion	2012-2014
Follo Ren, Oslo	Norway	Green-field Dirty MRF Sorting facility	29.000	Project planning, conceptual design of Dirty MRF sorting facility and MBT.	2012-2014
Lincolnshire County Council	UK	Green-field WtE facility	150.000	Technical advisor. Design-Build-Operation contract. Preparation of outline business case, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, project/contract management, supervision, commissioning and supervision of initial operation. Mechanical equipment and civil works. In JV with two other consultants	2007-2014
TAQA, Abu Dhabi	United Arab Emirates	Green-field WtE facility	3x320,000	Owners Engineer, Project planning, conceptual design, management of the procurement process, bid evaluation, contract negotiations	2012-2014
Fortum Värme, Brista B2, Stockholm	Sweden	Green-field WtE facility	240.000	EPCM Contractor, Engineering, Procurement, Construction, Management of the new facility	2010-2013

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
KARA/ NOVEREN (now ARGO), Roskilde	Denmark	New WtE unit (CHP)	200.000	Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, contracting, supervision of design, erection, commissioning. Site management and H&S.	2008-2013
Lynettefælles- skabet I/S (now Biofos A/S), Copenhagen	Denmark	New fluidized bed sludge incineration unit	20,000(on dry basis)	Owners Engineer/EPCM contractor: Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision, commissioning and guarantee testing. Services include both mechanical equipment and civil works	2008-2013
North London Waste Authority (NLWA), OLD	UK	New WtE facility, London, New direction was taken in 2014	700,000	Technical advisor and owner's engineer, procurement of technical risk, procurement documentation and specifications, preparation of technical options assessment and outline business case, cost and investment requirements,	2007-2013
RenewGENBang alore	Sri Lanka	Green-field WtE facility	200.000	Owners Engineer, Project planning, conceptual design, management of the procurement process, bid evaluation, contract negotiations	2011-2013
Toplofikacia Sofia	Bulgaria	Green-field WtE facility	180.000	Technology selection, preparation of tender documents, site selection, financial applications, terms of reference for EIA	2013
Westenergy Oy Ab, Vaasa	Finland	Green-field WtE facility (CHP)	160.000	Owners Engineer/EPCM contractor: Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision, commissioning and guarantee testing. Services include both mechanical equipment and civil works	2008-2013
AVV I/S, Hjørring	Denmark	New WtE unit (CHP)	80.000	Project analysis and planning, conceptual design and permitting.	2007-2012
Halmstad Energi og Miljø	Sweden	New WtE unit (CHP)	120.000	Project planning and definition, conceptual design, tendering, procurement, project/contract management, supervision, commissioning, implementation and evaluation of performance guarantees.	2011-2012

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Returkraft AS/ Kristiansand	Norway	Green-field WtE facility (CHP)	120.000	Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	2005-2012
EGE, Oslo	Norway	New WtE unit (CHP)	415.000	Project analysis and planning, conceptual and detailed design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations. Mechanical equipment and civil works Detailed design of concrete constructions, contract management, supervision and commissioning.	2007-2011
Eidsiva Bioenergi AS, Hamar	Norway	Green-field WtE facility (CHP)	72.000	Project analysis and planning, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, project/contract management, supervision and commissioning.	2007-2011
FCC/UrbaserAst urias	Spain	Green-field WtE facility	2 x 200,000	Technical Advisor. Specification for suppliers and supplier information management for the proposal. Bid technical support. Energy modeling and CHP assessment.	2011
L90, Kjellerup	Denmark	Green-field WtE facility (CHP)	220.000	Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents. Mechanical equipment and civil works	2008-2011
Troms Kraft, Tromsø	Norway	Feasibility Study	64.000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2007-2011
AVR, Rotterdam	Netherlands	New WtE units (CHP)	2x200,000	Feasibility study, conceptual design, assistance to application for permits, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations. Mechanical equipment and civil works	2006-2009
European Bank for Reconstruc- tion and Development, St . Petersburg	Russia	Green-field WtE facility for sludge	3x16,000	Lender's Supervisor. Revamping of existing waste water treatment plant (St. Petersburg North), including three new fluidised bed sludge incinerators	2005-2009

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
South East Region	Ireland	Green-field WtE facility and waste management system	up to 300,000	Waste strategy review, PPP assessment, project structuring, management of the procurement process (25 years DBFO contract), preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2004-2009
MV Kiel	Germany	New WtE unit (CHP)	100.000	Project analysis and planning, conceptual and detailed design, permits and preparation of tender documents. Mechanical equipment and civil works	2006-2008
SYSAV, Malmö	Sweden	New WtE unit (CHP), Line 4	210.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	2005-2008
Uddevalla Energi	Sweden	Green-field WtE facility (CHP)	88.000	Project analysis and planning, conceptual design, assistance to application for permits, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2005- 2008
European Commission, St. Petersburg	Russia	Green-field WtE facility for sludge	2x44,000	Bid evaluation, project/contract management, supervision and commissioning	2004-2007
Trekantområ- dets Affalds- selskab I/S (now Energist), Koldi ng	Denmark	New WtE unit (CHP)	80.000	Bid evaluation, project/contract management, supervision and commissioning	2003- 2007
Trondheim Energiverk (now Statkraft Varme AS)	Norway	New WtE unit (CHP)	120.000	Management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2003- 2007
I/S Reno- Nord, Aalborg	Denmark	New WtE unit (CHP)	160.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1999-2006

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Kraftvärmeverket Torsvik, Jönköping Energi	Sweden	Green-field WtE facility	160.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning.	2006
States of Alderney	Alderney	Green-field WtE facility	500 kg/h	Updating of tender documents, management of the procurement process, bid evaluation and contract negotiations	2006
I/S FASAN (now AffaldPlus), Næstved	Denmark	Green-field WtE facility (CHP)	65.000	Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	2001-2005
I/S Vestforbrænding, Copenhagen	Denmark	Upgrading of WtE facility, line 6	280.000	Owner's engineer for procurement, negotiation and follow-up on all technical and civil contracts for the new line 6 (35 t/h).	2005
States of Guernsey, Board of administration	Guernsey	Feasibility Study	72.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2001-2005
Vattenfall Värme Uppsala AB	Sweden	New WtE unit (CHP)	175.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project management	2000-2004
Halmstad Renhållnings AB	Sweden	New WtE unit (CHP)	120.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning.	1999 – 2003
SYSAV, Malmö	Sweden	New WtE unit (CHP) - Line 3	210.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1998 – 2003

