



Environmental Protection Agency

15 APR 2008

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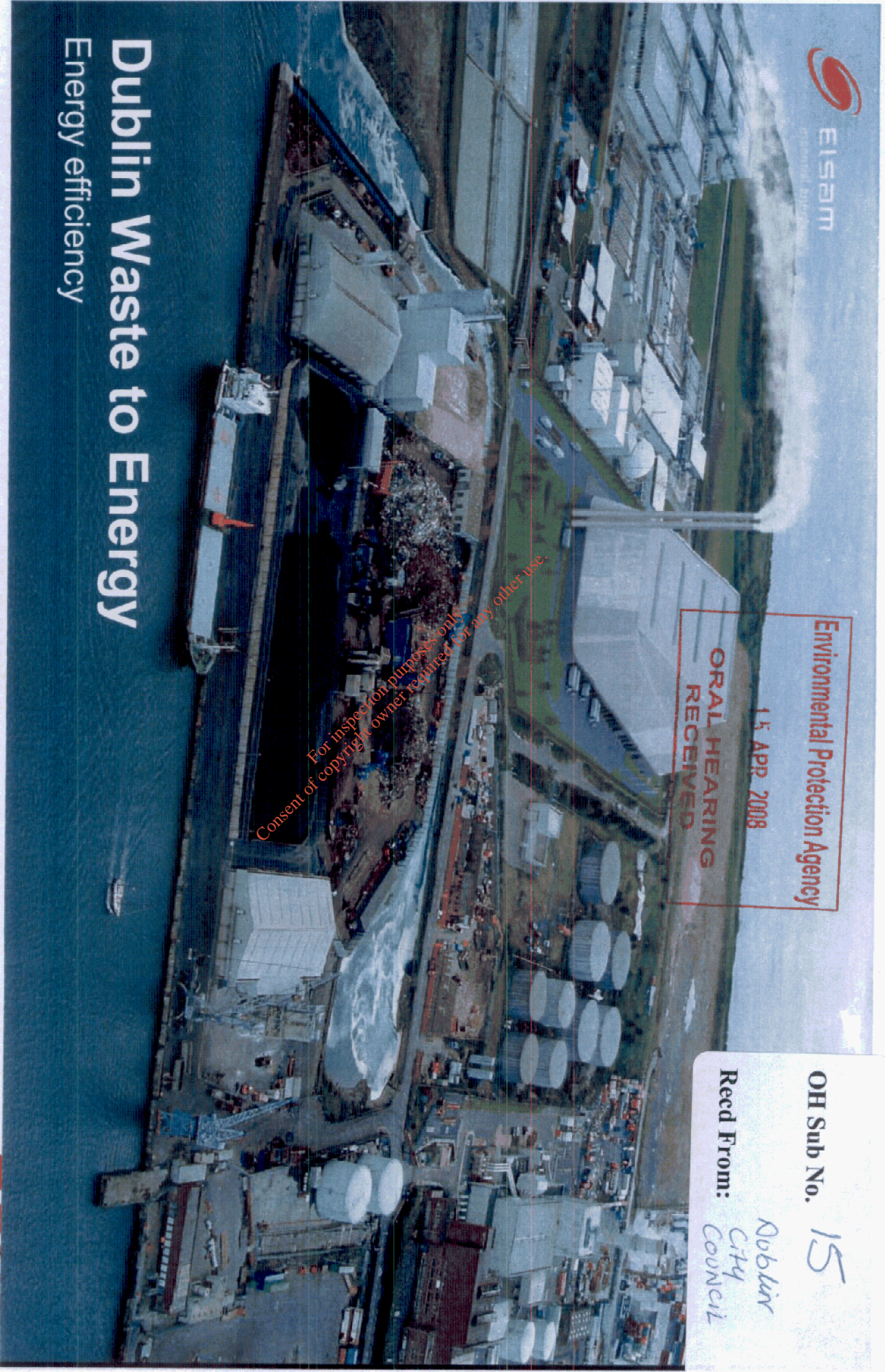
