

## Performance Tests of Turbines and Boilers

**A = DIN 1942/EN 12592-15**

**B = DIN 1943**

**C = IEC 953-2 Rules for Steam Turbine Tests**

**D = SFS 5624 / SFS 3869**

**E = BS 6069**

**F = ISO 2314**

**G = ANSI/ASME PTC 4.4 - 1981**

**H = IEC 953-3 Rules for Steam Turbine retrofit**

**I = VDI 2045**

**J = ANSI/ASME PTC 4.1 – Steam-generating Units**

YEAR	CLIENT	PROJECT DESCRIPTION	CAPACITY	FUEL	
2007	UPM Kymmene (UK) Ltd, Shotton, UK	Performance test of power plant with a fluidised bed boiler, bag filter , wet scrubber and a back pressure turbine	82 MWth 19 MWe	Biofuels, sludge	A, B
2007	Rovaniemen Energia Oy, Finland	Performance test of a hot water boiler	47MWth	Light fuel oil	A
2007	Kemin Energia Oy, Finland	Performance test of a fluidised bed boiler with wet, heat recovery scrubber and one hot water boiler	32 MWth 12 MWth	Peat, biofuels heavy fuel oil	A
2007	Vapo Oy, Haapavesi, Finland	Performance test of power plant with a fluidised bed boiler, steam heated dryer, electrostatic precipitator and a back pressure turbine	24 MWth 3 MWe	Peat, biofuels, sludge	A, B
2006	Juankosken Biolämpö Oy, Finland	Performance test of a fluidised bed boiler and two hot water boilers	17MWth 6 + 10 MWth	Wood waste, biofuels, heavy fuel oil	A
2006	Stora Enso Oyj, Heinola Fluting, Finland	Performance test of a back-pressure turbine	25 MWe	-	B
2006	Etelä-Savon Energia Oy, Pursiala power plant, Finland	Performance test of a back-pressure turbine	35 MWe	-	B
2006	Helsingin Energia, Finland	Performance test of hot water boilers	5 x 40 MWth (DH)	Heavy fuel oil	A
2006	Vapo Oy, Ilomantsi, Finland	Performance test of power plant with a fluidised bed boiler, steam heated dryer, electrostatic precipitator and a back-pressure turbine	20 MWth 3 MWe	Peat, biofuels	A, B
2005	Stora Enso Oyj, Anjalankoski, Finland	Performance test of a back-pressure turbine (Stal radial turbine)	40 MWe	-	B

YEAR	CLIENT	PROJECT DESCRIPTION	CAPACITY	FUEL	
2005	E.ON Finland Oyj, Finland	Performance test of hot water boiler	40 MWth	Biogas / heavy fuel oil	A
2005	Inesco Oy / Outokumpu Stainless Oy, Tornio, Finland	Performance test of waste heat recovery boiler	6,1 MWth	CO / propane	A
2005	Vantaan Energia, Finland	Performance test of two hot water boilers	2 x 40 MWth (DH)	Natural gas / heavy fuel oil	A
2004	Wärtsilä Finland Oy, Puerto Quetzal, Guatemala	Performance test of diesel power plant with electrostatic precipitators and flue gas desulphurization plants	10 x 15,6 MWe	Orimulsion	A
2004	E.ON Finland Oyj, Finland	Performance test of two hot-water boiler units	2 x 40 MWth (DH)	Natural gas / heavy fuel oil	A
2003–2005	Foster Wheeler Energia Oy, Ireland	Performance test of power plant (West Offaly) with a fluidised bed (circulating) boiler and a condensing steam turbine	400 t/h 370 t/h (RH) 150 MWe	Peat	A, B
2003–2005	Foster Wheeler Energia Oy, Ireland	Performance test of power plant (Lough Ree) with a fluidised bed (circulating) boiler and a condensing steam turbine	280 t/h 250 t/h (RH) 100 MWe	Peat	A, B
2003–2005	Foster Wheeler Energia Oy, Narva, Estonia	Performance test of power block (Eesti 8) with two fluidised bed (circulating) boilers and a condensing steam turbine	2 x 320 t/h (+ 280 t/h RH) 215 MWe	Oil shale	A, B
2003–2005	Foster Wheeler Energia Oy, Narva, Estonia	Performance test of power block (Balti 11) two fluidised bed (circulating) boilers and an extraction-condensing steam turbine	2 x 320 t/h (+ 280 t/h RH) 215 MWe 120 MWth (DH)	Oil shale	A, B
2003	Oy Metsä-Botnia Ab, Finland	Performance test of a fluidised bed (bubbling) boiler refurbishment	144 t/h	Peat and wood waste	A
2003	Oy Metsä-Botnia Ab, Finland	Reference performance test of a fluidised bed (bubbling) boiler	144 t/h	Peat and wood waste	A
2003	Järvi-Suomen Voima Oy, Finland	Performance test of a fluidised bed (bubbling) boiler.	108 t/h	Wood waste	A
2003	Järvi-Suomen Voima Oy, Finland	Performance test of a back-pressure turbine.	10 MWe	-	B
2003	Stora Enso, Langebrugge, Belgium	Performance test of a back-pressure turbine	10 MWe	-	B
2002	Turku Energia Oy, Finland	Performance test of a hot-water fluidised bed (bubbling) boiler unit, electrostatic precipitator and wet scrubber	40 + 12 MWth (DH)	Biomass	A, D