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DANIDA / Cairo University Hospital	Egypt	New clinical waste facility	Batch2 x 3.6 tpd	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2000 – 2002
Spildevands- center Avedøre (now Biofos A/S), Copenhagen	Denmark	Green-field WtE facility for sludge	16,000 (on dry basis)	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management and commissioning. Mechanical equipment and civil works	1995 – 2001
AVV I/S, Hjørring	Denmark	New WtE unit (CHP)	50.000	Analysis, planning, conceptual design, tendering, contracting, project/contract management, commissioning	1993-2000
DONG (now Fjernvarme Fyn), Odense	Denmark	Green-field WtE facility	250.000	Owner's engineer for feasibility study and conceptual design as well as procurement, negotiation and follow- up on all technical and civil contracts.	1996/2000
I/S KARA (now ARGO), Roskilde	Denmark	New WtE unit (CHP)	160.000	conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1994-2000
I/S Nordforbræn- di ng (now Norfors), Hørsholm	Denmark	New WtE unit (CHP)	80.000	Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1994-2000
I/S REFA, Nykøbing F.	Denmark	New WtE unit (CHP)	72.000	Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1997 – 2000

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
I/S Vestforbrænding, Copenhagen	Denmark	New WtE unit (CHP)	210.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1994-1999
Svendborg Kraftvarmeværk I/S	Denmark	New WtE unit (CHP)	48.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1994-1999
Environmental Protection Agency	Taiwan	Green-field WtE facility	300.000	Expert support to tender preparation, bid evaluation, evaluation of specifications, supervision and commissioning	1993-1998
BIR, Bergen	Norway	New WtE unit (CHP)	112.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	1996
Sønderborg Kraftvarmeværk	Denmark	New WtE unit (CHP)	66.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning. Mechanical equipment and civil works	1993 – 1996
DONG, Haderslev	Denmark	Green-field WtE facility	2x36,000	Owner's engineer for feasibility study and conceptual design as well as procurement, negotiation and follow-up on all technical contracts.	1993
DONG, Måbjerg	Denmark	Green-field WtE facility	2x80,000	Owner's engineer for feasibility study and conceptual design as well as procurement, negotiation and follow-up on all technical contracts.	1993
DONG, Horsens	Denmark	Green-field WtE facility	65.000	Owner's engineer for feasibility study and conceptual design as well as procurement, negotiation and follow-up on all technical and civil contracts.	1992
IRF, Leirvik	Faroe Islands	Green-field WtE facility	25.000	Pre-design, tendering, completion	1980-1989
Municipality of Torshavn	Faroe Islands	New WtE unit (CHP)	20.000	Pre-design, tendering, completion	1984-1989

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Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
BIOFOS A/S, Renseanlæg Avedøre	Denmark	New heating system with heat recovery from sludge and utilisation of heat from sludge incineration.		Owner's Engineer Conceptual design, tender documents, tendering. Contract and works supervision.	2016-2019
I/S Reno-Nord, Aalborg	Denmark	Capacity extension of oven line 3		Owners engineer. Environmental impact assessment, environmental application and other authority applications	2016-2019
IRF, Leirvik	Faroe Islands	Upgrading of WtE facility	28.000	Capacity extension	2015-2019
IRF, Leirvik	Faroe Islands	Upgrading of existing WtE facility, including new grate, establishment of wear zones, boiler/furnace, crane and crane	30,000 (former 25,000)	Contract negotiations, project/contract management, supervision and commissioning, preparation of technical, environmental and financial analyses, supervision of mechanical supply and feasibility studies.	2015-2019
Uddevalla Kraft AB	Sweden	New generator at existing WtE facility, Uddevalla		Owners engineer. Procurement of overhaul of generator and new generator	2018-2019
BIOFOS A/S, Renseanlæg Lynetten	Denmark	Upgrading of AD plant. Construction of two new digestion tanks including renovation of existing digestion tanks.		Consultant during phases: Construction of new tanks, renovation of existing tanks and construction of new sludge storage building. Managing detailed design, preparing tender documents, project managing, contracting.	2013-2018
Energigjenvinningssetaten (EGE), Oslo Kommune	Norway	50,000 tonnes per annum source segregated household waste. Pre-treatment, THP, AD and evaporator. Biogas treatment: H ₂ S and CO ₂ removal and LBG system		Feasibility study. Trouble shooting and plant optimisation. Technical assistance and project management in regard to establish of a new sturdy and solid technical solution. Financial modelling and material recovery potential. Analysis of potential technical solutions.	2018
Sparebank 1 SMN	Norway	New AD, gas upgrade and LBG plant for subsequent production of LBG. LBG production 125 GWh/ year (phase 1). 250 GWh/year (phase 2).		Owner's Engineer Controller, contract follow-up, supervision and inspection	2016-2018
Statkraft Varme AS, Trondheim	Norway	Lifetime assessment of HVS L1 and L2		Revision of technical lifetime assessment of Statkraft Varme Line 1 and Line 2 in Trondheim.	2017-2018
Torshavn Municipality	Faroe Islands	Boiler, crane, crane and CMS upgrade	20,000	Tender documents, preparation of technical, environmental and financial analyses, contracting, supervision of mechanical supply and feasibility studies.	2014-2018

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Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Energist, Esbjerg	Denmark	Retrofit of flue gas condensation	235.000	Design brief, Management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, regulatory procedures and contact with public authorities.	2015-2017
Frevar KF	Norway	Procurement of flue gas clean system		Procurement and implementation of flue gas treatment plant for two furnace/boiler lines.	2017
HRA	Norway	Inspection and assessment of existing AD and gas upgrade plant. 20 000 ton household waste per year. Production currently unknown		Feasibility study	2016-2017
Statkraft Varme A/S	Norway	Upgrading of WtE facility, flue gas cleaning and low-temperature economiser on HVS L3	120.000	Preparation of technical tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning.	2016-2017
Stockholm Vatten Avfall AB, Högdalen	Sweden	Plant for pre-treatment for household waste, digestion at Fortums existing plant in Högdalen.		Owner's Engineer/Controller, contract follow-up, supervision and inspection	2016-2017
SYSAV, Malmö	Sweden	Bottom ash sorting plant		Ramboll's contract is for consulting services on the complete mechanical and electrical equipment for Sysav's new bottom ash sorting plant. Ramboll assists in developing the technical specifications for the sorting plant, the tendering and contract negotiation with an EPC-contractor for the complete electro-mechanical supply, and following up on the EPC contractor until finalisation and take-over of the sorting plant.	2017
AffaldPlus, Næstved	Denmark	Retrofit of flue gas condensation	130,000	Design brief, Management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, regulatory procedures and contact with public authorities.	2013-2016
AVV, Hjørring	Denmark	Retrofit of flue gas condensation	90.000	Design brief, Management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, regulatory procedures and contact with public authorities.	2014-2016
BIOFOS A/S, Renseanlæg Lynetten	Denmark	Upgrading of AD plant. Establishment of an optimal energy recovery technical solution		Basic and detail engineering, project management, analysis of potential technical solutions, cost/benefit analysis	2014-2016