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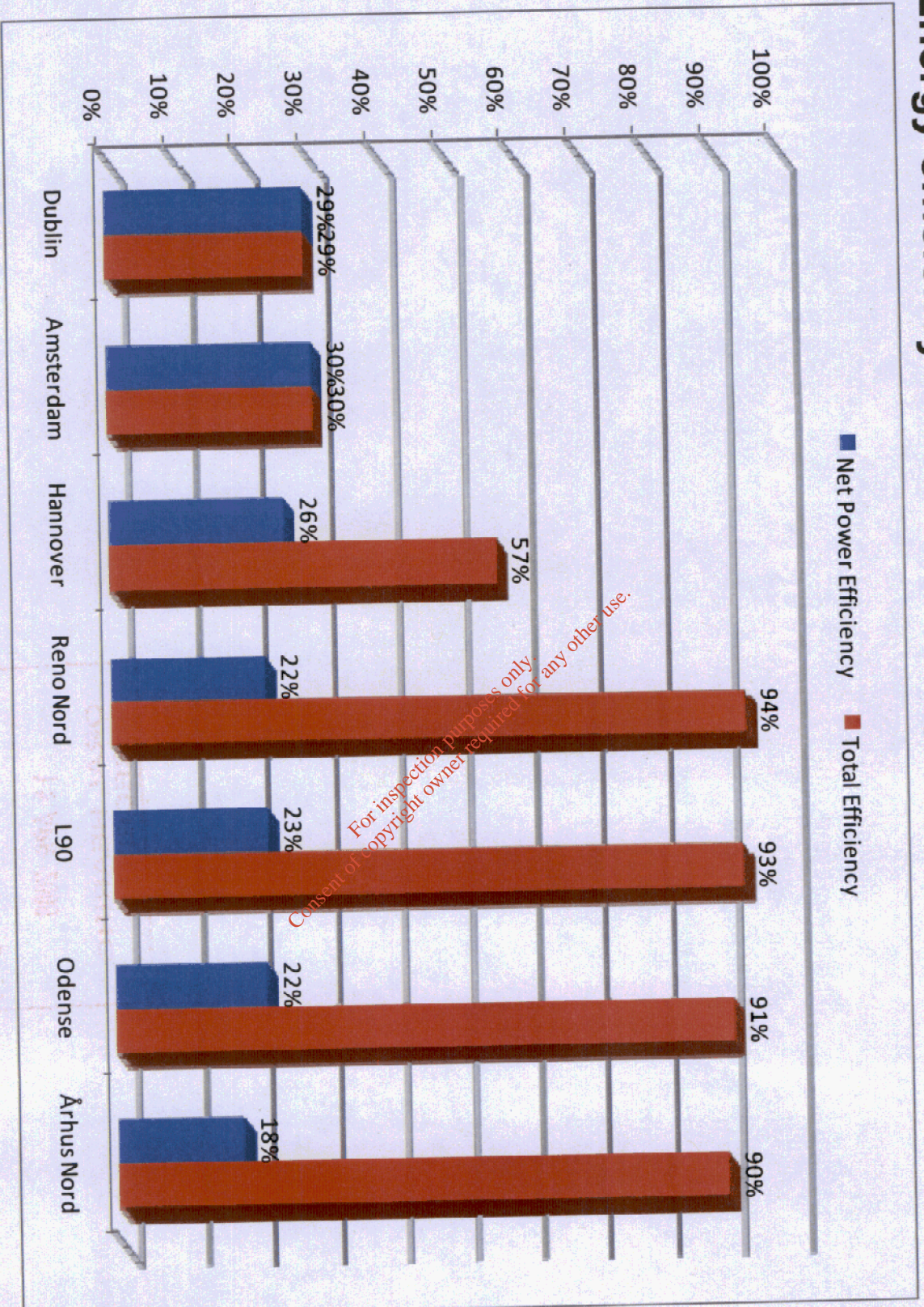
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Dublin Waste to Energy

