



Fortum's Knowledge Transfer concept

Power plant operations and maintenance performance Asset Management

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Fortum eNext

Fortum Group in brief

We are an active player along the Power Value Chain

Forerunner in
Clean energy

8,300 professionals
in the Nordics,
the Baltics, Russia,
Poland and India

Key figures 2018

Sales
EUR 5.2 bn

Comparable
operating profit
EUR 1.0 bn

Balance sheet
EUR 22 bn

Finnish State
ownership **50,8%**

Our core

Energy from Waste,
Hydro, Nuclear, Bio,
Solar and Wind

Circular economy

Largest **electricity
retailer** in the
Nordics with
2.4 million
Customers

Pioneer in **electric
vehicle charging**

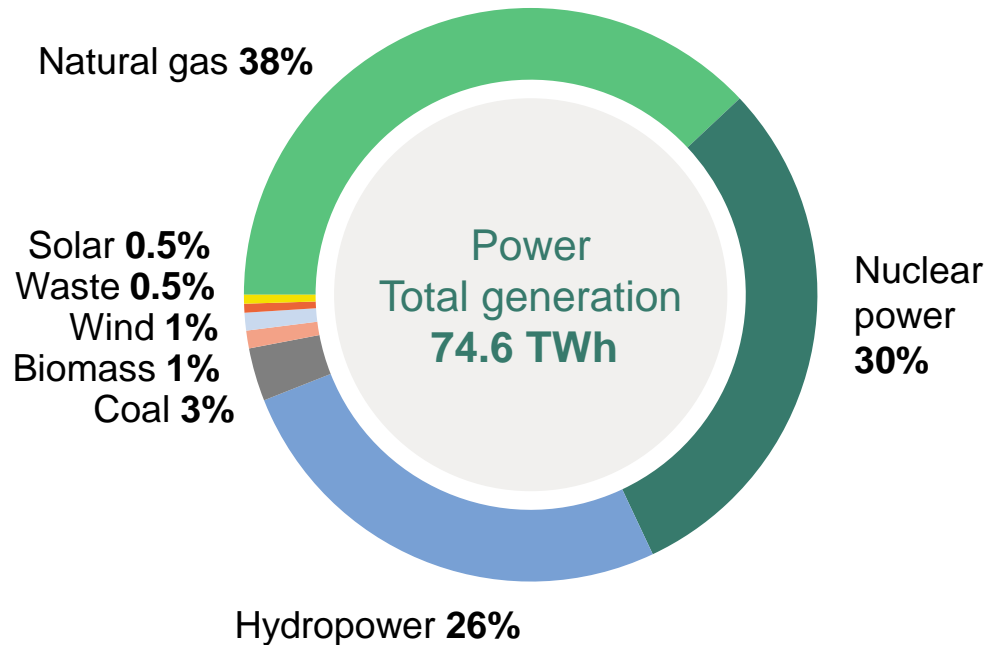
61% of all power
generation is
CO₂ free,
96% in Europe

Decades of
experience in
providing expert
services for
**power plant
performance**

**Driving
the change**
in energy market
transformation

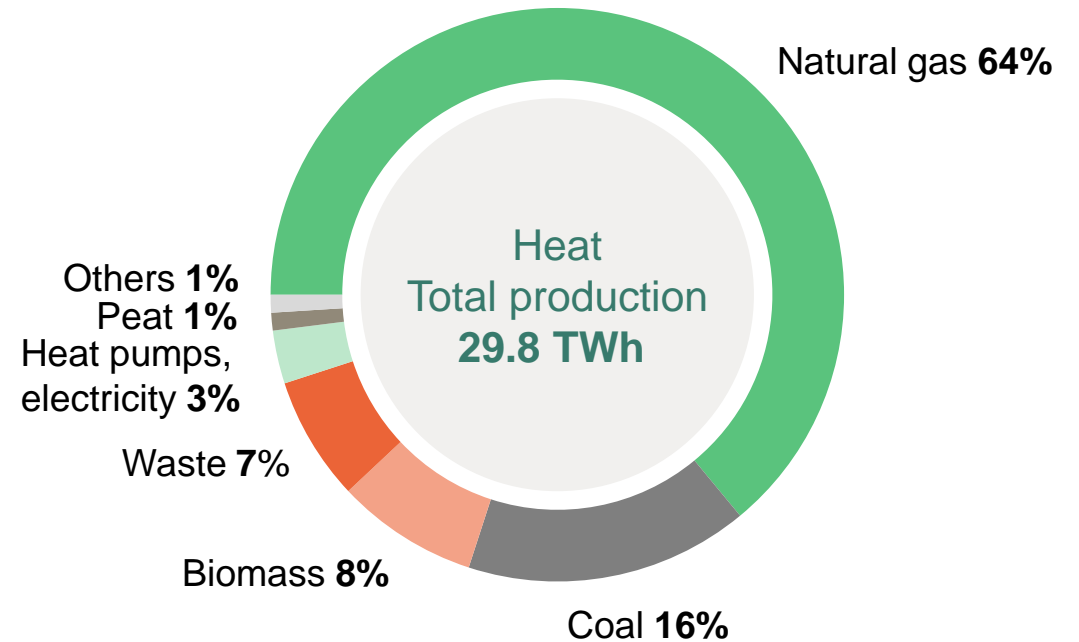
Fortum's power and heat production by source