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Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
County Waste Management Centre "Kastijun", County of Istria	Istria	The aim of the project is to construct a modern county waste management centre in the city of Pula to service the County of Istria's 206,500 residents and a seasonal population of tourists. The plant included anaerobic digestion by batch dry digestion and utilisation of the biogas in a CHP-plant. This is an EU funded project, with the EPEEF (Environmental Protection and Energy Efficiency Fund) as the Contracting Authority and Kastijun Waste Management Company as the Beneficiary.		Owners Engineer	2012-2016
EGE, Oslo	Norway	Technical assistance and project management in regard to establish a new sturdy and solid technical solution at a newly established MBT plant Gas production: 2.4 M Nm ³ methane per annum based on 25,000 TPA Food waste CBG: 85,000 m ³ pr. annum	Capacity: 50,000 TPA food waste	Ramboll has carried out a feasibility study covering: • Description of suitable sturdy technology • Mass- and energy balance • Assessment of material recovery potential including cost benefit analysis • Modelling of treatment and maintenance cost	2015-2016
Frevar KF	Norway	Upgrading of WtE facility, flue gas cleaning	2 x 45,000	Feasibility study, project analysis and planning, elaboration of conceptual design and investment budget.	2016
I/S Vestforbrænding, Copenhagen	Denmark	Combustion air humidification at line 6	240.000	Feasibility study. Conceptual design. Technical and economical evaluation of project	2016
Oslo Kommune, Bekkelaget VAV	Norway	CBG plant modification for increased pressure and storage capacity.		Procurement support and engineering.	2016
Romerike Biogas Plant, Oslo	Norway	New biogas facility	50.000	Owner's Engineer, operation support to biogas facility in Oslo, troubleshooting, operation optimisation, procurement and implementation.	2015-2016
Glør IKSU Upgrade and filling station at MJØSANLEGGET / ROVERUDMYRA	Norway	Gas upgrade, compression, and filling station. Plant capacity 600 Nm ³ /h.		Owner's Engineer Preparation of tender documents, support during procurement and project management.	2014-2015

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Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Göteborg Energi, Göteborg	Sweden	Feasibility Study		Investigate and identify potential measures to increase the availability and reduce the amount of gas flared at the biogas upgrade and CBG in Skövde.	2015
Göteborg Energi, Göteborg	Sweden	Feasibility Study.		Investigate required process and investment measures on biogas upgrade and grid injection plant to meet increased biogas production at Gryaab.	2015
Skellefteå Airport	Sweden	New filling station for biomethane (CBG) and diesel at Skellefteå airport.		Feasibility study.	2015
Skellefteå Kommun	Sweden	New fuel station with CBG, biodiesel and electricity		Engineering and layout.	2015
Statkraft Varme A/S	Norway	Upgrading of WtE facility, scrubber towers and low-temperature economisers on HVS L1 and L2	2 x 48,000	Preparation of technical tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning.	2014-2015
Biokraft	Norway	Feasibility study, market report and regional biogas strategy for the Trondheim region		Feasibility Study	2014
Ecopro A/S	Norway	Integrated 30 GWh upgrading unit for production of vehicle quality biomethane at Ecopros plant in Verdal Norway. Investment 50 M NOK.		Feasibility study. Conceptual and feasibility study.	2013-2014
Oslo municipality VAVBekkelaget WWT plant Biogas upgrading plant	Norway	New upgrade biogas plant at waste water treatment facility in Oslo. Plant capacity 750 Nm ³ /h incl. biogas upgrading unit and compression of the gas.		Project management, Tender evaluation, inspections, risk analysis and process optimization.	2008-2014
BIOFOS A/S, Renseanlæg Lynetten	Denmark	Retrofit of WtE facility in Copenhagen. Gas installation for incineration gas torch.		Prequalification, Preparation of tender documents, Contract negotiations, Construction supervision, Assistance in Guarantee Period	2008-2013
Borås Energi & Miljö, Upgrading plant Sobacken	Sweden	New biogas upgrading plant	300 Nm ³ /h	Preparation of tender documents support with evaluation, procurement and final inspection and performance test..	2011-2013
Charlottendal, Stockholm	Sweden	New vehicle fuelling and LNG backup station for bus depot for 137 buses		Engineering and Tendering. Support with permit process and HSE.	2010-2013
Borås Energi & Miljö, Borås	Sweden	New public vehicle fuel filling station based on biogas		Technical specifications, procurement, and installation supervision.	2011-2012

Selected References

Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Aalborg KommuneVaars t	Denmark	Independent technical review of anaerobic digestion facility	108.000	Independent technical review of Vaarst Fjellerad Biogas. Evaluation of existing equipment and a business plan for maintenance of the Anaerobic Digestion plant. Analysis of existing biomass basis. Preparation of a technical evaluation for the use of Aalborg municipality in connection to municipal guarantee loans for upgrading of Vaarts-Fjellerad biogas plant.	2012
AVV I/S, Hjørring	Denmark	Retrofit of new boiler of waste-to-energy facility	30,000	Project analysis and planning, life extension of plant, design brief, enlargement of production capacity, Management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, contract supervision	2011
BIOFOS A/S, Renseanlæg Avedøre	Denmark	Retrofit of air pre-heater at a wastewater treatment facility		Project analysis and planning, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, visit of inspection, contract follow-up	2011
BIOFOS A/S, Renseanlæg Avedøre	Denmark	Upgrading of sludge digesters 4 x 6,000 m3.		Owner Engineer Tender documents, tendering process, supervision and commissioning.	2009-2011
BIOFOS A/S, Renseanlæg Avedøre	Denmark	Upgrading of Anaerobic Digestion facility (3x6000 m3 digestion tanks)		Client consultant, Renovation of digersters, preparation of tender conditions, tendering business, supervision, commissioning and hand- over.	2009-2011