Energy efficiency

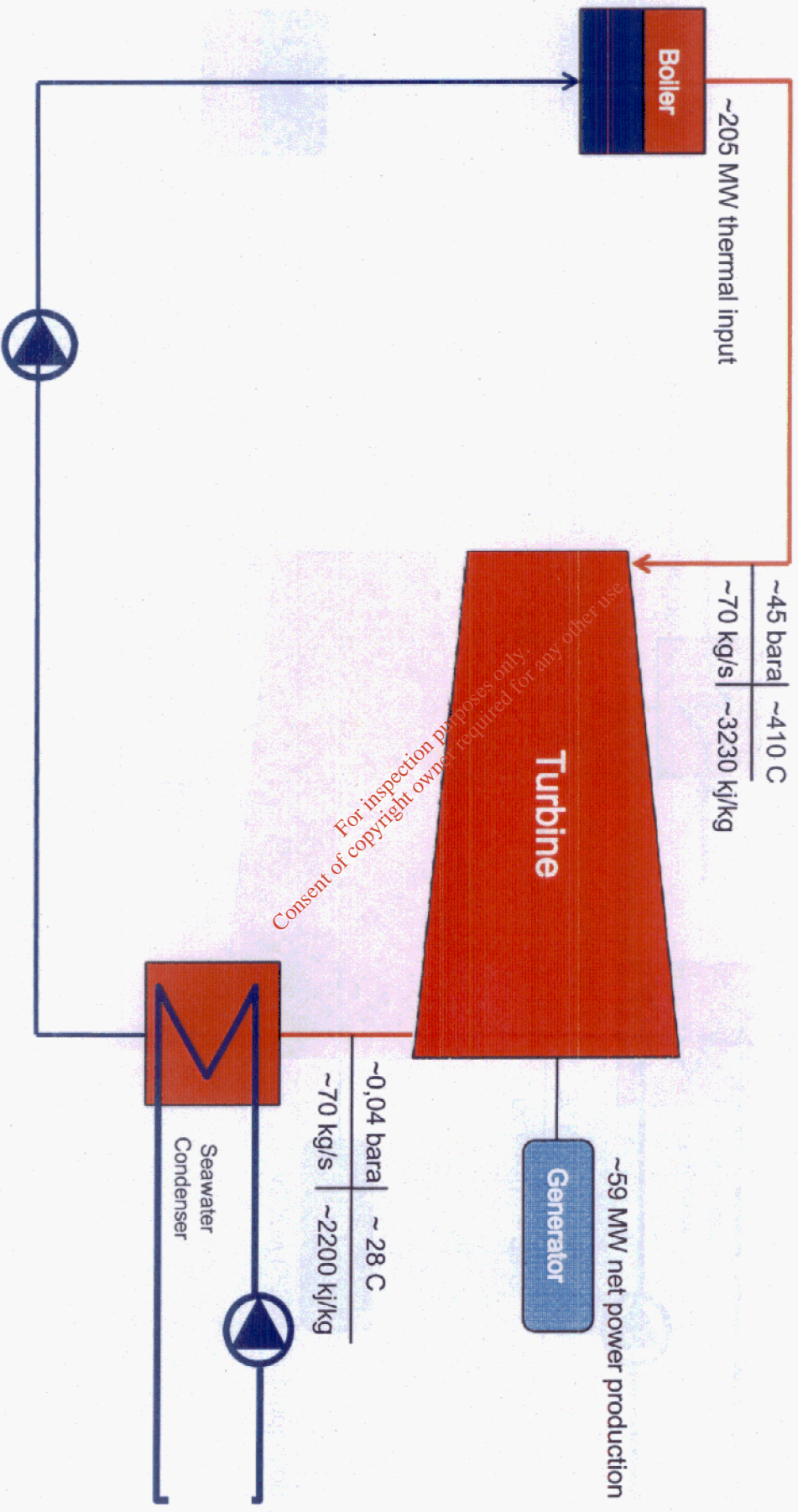


Energy efficiency Dublin WtE compared to other facilities