YEAR	CLIENT	PROJECT DESCRIPTION	CAPACITY	FUEL	
2002	Espoon Sähkö Oy, Finland	Performance test of a hot-water boiler unit	40 MWth (DH)	Natural gas / heavy fuel oil	A
2002	Pieksämäen Energia Oy, Finland	Performance test of a fluidised bed (bubbling) boiler	43 t/h	Peat and biomass	A
2001/2002	Vattenfall Oy, Finland	Performance test of a fluidised (bubbling) bed boiler, bag house filter and wet scrubber	130 t/h	Peat, biomass and sludge	A, D
2001	Vattenfall Oy, Finland	Performance test of a back-up boiler unit	63 t/h (steam)	Natural gas / Light fuel oil	A
2001	Vattenfall Oy, Finland	Performance test of a back-up boiler unit	69 t/h (steam)	Natural gas	A
2001	Joensuun Energia Oy, Finland	Performance test of a fluidised (circulating) bed boiler refurbishment	270 t/h	Peat, biomass and RDF	A
2001	Vaasan Sähkö Oy, Finland	Performance test of a back-up boiler	72 t/h	Heavy fuel oil	A
2001	Alholmens Kraft, Finland	Performance test of a condensing turbine	250 MW	-	B
2001	Kuopion Energia, Finland	Performance test of a hot water boiler unit	40 MWth (DH)	Light fuel oil	A
2000	Kymenso Oy Anjalankoski Power Plant Anjalankoski, Finland	Performance test of a HRSG (fresh air and supplementary fired) unit Performance test of gas turbine	75 MWe / 220 t/h (steam)	Natural gas Natural gas	G F
2000	Seoul Energy Co Ltd, Republic of Korea	Performance measurements of six boiler units at Nowon and Kangseo power plants (Energy Operations Improvement)	30 ...42 t/h	Natural gas	J
2000	Kumpuniemen Voima Oy, Finland	Performance test of a grate-fired boiler	32 t/h	Wood waste	A
2000	Stora Enso Pankakoski Oy, Finland	Performance test of a fluidised bed (bubbling) boiler	50 t/h	Biomass and sludge	A
2000	TXU Europe Power Ltd, UK	Electrostatic precipitator refurbishment – Performance test monitoring	2 x 330 MWe blocks	Coal (pulverised)	E
2000	Tampere Power Utility, Tampere, Finland	Performance test of a HRSG (supplementary fired) unit	127 MWe / 140 MWth (DH)	Natural gas	G
2000	Rosenthal ZPR, Blanckenstein, Germany	Performance test of an extraction-condensing turbine	57 MWe	-	B

YEAR	CLIENT	PROJECT DESCRIPTION	CAPACITY	FUEL	
2000	Lahden Lämpövoima Oy, Kymijärvi power plant, Finland	Performance tests of a condensing turbine	140 MWe	-	B
2000	Metsä-Botnia Oy, Kaskinen, Finland	Performance test of a back-pressure turbine	36 MWe	-	B