Selected References

Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
BIOFOS A/S, Renseanlæg Avedøre	Denmark	Feasibility Study. Upgrading of sludge digesters 4 x 6,000 m ³ . Technical and economical evaluation of sludge treatment at waste water treatment plant, which includes renovation of digesters, concentration of primary sludge, storage of sludge, improvement of the operation of digesters, dewatering equipment and sludge incineration. Tendering of installations for thickening of primary sludge, by means of control of withdrawal of sludge by mass meters. Change the operation of the digesters from serial to parallel operation, optimising of biogas motor cooling		Owner's Engineer. Feasibility Study: Conceptual design, CAPEX, OPEX. Execution phase: Tendering, contacting, supervision of works and commissioning.	2008-2011
BOFA, Bornholm	Denmark	Analysis of need for retrofit/replacement of WtE facility and upgrading the facility		Technical review of existing waste-to- energy facility and preparation of decision-making basis. Project planning and definition, conceptual design, tendering, procurement, contract management, supervision, commissioning	2009-2011
Eidsiva Bioenergi AS, Gjøvik	Norway	Upgrade of biomass-fired facility to receive wood waste	65,000	Management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2011
Karlstad municipality, Sjöstad WWTP	Sweden	New biogas upgrading plant.		Client consultant, biogas upgrading, preparation and evaluation of bid documents, environmental assessment, project management and supervision.	2008-2011
Bekkelaget - Olso Municipality VAV (Water & Sewerage)	Norway	Upgrading of biogas to biomethane.		Client consultant, detailed design, specifications, procurement, risk analysis and supervision.	2008-2010
Käppalaförbund etKäppala WWT- Stockholm	Sweden	Feasibility Study. New facility to upgrade 1,250 Nm ³ /h biogas to vehicle fuel. Implementation of construction and equipment.		Owner's Engineer. Investment appraisals, EIA and permits, Specifications for upgrading plant and project implementation. Project management during construction phase 2010.	2008-2010

Selected References

Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
SCOTTISH WATERWASTE SERVICES	Scotland	Upgrading of excess biogas in an existing plant at Dalderse sewage works in Falkirk. The study was aimed at identifying the most suited process upgrading and comparing gas grid injection vs vehicle fuel use.		Feasibility study. The study was aimed at identifying the most suited process upgrading and comparing gas grid injection vs vehicle fuel use.	2010
Trondheim Energiverk (now Statkraft Varme AS)	Norway	Upgrading of existing WtE facility, including new combustion control system and new CMS	2 x 48,000	Contract negotiations, project/contract management, supervision and commissioning	2009-2010
Upplands Lokaltrafik AB, Fyrislund	Sweden	Facility for upgrading of biogas to vehicle fuel.		Client consultant, preparation and evaluation of bid documents, regulatory applications, project manager in the design phase and technical advisor.	2009-2010
Kalstad Municipality		Biogas upgrading and filling station at Sjöstads WWTP in Karlstad: Biogas upgrade plant (250 Nm ³ /h) including HP compressor and mobile storage facility.		Tender preparation, procurement, installation supervision and performance testing.	2008-2009
AffaldVarme Århus	Denmark	Upgrading of existing WtE facility, including water-cooled wear zones, new furnace and flue gas condensation	2 x 60,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2007-2008
Borås Energi & Miljö AB, Borås	Sweden	New plant for upgrading of biogas to vehicle fuel		Client consultant, preparation and evaluation of bid documents, regulatory applications, project manager in the design phase and technical advisor.	2007-2008
Borås Energi & Miljö, Borås	Sweden	New gas station for a fleet of 43 buses, gas and LNG storage facility and compressor building		Technical specifications, procurement, and installation supervision.	2008
I/S Amagerfor- brænding (now Amager Ressource- center), Copenhagen	Denmark	Upgrading of existing WtE facility, including replacement of existing slag and grate riddling transport systems	4 x 96,000	Contract negotiations, project/contract management, supervision and commissioning	2007-2008
Kalstad Municipality, Karlstad	Sweden	New biogas upgrading plant. Process and technologies, civil works, electrical and SCADA design. Preparation of tender documents. Assessment of environmental issues.		Owner's engineer. Design. Tendering. Supervision.	2007-2008

Selected References

Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Oslo Kommune		New upgrade biogas plant at waste water treatment facility in Oslo. Plant capacity 750 Nm ³ /h incl. biogas upgrading unit and compression of the gas.		Owner's EngineerGas upgrading plant Bekkelaget Renseanlegg: Preparation of tender documents, applications to authorities	2008
Stockholm Vatten VA AB	Sweden	Anaerobic digestion plant.Anaerobic digestion of organic household waste and biogas upgrading plant at Louddens reningsverk. Detailed design, tender documents and tendering		Owner's EngineerDetail design, tender documents and tendering.	2006-2008
Vattenfall Värme Uppsala AB	Sweden	Upgrading of existing WtE facility, including new turbine	175.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2007-2008
BIOFOS A/S, Renseanlæg Avedøre	Denmark	Feasibility Study.Upgrading of AD facility		Rambøll acted as Client's Engineer during the procurement, replacement and commissioning, which took place end of 2006.	2004-2007
Fernvärme Wien, Spittelau, Vienna	Austria	Upgrading of existing WtE facility, including planning of reconstruction and energy optimization of the two incineration lines	2 x 133,000	Project analysis and planning	2006-2007
Käppalaför- bundet	Sweden	New biogas upgrading plant.		Design and contract supervision.	2007
ASM Brescia	Italy	Upgrading of existing WtE facility, including crane automation and establishment of a new crane	3x184,000	Feasibility study, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2004-2006
Göteborg Energi, Arendal	Sweden	New biogas upgrading plantBio-methane production equivalent to 35-60 GWh per year. Injection of bio-methane into gas grid.		Owner's engineer. Design. Tendering. Supervision.Tendering and tender evaluation, planning and procurement, project management, inspection and performance testing.	2006
I/S KAVO (now AffaldPlus), Slagelse	Denmark	Upgrading of existing WtE facility, including new furnace, grate and auxiliary burners	32.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2006