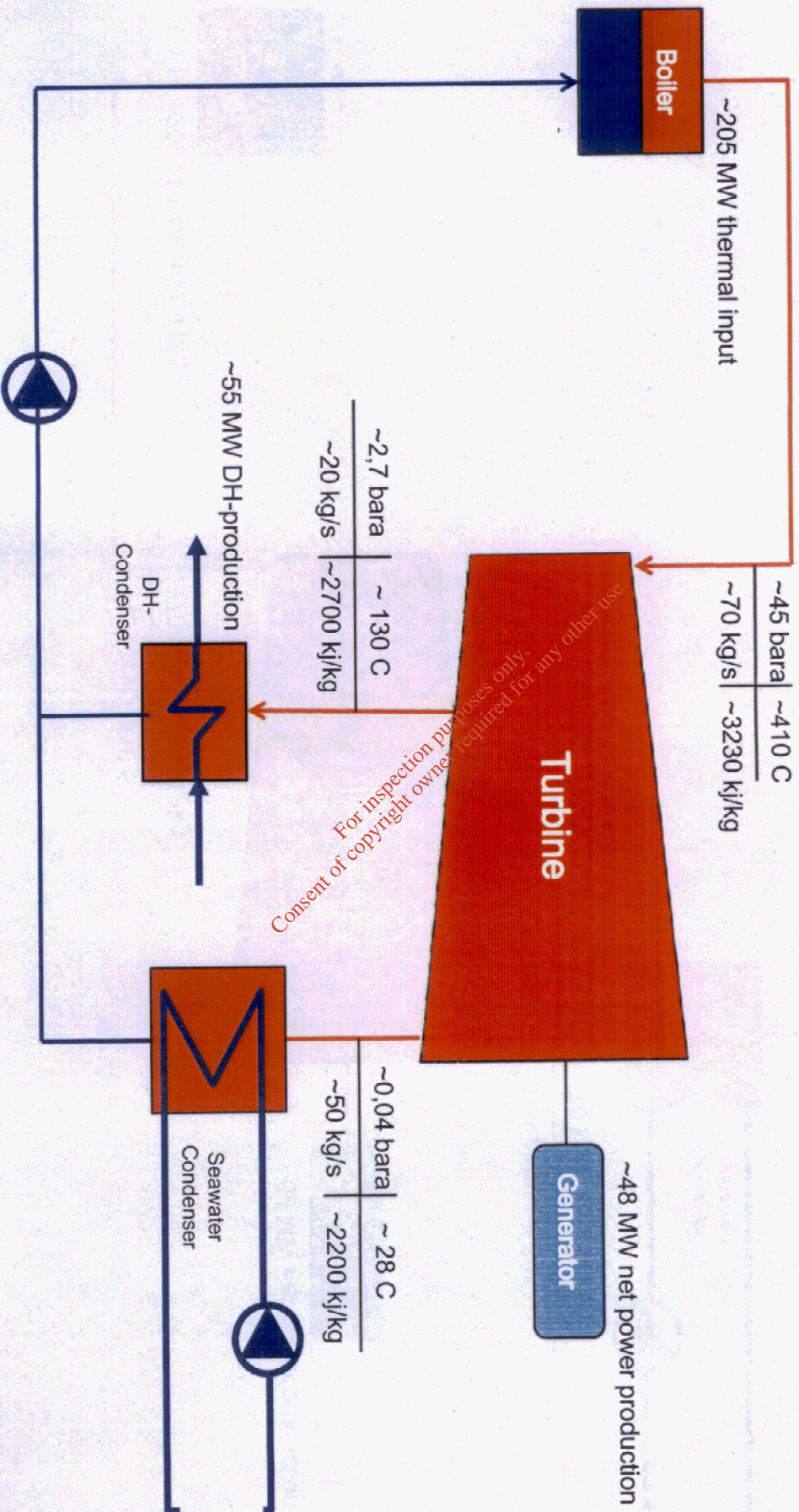
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Power production without DH – Guideline general principle