Fortum's power generation in 2018



Total power generation capacity
13,724 MW

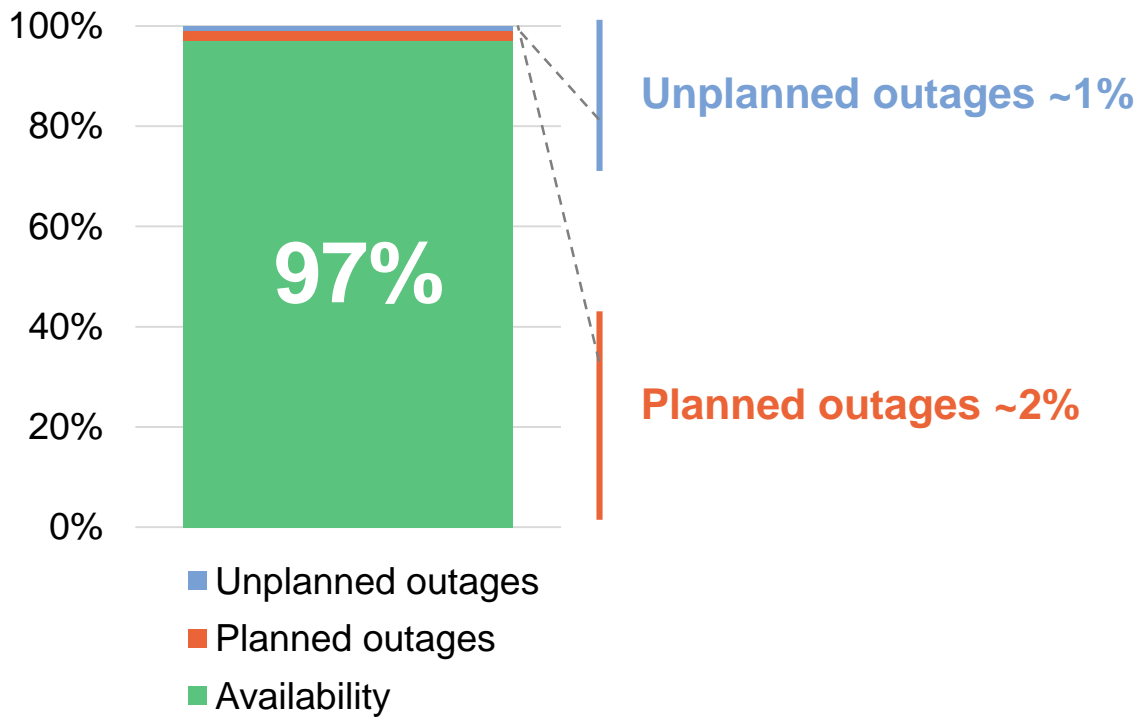
Fortum's heat production in 2018



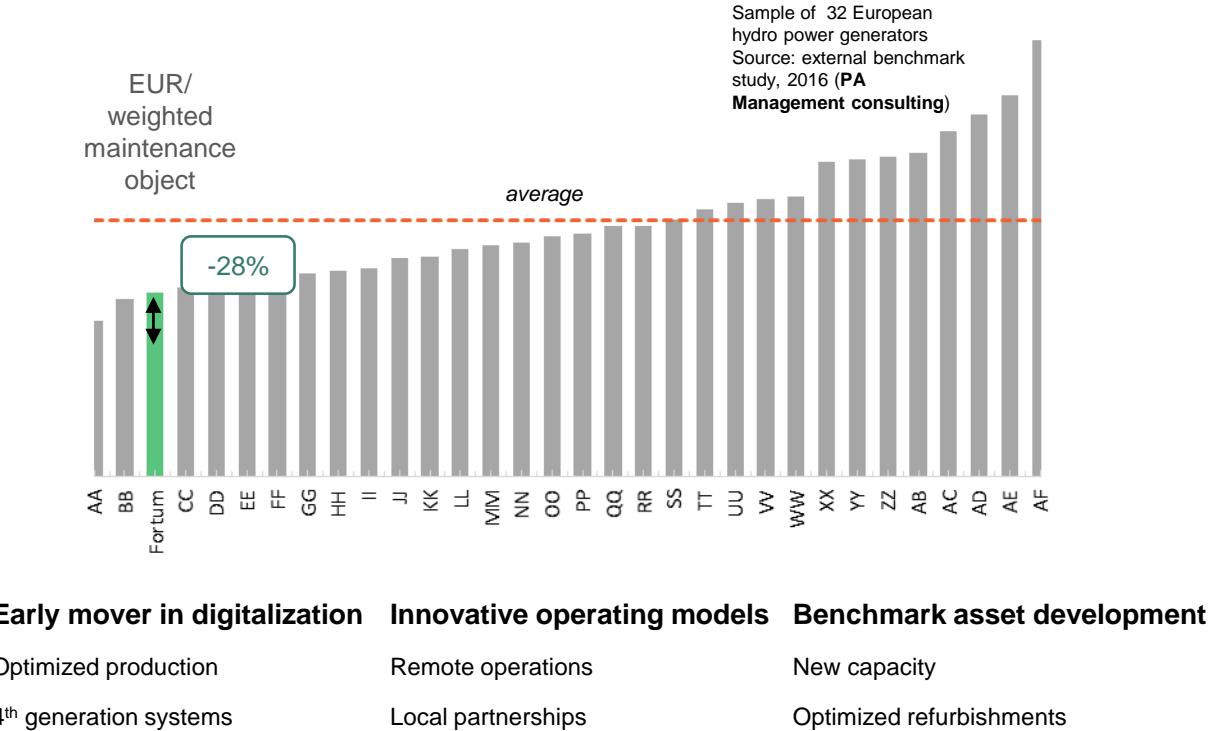
Total heat production capacity
15,009 MW

Fortum has best-in-class hydro power operations – both in plant availability and costs