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Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
I/S KAVO (now AffaldPlus), Slagelse	Denmark	Upgrading of existing WtE facility, including flue gas treatment system and burners	32,000 + 48,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2002-2006
I/S Reno-Nord, Aalborg	Denmark	Upgrading of existing WtE facility, including crane automation	160,000 + 88,000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2004-2006
IRF, Leirvik	Faroe Islands	Upgrading of existing WtE facility, including flue gas treatment system.	30,000 (former 25,000)	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2004 – 2006
Klemetsrud Avfallsenergi-verk, Oslo	Norway	Upgrading of existing WtE facility	2x80,000	Plant inspection and proposal for upgrading	2006
Torshavn Municipality	Faroe Islands	Upgrading of existing WtE facility, including flue gas treatment system	20.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2004 – 2006
Trondheim Energiverk (now Statkraft Varme AS)	Norway	Upgrading of existing WtE facility, including SNCR and wastewater treatment	2x48,000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2004 – 2006
Tynes Bay Waste Treatment Facility	Bermuda	Upgrading of existing WtE facility and establishment of new WtE unit	2x48,000	Plant inspection and proposal for upgrading	2006
Århus Kommune Værker	Denmark	Upgrading of existing WtE facility, including flue gas treatment system, SNCR and burners	2x64,000	Feasibility study, project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2003 – 2006
Halmstad Renhållnings AB	Sweden	Upgrading of existing WtE facility, including ECO and convection part	2x40,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2005

Selected References

Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Halmstad Renhållnings AB	Sweden	Upgrading of existing WtE facility, including refractory lining, gas/gas reheater, make-up water and electrical installations	120,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2005
Halmstad Renhållnings AB	Sweden	Upgrading of existing WtE facility, including flue gas treatment system	2x40,000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2001-2005
I/S FASAN (now AffaldPlus), Næstved	Denmark	Upgrading of existing WtE facility, including flue gas treatment system	2x36,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2001-2005
I/S KARA (now ARGO), Roskilde	Denmark	Upgrading of existing WtE facility, including SNCR	160,000 + 2x56,000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2003-2005
I/S Nordforbræn- ding (now Norfors), Hørsholm	Denmark	Upgrading of existing WtE facility, including SNCR	88,000 + 3x24,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2001-2005
Lynette- fællesskabet I/S (now Biofos A/S), Copenhagen	Denmark	Upgrading of existing sludge incineration facility, including flue gas treatment system	24,000(on dry basis)	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2003 – 2005
SYSAV, Malmö	Sweden	Upgrading of existing WtE facility, including flue gas treatment system and boilers	2x96,000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2003 – 2005
TIRME, S.A., Mallorca	Spain	Upgrading of existing WtE facility, including flue gas treatment system and SCR	2x150,000	Bid evaluation	2004-2005
Trekant- områdets Affalds-selskab I/S (now Energlist), Kolding	Denmark	Upgrading of existing WtE facility, including flue gas treatment system	2x32,000	Management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, project/contract management, supervision and commissioning	2003-2005

Selected References

Upgrading/Retrofit of Waste-to-Energy Facilities

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
I/S Amagerforbrænding (now Amager Ressource-center), Copenhagen	Denmark	Crane automation	4x96,000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2003-2004
I/S KARA (now ARGO), Roskilde	Denmark	Upgrading of existing WtE facility, including crane automation	160,000 + 2x56,000	Feasibility study, project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2003-2004
Sønderborg Kraftvarme-værk	Denmark	Upgrading of existing WtE facility, including flue gas treatment system	64.000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2002-2004
AVV I/S, Hjørring	Denmark	Upgrading of existing WtE facility, including flue gas treatment system	48.000,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2003
City of Budapest	Hungary	Upgrading of existing WtE facility, including flue gas treatment system and furnace/boiler. Introduction of facilities for pre-treatment of waste and treatment and disposal of residues	4x120,000	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations	2001-2002
Kommune-kemi (now Fortum), Nyborg	Denmark	Complete retrofit of hazardous waste incineration facility	N/A	Supervisor of the retrofit of the combustion chamber and the boiler	2001
Turku WtE facility	Finland	General consultancy at Turku WtE Plant	2x32,000	General technical and administrative consulting. Plant performance follow-up and reporting. Process modernisation, tendering, procurement and supervision	1988

Selected References Waste-to-Energy Studies

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
IRF, Leirvik	Faroe Islands	Upgrading of existing WtE facility, including new grate, establishment of wear zones, boiler/furnace, crane and crane	30,000 (former 25,000)	Contract negotiations, project/contract management, supervision and commissioning, preparation of technical, environmental and financial analyses, supervision of mechanical supply and feasibility studies.	2015-2019
Danish Energy Agency	Denmark	Optimization of combustion air humidification	N/A	Project management, thermodynamic design, detail design, research	2016-2018
Department for Nature, Environment and Legal, Nuuk	Greenland	Technical Assistance WtE, Nuuk		Different ad hoc task within the waste sector for the Government of Greenland	2017-2018
Energist, Esbjerg	Denmark	New WtE oven line, Esbjerg	350.000	Feasibility study of building new oven line to extend the district heating network in Esbjerg, Western Denmark. The project involves technical and economic analysis.	2017-2018
International Finance Corporation (IFC)	Argentina	Waste Pre-feasibility Study, Buenos Aires		- Pre-feasibility study of of an incineration based Waste-to-Energy Facility within Buenos Aires city limits, as well as providing a review of the existing Integrated Solid Waste Management Plan prepared by the City of Buenos Aires.	2017-2018
REFA	Denmark	Feasibility study of flue gas condensation at line 3		Feasibility study of flue gas condensation for REFA's oven line 3, hereby optimising energy efficiency, flue gas cleaning and lime consumption.	2014-2018
Torshavn Municipality	Faroe Islands	Boiler, grate, crane and CMS upgrade	20,000	Tender documents, preparation of technical, environmental and financial analyses, contracting, supervision of mechanical supply and feasibility studies.	2014-2018
Be'ah, Muscat	Oman	Be'ah Oman Legal Assistance		Legal assistance to the client regarding legal framework for waste management	2017
Biofos A/S	Denmark	Assessment of remaining lifetime for an existing sludge incineration plant (capacity 15,000 tons of dry matter per year).	15.000	Ramboll performed an assessment of the current state of the plant and identified necessary changes/replacements to extend the lifetime with 10 years. The project included a cost-benefit analysis for the alternative of building a new plant. Furthermore some operational problems (capacity drop) were analyzed and solved.	2017
Dansk Affaldsforening	Denmark	Tax adjustments		Assessment of a number of scenarios for adapting Danish taxes on energy, fuels and waste. Assessment of different methods and their applicability	2017