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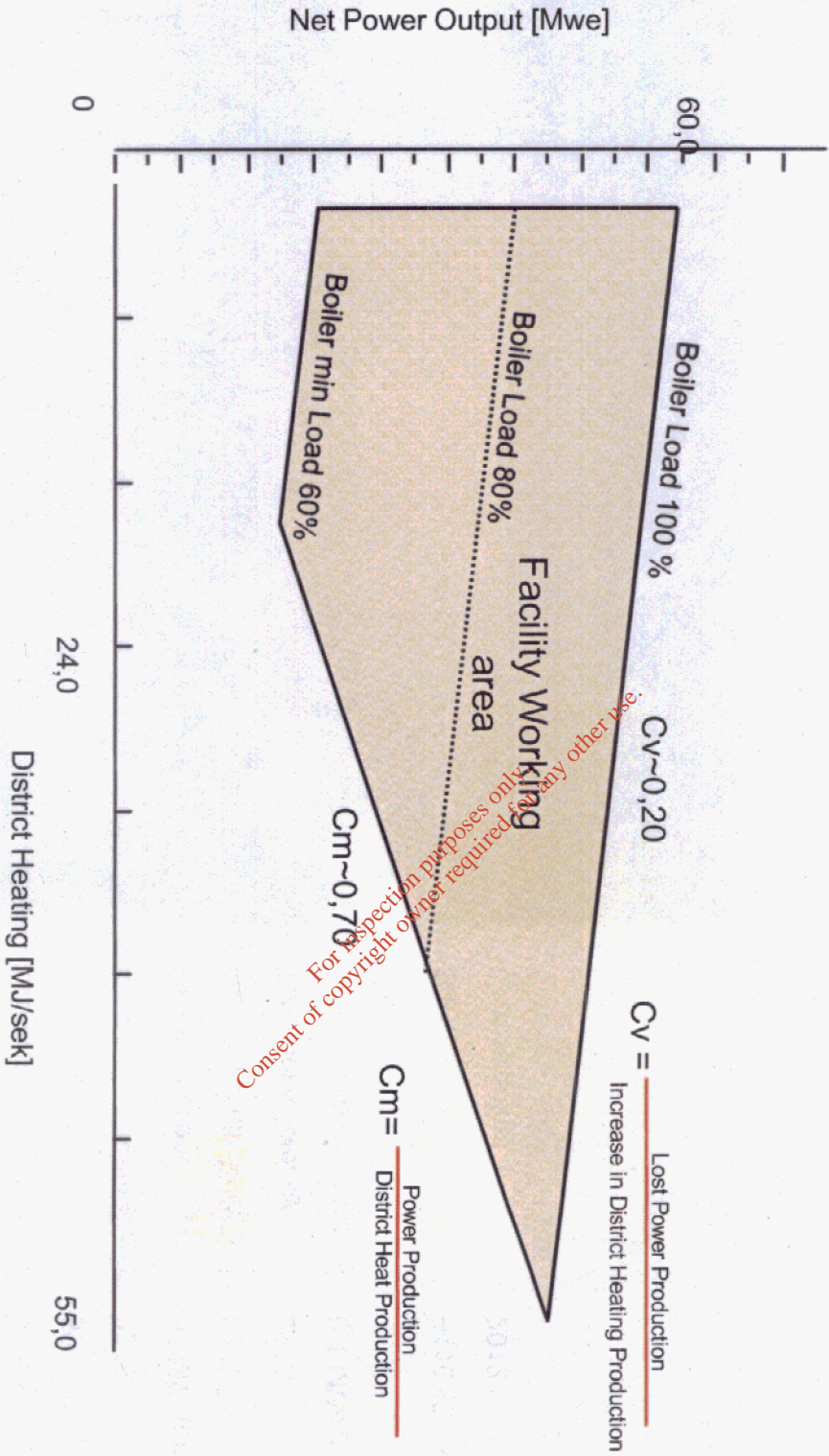
Power production with DH – Guideline general principle



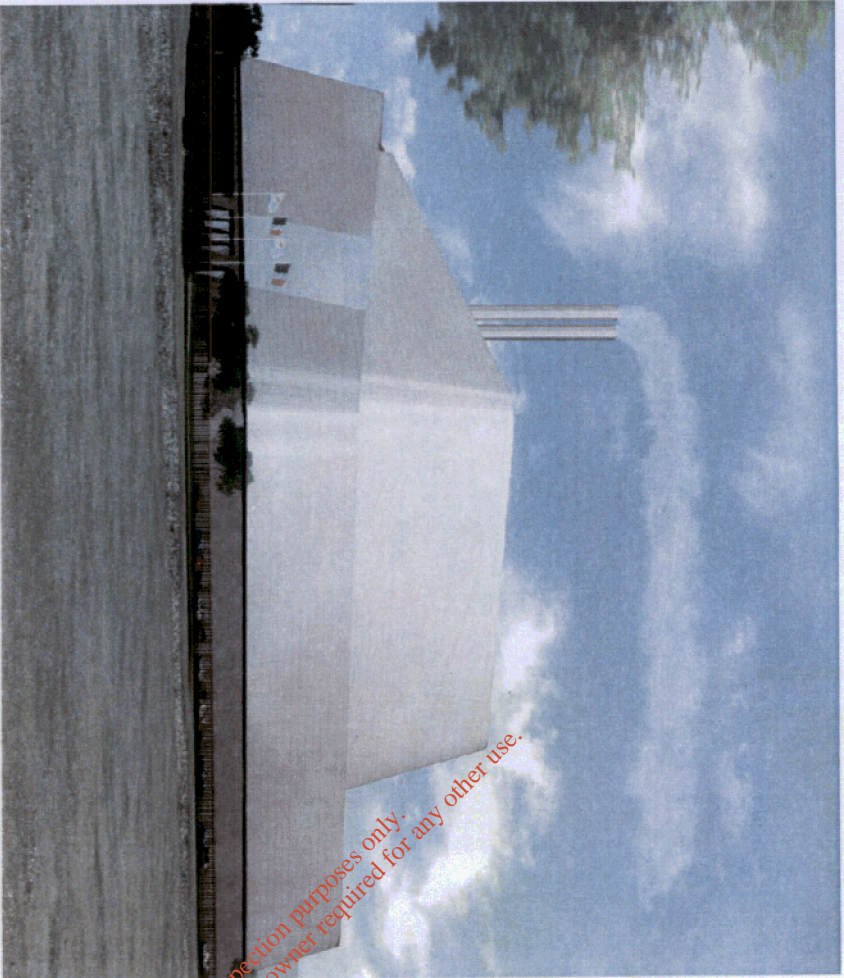
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Relation between power and heat production