Hydro availability



Normalised hydro maintenance costs



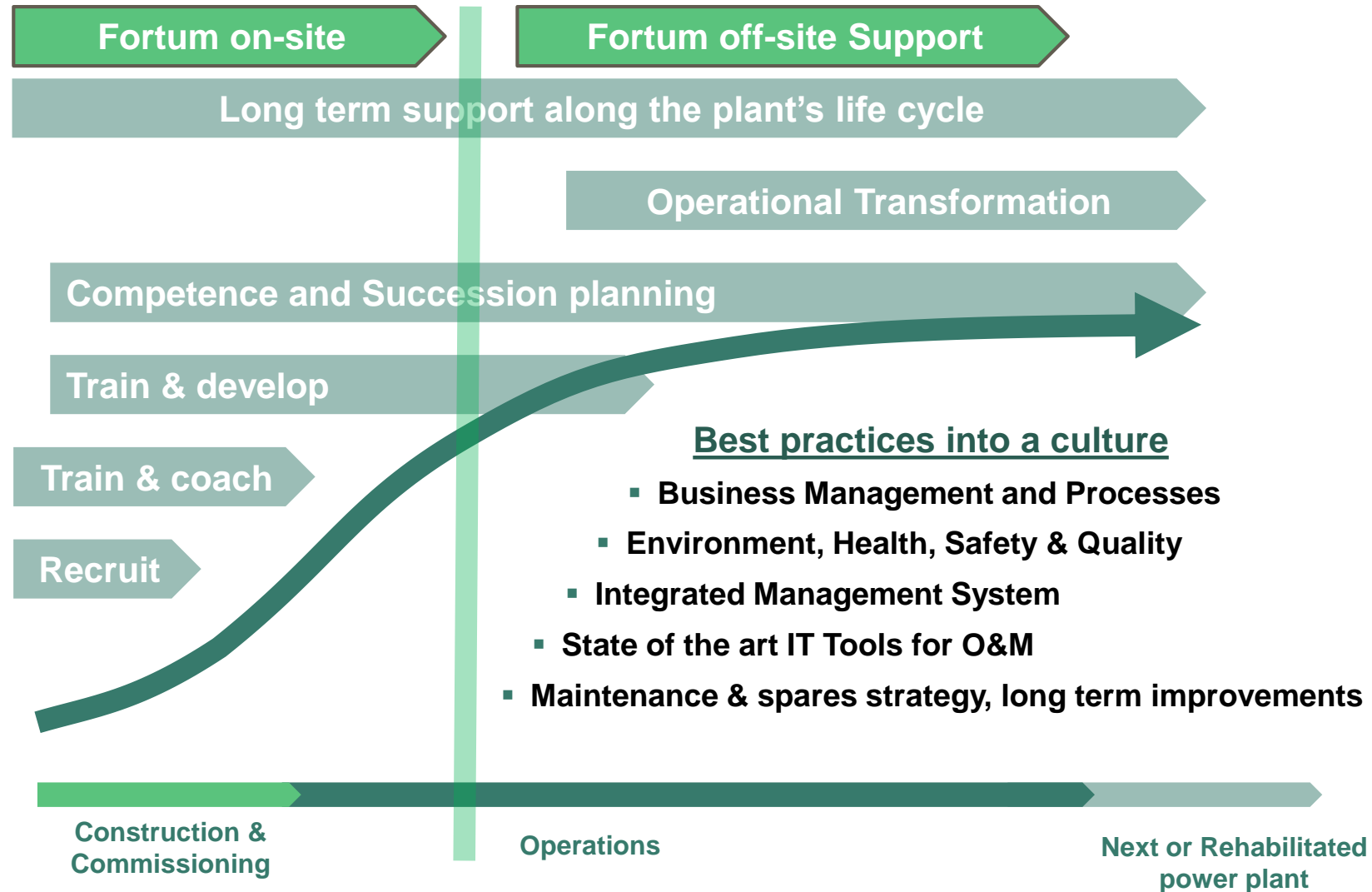
Consistent work to maximise hydro availability with tight control of maintenance costs

Helping power plants to improve their
operations
and
reduce negative impact to environment