Selected References Waste-to-Energy Studies

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Department for Nature, Environment and Legal, Nuuk	Greenland	Technical Assistance WtE, Aasiaat		Review and assesment of documentation of phase 1: lifetime extension and environmental upgrade of a WtE facility in Aasiaat	2017
Ecoinowaste AS	Norway	Market sounding Europe		The scope of works was to make a market screening analysis and investiagate the market potential.	2017
Halmstads Energi & Miljö AB	Sweden	New plants for heat production in Scandinavia		Assesment of options to cover future district heating demands	2017
London Waste Ltd	United Kingdom	House set turbine foundation review		Technical support to North London Waste Authority with the provision of a new plant at Edmonton and O&M Support to London Waste Authority.	2017
London Waste Ltd	United Kingdom	RPD and Plant Labelling		Technical support to North London Waste Authority with the provision of a new plant at Edmonton and O&M Support to London Waste Authority.	2017
Stonepeak Infrastructure Partners	United Kingdom	Due Diligence		Technical due dillgience of Wheelabrator Technologies' (WTI) assets in the UK.	2017
Vattenfall Uppsala AB	Sweden	Lifetime assesment of Uppsala		Condition assesment, life time extension investment plan	2017
Energigjenvinningssetaten (EGE), Oslo Municipalty	Norway	Pre-treatment of source segregated food waste	50	Technical assistance and project management in regard to establish of a new study and solid technical solution	2015-2016
The World Bank Group, IFC, Ogun State	Nigeria	IFC, WTE Ogun State Nigeria	130.000	Review of organization	2015-2016
Danish EPA	Denmark	Assessment of metal containing waste for incineration	Not relevant	Evaluation of the consequences by incineration shredder residue and impregnated wood in waste-to-energy facilities. Elaborate report published by the Danish Environmental Protection Agency, Environmental project 1654 (2015), "Vurdering af metalholdigt affald til forbrænding".	2014-2015
Confidential	South America	Development of a low CAPEX WtE facility	N/A	Conceptual development of standard WtE facility targeted low capital costs as well as compliance with environmental and technical standards, plant layout, cost estimation, management of procurement planning and implementation	2012-2013
Statkraft Varme AS, Trondheim	Norway	Upgrading of WtE facility, flue gas condensation	2x48,000	Feasibility Study for Heat Recovery Condenser	2012-2013
A2A S.p.A., Naples	Italy	Feasibility Study of flue gas condensation, boiler optimization and corrosion reduction	648,000	Design review and certification, procurement, testing and commissioning validation	2012

Selected References Waste-to-Energy Studies

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
AffaldPlus, Næstved	Denmark	Reducing production cost		Screening project, mapping of initiatives targeted lowering production costs, optimizing of heat production	2012
Andels- selskabet Slam- forbrænding	Denmark	Feasibility study of sludge incineration facility	200,000	Concept design of treatment and incineration plant for municipal wastewater sludge, plant layout, procurement strategy, drafting of economic analysis	2011-2012
Confidential, Doha	Qatar	Feasibility Study	Confidential	Fact finding, Feasibility study for WtE	2012
Danish Environmental Protection Agency	Greenland	Waste quantity study for Greenland		Data collection of waste streams and sorting systems, conceptual design of data model/simulation tool based on waste fractions as well as demographic and industrial structures, risk assessment, analysis of available combustible waste in Greenland.	2012
E.ON Värme Sverige AB, Högbytorp	Sweden	Feasibility study of new WTE unit	215,000	Feasibility study and conceptual development of WtE facility, plant layout including integration of existing biogas facility, capacity planning and management, preparatory work forming the basis of an application for environmental permit	2011-2012
Farsund Kraft, Oslo	Norway	Pre-feasibility study	240,000- 480,000	The pre-feasibility study includes an investigation of technical and economic consequences of the establishment of a 30 t/h (corresponding to 240.000 tonnes waste pr. year) energy-from-waste facility based on grate-fired mass burn technology. Furthermore, it will be possible to extend the facility with an additional line increasing the capacity to 2 x 30 t/h (corresponding to 480.000 tonnes waste pr. year).	2012
I/S Amagerforbræn- ding, Copenhagen	Denmark	Optimizing maintenance	400,000	Process modernization, failure mode effects and criticality analysis (FMECA) and Reliability centered maintenance (RCM)-analysis of turbine	2012
I/S Reno-Nord, I/S Reno-Vest og I/S Fælles Forbrænding	Denmark	Merger of three waste management companies		Feasibility study of merging three waste management companies in the northern part of Denmark	2008-2012
MPO, Warsaw	Poland	Expansion of WTE plant	480.000		2012
Solør Bioenergi, Svenljunga	Sweden	Plant assessment of Svenljunga Värmeverk	N/A	Assessing the plant condition of a 26 year old solid fuel district heating plant	2011-2012
Ace Power	Sri Lanka	Technology Assessment of WTE technologies	Approx. 35,000	Technical assessment and evaluation of a proposed electrically powered high temperature pyrolysis process producing clean gas based on municipal solid waste	2011