Principle figure



Dublin WtE – Energy efficiency



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Capacity:	2*35 t/h@10,5 GJ/t
Gross power output :	66 MW
Net power output :	59 MW
Gross power efficiency :	32 %
DH-production:	55 MW (optional)
Net power efficiency :	29 %
Total net efficiency :	29 %
Internal power usage:	0,1 MWh/t
Steam data:	~410 °C / ~ 45 bara
Commissioning:	2012

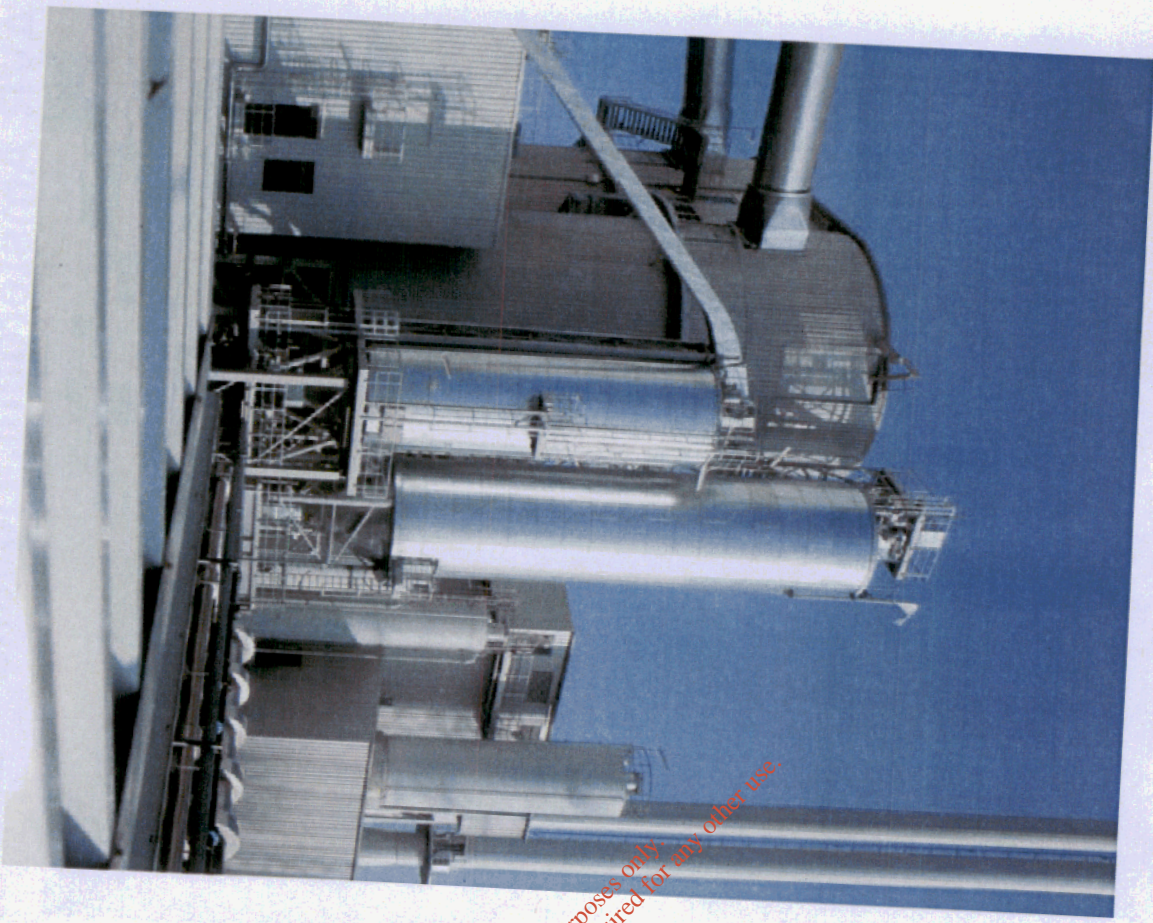
AVR Amsterdam, Holland – Energy efficiency