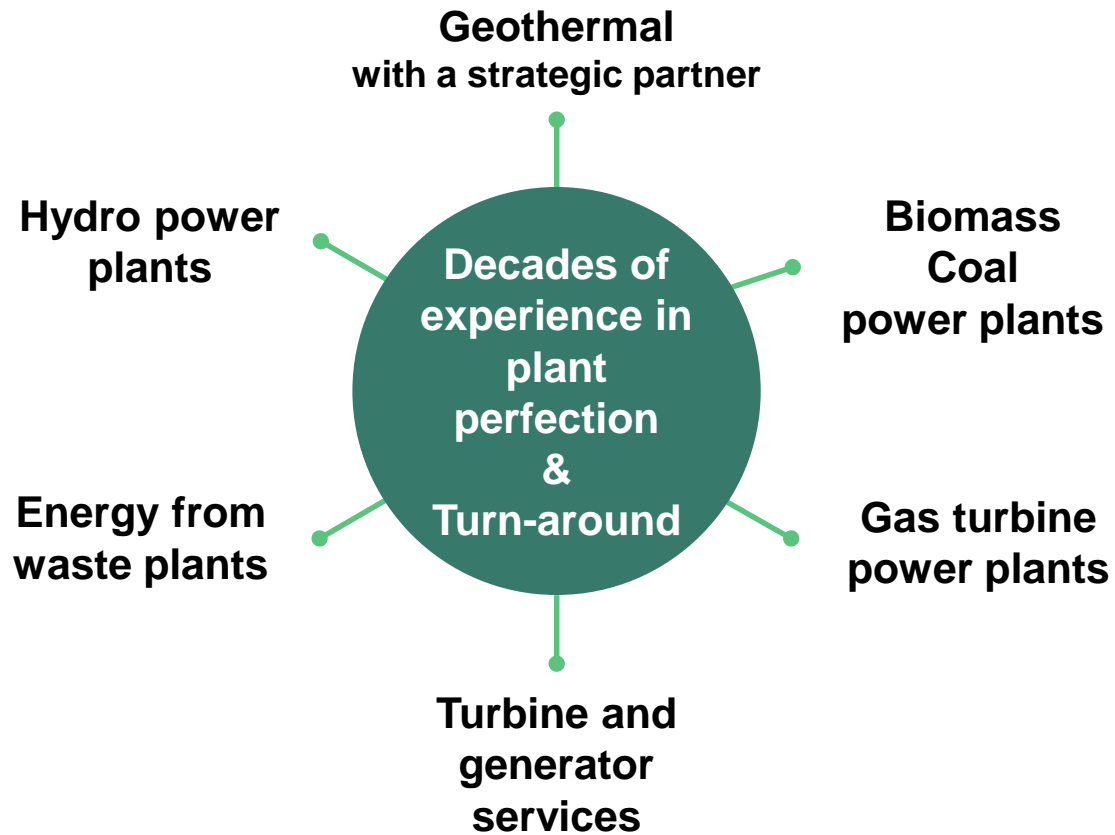
- Best-in-class reliability and availability
- Safety and environment always in the forefront
- Economical asset life cycle management
- Operational excellence knowledge transfer