Selected References Waste-to-Energy Studies

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
AffaldPlus, Næstved	Denmark	Optimization of flue gas desulphurization system	160,000	Operation optimization of flue gas cleaning plant, solving operation problems with blocking and caking of reagent in Alstom NID plant.	2011
AffaldPlus, Slagelse	Denmark	Optimizing heat production	48,000	Project analysis and planning, analysis of energy optimization and efficiency of existing WtE lines	2011
AffaldVarme Århus	Denmark	New WtE unit (CHP)	2x60,000	Project analysis and planning, EIA and permits	2009-2011
BOFA, Bornholm	Denmark	Analysis of need for retrofit/replacement of WtE facility and upgrading the facility		Technical review of existing waste-to-energy facility and preparation of decision-making basis. Project planning and definition, conceptual design, tendering, procurement, contract management, supervision, commissioning	2009-2011
City of Atlanta	United States of America	Pre-feasibility study of the implementation of a WtE facility at Atlanta International Airport	200,000	Ramboll was advisor to the Atlanta International Airport on the study.	2011
FCC, North Wales	UK	Green-field WtE facility	140.000	Technical advisor to FCC on PFI bid. Bid technical support. Specification to suppliers and supplier information management to proposal.	2010-2011
FCC, South East Wales	UK	Green-field WtE facility	Confidential	Technical advisor to FCC on PFI bid. Bid technical support. Specification to suppliers and supplier information management to proposal. Energy modeling and CHP assessment.	2009-2011
Fortum Power and Heat Oy	Finland	Development of a standard WtE facility project	100,000-300,000	Conceptual design of new WtE-facility, plant layout, drafting of procurement strategy	2011
Government of Greenland	Greenland	Development of a strategy and assessment of options for developing WTE in Greenland	N/A	Project analysis and planning, mapping of energy utilization and existing waste management infrastructure, drafting of transportation strategy for waste management, energy modelling, scenario analysis of waste management and waste collection	2011
I/S Kraftvarme-værk Thisted	Denmark	New 100,000 WtE unit (CHP)	100.000	Project analysis and planning and permits + tilstandsvurdering	2008-2011
I/S Vestforbrænding, Glostrup	Denmark	Feasibility study of new WtE facility	N/A	Technical and financial analysis of new incineration plant integrated into a larger industrial symbiosis, scenario analysis	2011
Ministry of Environment, British Columbia	Canada	Technical review of RDF		Technical review of international practices concerning treatment and combustion of refuse derived fuel (RDF), legal analysis, drafting of policy proposals	2011
Müllverbrennung Kiel	Germany	Feasibility study of the establishment of a biomass fired combined heat and power plant	N/A	Ramboll was advisor to the client on the feasibility study	2011

Selected References Waste-to-Energy Studies

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Renosyd I/S, Skanderborg	Denmark	Assessment of future scenarios for an existing WtE facility	70,000	Assessment of existing plant, scenario analysis focused on retrofitting and development of new CHP facility, financial review	2011
Tynes Bay Waste Treatment Facility	Bermuda	New WtE unit and upgrading of existing two units	72.000	Feasibility study and preparation of tender documents	2006-2011
Guernsey	Guernsey	Feasibility Study	55.000	Project analysis and planning, conceptual design, permits, management of the procurement process, preparation of tender documents, bid evaluation and contract negotiations, project/contract management, supervision, commissioning. Mechanical equipment and civil works	2007-2010
Lancaster County	USA	New WtE facility	3 x 146,0001 x 219,000	Technology review and strategic advice to the facility owner	2009-2010
Moravia-Silesia Region, Ostrava	Czech Republic	New 192,000 tpa WtE facility	192.000	Support to the preparation of an EIA and planning application	2008-2010
Northeast Maryland Waste Disposal Authority, Frederick and Carroll County	USA	New 500,000 WtE facility	500,000	Evaluation of technical proposals	2007-2010
Warrington Borough Council	UK	WTE options review	50.000	Technical advisor. Review of WTE options for the county.	2010
York County	USA	Expansion of existing plant with new 200,000 tpa WtE unit	200,000	Technical assistance for procurement planning and implementation	2007 - 2010
AVØ I/S, Frederikshavn	Denmark	Technical assistance		Technical review of existing waste-to-energy facility and planning of capacity extension	2008-2009
Confidential	Confidential	Technical due diligence	> 100,000	Technical due diligence to support the potential acquisition of a hazardous waste facility	2008-2009
Government of Gibraltar	Gibraltar	New WtE facility for the incineration of MSW and sludge and demolition of an existing WtE facility	28.000	Preparation of public sector comparator	2005-2009
Helsinki Energy	Finland	Technical assistance to 350,000 tpa WtE facility		Pre-engineering of Kivikko WtE facility, including preparation of electromechanical budget and tender preparation	2008-2009
Skagerak Varme AS, Tønsberg	Norway	New WtE facility		Analysis of technical options	2009
Affald Danmark	Denmark	Waste-to-energy in Denmark		Assessment of the amount of incinerable waste in Denmark. Preparation of report	2008

Selected References Waste-to-Energy Studies

Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Biolan/Nefco	Russia	Technical assistance		Feasibility study of the combustion potential of poultry litter, including a study of AD process and composting	2008
Durham County	Canada	New 200,000 tpa WtE facility	200,000	Quality assurance during preparation of RFQ and RFP	2008
KARA/ NOVEREN (now ARGO), I/S KAVO & I/S FASAN (now AffaldPlus)	Denmark	Merger of waste management companies		Feasibility study of merging three waste management companies in Region Sjælland in the eastern part of Denmark	2008
North London Waste Authority	UK	Upgrading or sale of existing WtE facility	500.000	Plant survey of the Edmonton WtE facility in London	2008
North London Waste Authority	UK	Technical assistance		Framework contract for technical advisory services concerning the treatment of residual waste within North London Waste Authority. Preparation of Outline Business Case	2007-2008
Private client - Confidential	Poland	Production of electricity based on waste	N/A	Feasibility study	2008
Region of Peel	Canada	New 250,000 tpa WtE facility	250,000	Feasibility study	2008
Trekant- områdets Affaldsselskab I/S (now Energnist), Kolding	Denmark	New WtE unit (CHP)		Project analysis and planning and permits	2008
Arctic Paper Håfreström	Sweden	Concept for fuel conversion		Pre-feasibility study	2006-2007
Board of Investment , Mauritius	Mauritius	New 300,000 tpa WtE facility	300.000	Technical/economical assessment of private developer's proposal to build and operate a WtE plant to treat the island's waste	2007
Confidential	Confidential	Acquisition of hazardous waste treatment facility		Due diligence of a hazardous waste treatment facility with a capacity of 60,000 tpa in relation to a possible acquisition by a private equity fund	2007
Durham and York County	Canada	New 250,000-400,000 tpa WtE facility	250,000 - 400,000	Incorporation of the most recent WtE knowledge and experience in the project and tender documents; participation in the overall planning of the facility, detailed layout, risk analysis and discussions related to the ownership and operation of the facility and mechanical equipment	2006-2007
Environment Canada	Canada	MSW thermal treatment in Canada		Status of MSW thermal treatment in Canada	2007
I/S Amagerfor-bræ nding (now Amager Ressource- center) & I/S Vestfor-bræ nding	Denmark	Thermal waste treatment capacity in Copenhagen		Analysis of new thermal waste treatment capacity in Region Sjælland in the eastern part of Denmark	2007