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Capacity :	530,000 t/y
Gross power output :	485,000 MWh/y
Net power output :	420,000 MWh/y
Gross power efficiency :	35 %
DH-production:	-
Net power efficiency :	30 %
Total net efficiency	30 %
Internal power usage:	0,12 MWh/t
Steam data:	440 °C/125 bara
Commissioned:	2007

Hannover, Germany



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Capacity :	280,000 t/y
Net power output :	24,4 MW
DH-production:	30 MW (optional)
Gross power output :	
Net power efficiency :	26 %
Total net efficiency	
Gross power efficiency :	
Internal power usage:	

Steam data:	400 C / 40 bar
Commissioned:	2007

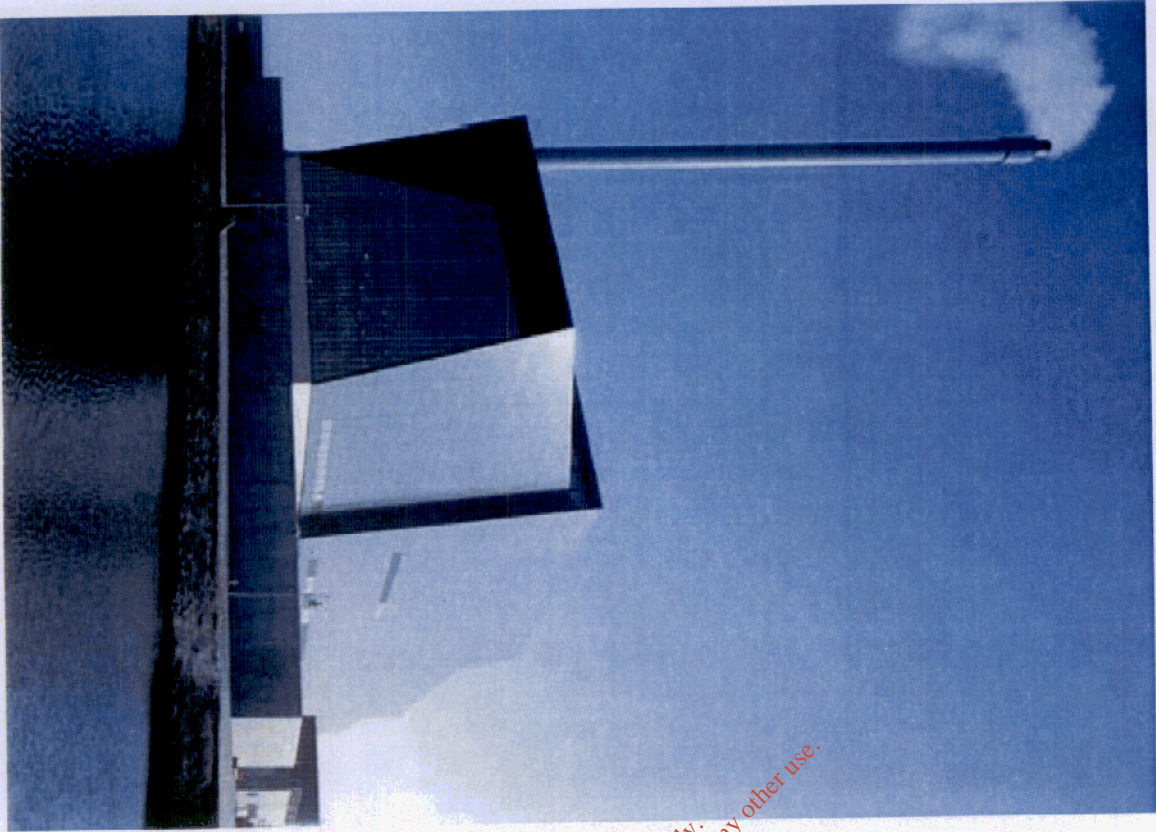
Reno Nord Aalborg Denmark



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Capacity :	174,536 t/y (2006)
Gross power output :	128,094 MWh (2006)
Net power output :	110,827 MWh (2006)
Gross power efficiency :	25,9 % (2006)
DH-production:	353,682 MWh (2006)
Net power efficiency :	22,4 % (2006)
Total net efficiency	93,9 % (2006)
Internal power usage:	0,10 MWh/t (2006)
Steam data:	423 °C / 48,6 bara
Commissioned:	2005