Knowledge transfer – adoption of Fortum's best practices



Full-scope asset management for power plant owners and investors



**OUR TASK IS TO HELP YOU RUN YOUR
PLANT AND ENERGY BUSINESS WITH THE
INDUSTRY'S BEST KNOWLEDGE AND
TECHNOLOGY**

EHSQ as the corner stone for plant lifetime profitability

All our operations are certificated – Yours can be as well



Quality
ISO 9000

Environment
ISO 14000
























Health & Safety
OHSAS 18001

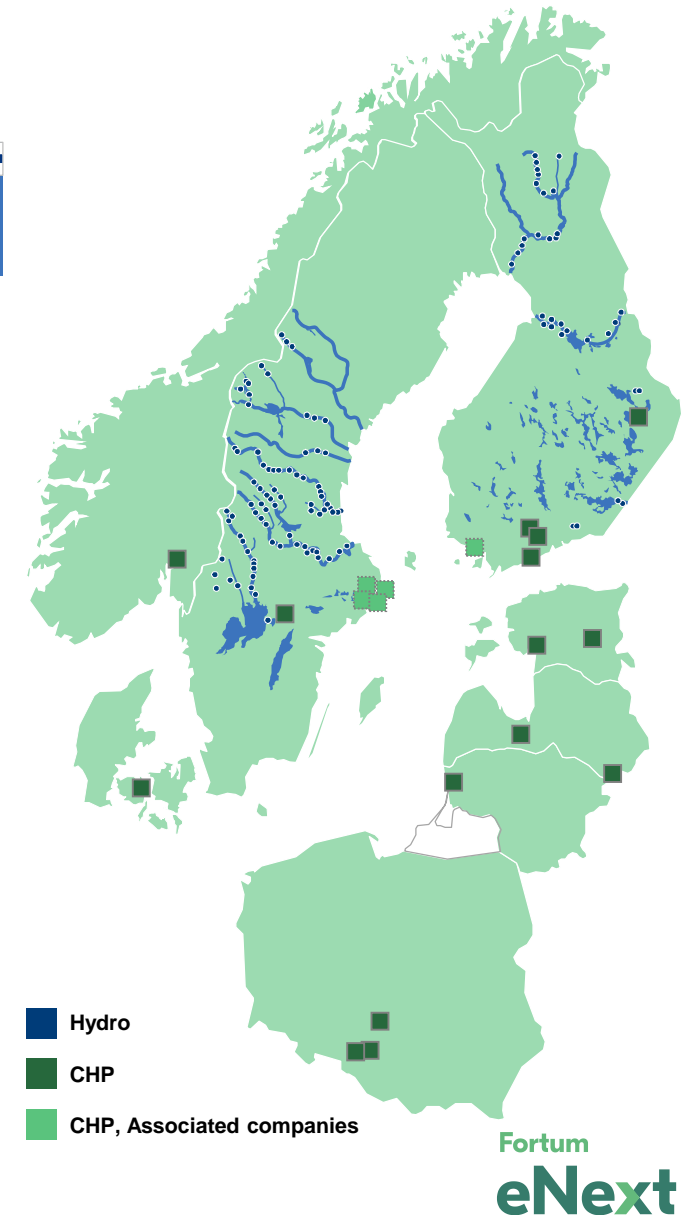
Asset Management
ISO 55000

Integrated Management System (IMS)




Fortum hydro and thermal fleet in Europe

Bio-CHP	Multifuel-CHP	Waste-CHP	Coal/gas-CHP	Hydro
Joensuu  Woodchips, peat + pyrolysis plant 52 MW _e , 180 MW _h	Czestochowa  Coal, woodchips 68 MW _e , 129 MW _h	Riihimäki  Hazardous waste MSW+ ICW, material recovery 0,34Mt/a, 18 MW _e , 90 MW _h	Espoo  Coal, natural gas 350 MW _e , 600 MW _h	Finland  in total 1,548 MW
Järvenpää  Woodchips, horse manure & SRF 23 MW _e , 45 MW _h	Zabrze  Coal, waste 63 MW _e , 174 MW _h	Kumla  Hazardous waste ICW + MSW 0,14Mt/a, 7,8 MW _h	Bytom  Coal 55 MW _e , 214 MW _h	Sweden  In total 3,124 MW
Jelgava  Woodchips 23 MW _e , 45 MW _h	Zabrze  Biomass, coal 75 MW _e , 145 MW _h	Nyborg  Hazardous waste 0,2Mt/a, 16 MW _e , 54 MW _h		
Pärnu  Woodchips 24 MW _e , 48 MW _h		Klaipėda  MSW, RDF, woodchips 0,25 Mt/a, 20 MW _e , 64 MW _h		