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
Lincolnshire County Council	UK	Development and procurement of a Public Private Partnership for Lincolnshire Waste Treatment Project		Preparation of Outline Business Case for the treatment of residual waste in Lincolnshire County including a 150,000 tpa WtE facility. Design for planning application	2006-2007
Merseyside Waste Disposal Authority	UK	Review of waste strategy	170,000	Preparation of Outline Business Case for two MBT plants followed by two 170,000 tpa WtE plants	2005-2007
OÜ Norman Invest	Estonia	Technical assistance		Pre-feasibility Study. Technical and economic evaluation of project. Different consultancy work for the plant owner.	2007
RVF	Sweden	Grate technology		Comparison of grate technologies	2006-2007
Salt Lake City, Utah	USA	Technical assistance		Description and evaluation of alternative waste management technologies	2007
The regional municipality of Halton	Canada	New WtE facility		Business case analysis	2007
Dufferin	Canada	New 100,000 tpa WtE facility	100.000	Evaluation of tender documents	2006
Energinet.dk	Denmark	Dioxin formation		Study of dioxin formation and destruction mechanisms in WtE facilities	2005-2006
I/S KARA (now ARGO), I/S KAVO (now AffaldPlus), I/S NOVEREN (now ARGO)	Denmark	Merger of waste management companies		Feasibility study of merging three waste management companies in the eastern part of Denmark	2006
IRF, Leirvik	Faroe Islands	Upgrading of existing WtE facility, including flue gas treatment system.	30,000 (former 25,000)	Project analysis and planning, conceptual design, management of the procurement process, preparation of tender documents, bid evaluation, contract negotiations, project/contract management, supervision and commissioning	2004 – 2006
MVA Flingern, Düsseldorf	Germany	Strategic development of existing WtE facility		Master plan	2006
Norsk Varme, Kristiansand	Norway	New WtE facility		Environmental Impact Assessment	2005-2006
SORPA	Iceland	New 200,000 tpa WtE facility	200.000	Feasibility study	2006
Vancouver	Canada	Seminar		Planning and conduct of seminar for the board of Greater Vancouver Waste Authority and its technical staff. The seminar focussed on waste management in Europe and North America	2006
Vilnius Energija/ Dalkia	Lithuania	New MSW and straw fired CHP plant in Vilnius		Pre-feasibility study	2006
Denmark nationwide	Denmark	Valuation of WtE facilities		Preparation of report	2005
Eight waste management companies	Denmark	Merger		Feasibility study of merging eight waste management companies	2005

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I/S Amagerfor-brænding (now Amager Ressource-center), Copenhagen	Denmark	New WtE unit(s)		Feasibility study	2005
Reno-Sam	Denmark	Waste incineration in Denmark		Study of waste incineration in Denmark	2005
States of Alderney	Alderney	New incineration facility		Feasibility study	2005
Rambøll/Vølund	Denmark	100 years of waste incineration in Denmark		Preparation of historical review of waste incineration in Denmark	2004
States of Alderney	Alderney	Waste gasification system		Procurement of a waste gasification system (2,000 tpa) on a lease basis	2002-2004
States of Guernsey	Guernsey	Emerging technologies		Study of emerging technologies	2004
Trekant-området's Affalds-selskab I/S (now Energnist), Kolding	Denmark	New WtE facility		Environmental Impact Assessment	2004
EPA Hong Kong	Hong Kong	Household problematic waste		Study of household problematic waste	2003
I/S Reno-Nord, Aalborg	Denmark	New WtE facility		Environmental Impact Assessment	2002
NEFCO via ERM, Murmansk	Russia	Retrofit of waste incineration facility		Feasibility study	2002
EPA Hong Kong	Hong Kong	30 tpd animal carcass incineration facility		Feasibility study and preparation of tender documents	2001
Moscow City	Russia	Rehabilitation of existing WtE facility		Detailed study of the feasibility of rehabilitating plant no. 3 in Moscow (4 x 84,000 tpa)	1993-2001
States of Alderney	Alderney	Review of waste strategy		Review of Alderney's preliminary waste strategy including an analysis of an on-island disposal option of MSW through thermal treatment	2001
Danish EPA	Denmark	Waste as a resource for energy production		Studies to assess the need for incineration over the next decade for each region and for Denmark as a whole	2000
I/S FASAN (now AffaldPlus), Næstved	Denmark	New WtE unit and purchase of a gas fired power plant		Technical, operational and financial analysis to assess the feasibility of a new facility and the purchase of a gas fired power plant	1999-2000
South East Region	Ireland	Preparation of waste management plan for the South East Region		Review and assessment of thermal treatment options outlined in a previous strategy study	2000
Danish Energy Agency, Kiev	Ukraine	New WtE facility or upgrade of existing facility		Feasibility study	1999
I/S Vestfor-brænding, Copenhagen	Denmark	Retrofit and/or new WtE unit		Feasibility study	1999

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Client/ location	Country	Project	Capacity tpa	Ramboll's main responsibilities	Year
I/S Vestforbrænding, Copenhagen	Denmark	New WtE unit		Preparation of EIA and application for environmental/operational permit for the largest WtE facility in Scandinavia	1998
Køge Kommune	Denmark	Privatisation of sludge incineration facility		Support to the seller of the facility (the municipality) with analysis and during negotiations	1998
World Bank (IBRD)	Regional	World Bank publication: "Decision Makers Guide to Municipal Solid Waste Incineration"		Preparation of the guide and a supporting World Bank Technical Paper "Municipal Solid Waste Incineration – Requirements for a Successful Project"	1998
The European Bank, Moscow City	Russia	PPP options for waste treatment in Moscow		Review of PPP options for the revamping, financing and operation of incineration plants in Moscow city	1997
DANIDA	Philippines	Pre-appraisal of WtE facility		Review of project feasibility	1995-1996
I/S Fælles Forbrænding (now I/S Reno-Nord), Hobro	Denmark	New WtE facility		Feasibility study	1996
Oslo Renholdsverket	Norway	New WtE unit		Feasibility study	1996
DANIDA, Guangzhou	China	Pre-appraisal of WtE facility		Review of project to assess feasibility for soft credit financing	1994
IPE-EGF	Portugal	Alternative thermal treatment technologies		Review of different thermal treatment technologies. Presentation of plant concepts, environmental performance, costs and manufactures	1994
I/S KARA, Roskilde	Denmark	New WtE facility		Feasibility study	1993
LIPOR, Oporto	Portugal	Green-field 400,000 tpa WtE facility		Expert assistance in the evaluation of bids	1993
Municipality of Skagen	Denmark	New CC plant for incineration of waste, biomass and natural gas		Feasibility study. Preparation of preliminary design	1993