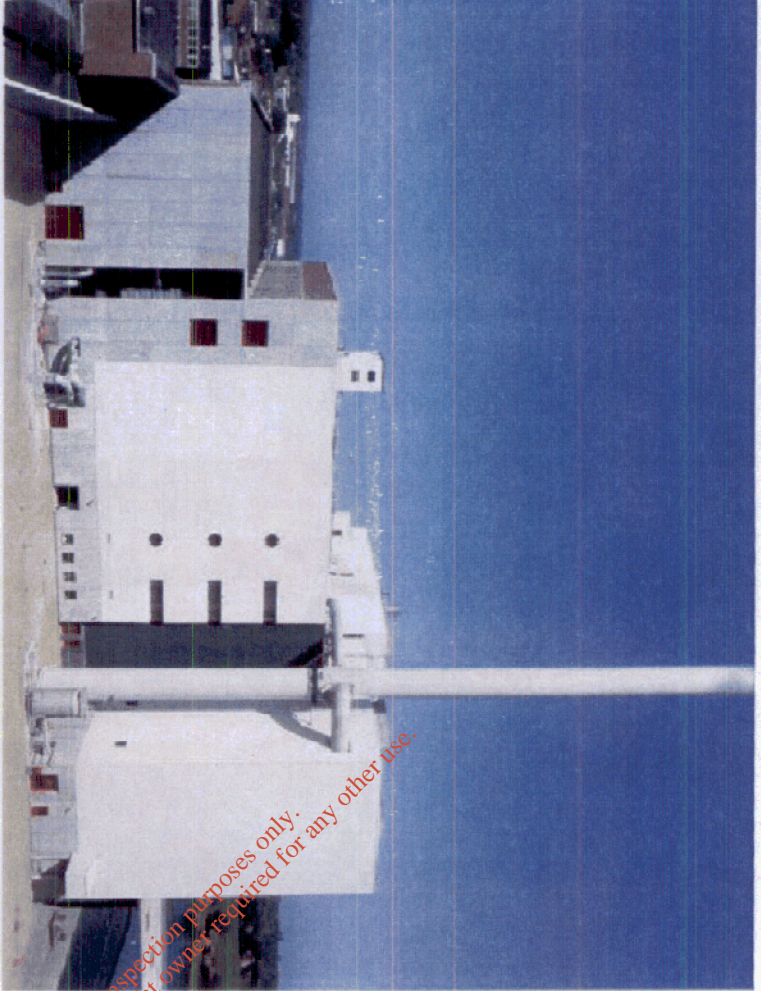
L90 Esbjerg, Denmark



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Capacity :	202,601 t/y (2006)
Net power output :	133,093 MWh (2006)
DH-production:	437,764 MWh (2006)
Gross power output :	146,511 MWh (2006)
Net power efficiency :	22,5 % (2006)
Total net efficiency	93,2 % (2006)
Gross power efficiency :	24,8 % (2006)
Internal power usage:	0,07 MWh/t (2006)
Steam data:	400 C / 50 bar
Commissioned:	

Odense, Denmark



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Capacity :	165,000 t/y
Gross power output :	193.505 MWh
Net power output :	14 MW
Gross power efficiency :	24,8 %
DH-production:	543.056 MWh
Net power efficiency :	22 %
Total net efficiency	91 %
Internal power usage:	0,08 MWh/t
Steam data:	380 °C / 65 bara
Commissioned:	2000

Arhus Nord, Denmark



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Capacity :	229,445 t/y (2006)
Gross power output :	143,286 MWh (2006)
Net power output :	122,133 MWh (2006)
Gross power efficiency :	21,4 %
DH-production:	482,423 MWh (2006)
Net power efficiency :	18 %
Total net efficiency	90 %
Internal power usage:	0,09 MWh/t
Steam data:	380 °C / 40 bara
Commissioned:	2005