Tartu  Woodchips, peat 25 MW _e , 50 MW _h		Klemetsrud  MSW, ICW, RDF 0,4Mt/a, 16 MW _e , 54 MW _h		
Värtan KVV8, Brista 1  Woodchips 130 MW _e , 280 MW _h	Naantali  Coal, woodchips 265 MW _e , 420 MW _h	Högdalen  MSW, ICW, RDF 0,7 Mt/a, 67 MW _e , 259 MW _h	Värtan, old units  Coal, oil	Co-owned and consolidated companies Associated companies
Hässelby  Wood pellets 75 MW _e , 200 MW _h		Brista 2  MSW, ICW, RDF 0,24 Mt/a, 20 MW _e , 60 MW _h		



Fortum eNext has extensive experience in providing Operation and Maintenance to external customers

Current	Under mobilisation		Teesside, UK  300 MW _e CHP Biomass 2018-	HQ Power, Rwanda  70 MW _e Condensing Peat 2018-
	Grangemouth, UK  145 MW _e / 250 MW _{th} CHP Gas 2000-	Hamm, Germany  800 MW _e CCGT Gas 2005-	Tanjung Jati Indonesia  2x660MW _e Condensing Coal 2006-	
Recent	Taweelah, UAE  2070 MW _e / 165 MIGD CHP, Water Desalination 2005-2010	Knapsack, Germany  800 MW _e CCGT Gas 2006-2009	Lakeside, UK  32 MW _e W2E Munic. Waste 2006-2012	Lünen, Germany  750 MW _e Condensing Coal 2008-2013
	Kapar, Malaysia  4x300 MW _e 2x500 MW _e 2x110 MW _e Coal, Gas 2002-2008	Herbrechtingen, Germany  16 MW _e / 25 MW _{st} CHP Biomass 2003-2009	Hythe, UK  53 MW _e CCGT Gas 2003-2011	Allington, UK  34 MW _e W2E Munic. waste 2004-2010
	Sullom Voe, UK  95 MW _e / 330 MW _{th} CHP, Gas 2004-2014			



Tell us your challenges, we can help

Thank you!



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