

Hva betyr grønne sertifikater for utviklingen av vindturbiner?

UiO, 22. sept 2011





SIEMENS – et av verdens største selskaper

190 land i
verden

410.000
ansatte

Selger for 1 mill.
NOK per minutt

Det alt handler om...

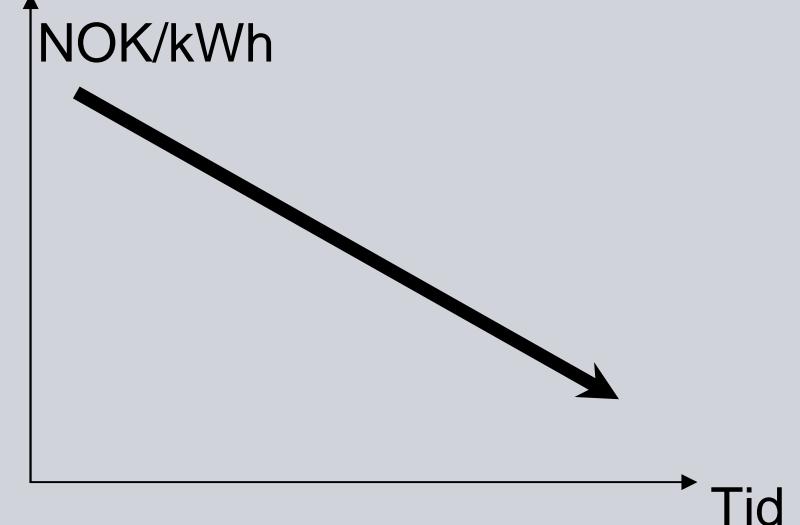
- Investeringskostnad (CAPEX)



- Drift og vedlikehold (OPEX)



- Energiproduksjon (AEP)



Subsidier til vindkraft



SIEMENS

1979: Begynnelsen



Effekt: 30 kW

Rotordiameter: 10 meter

Tårnhøyde: 18 meter

Husstander: 5

SIEMENS

1998: 1MW-barrieren brytes



Effekt: 1000 kW

Rotordiameter: 54 meter

Tårnhøyde: 50 meter

Husstander: 160

SIEMENS

2004: Serieproduksjon



Effekt: 2300 kW

Rotordiameter: 82 meter

Tårnhøyde: 80 meter

Husstander: 390

SIEMENS

2006: Spesialdesign for offshore



Effekt: 3600 kW

Rotordiameter: 107 meter

Tårnhøyde: 100 meter

Husstander: 600

SIEMENS

2010: Lett og effektiv



Effekt: 3000 kW

Rotordiameter: 101 meter

Tårnhøyde: 80-100 meter

Husstander: 500

SIEMENS

2011: Rask utvikling



Siemens AS 2011

Det alt handler om (en gang til)...

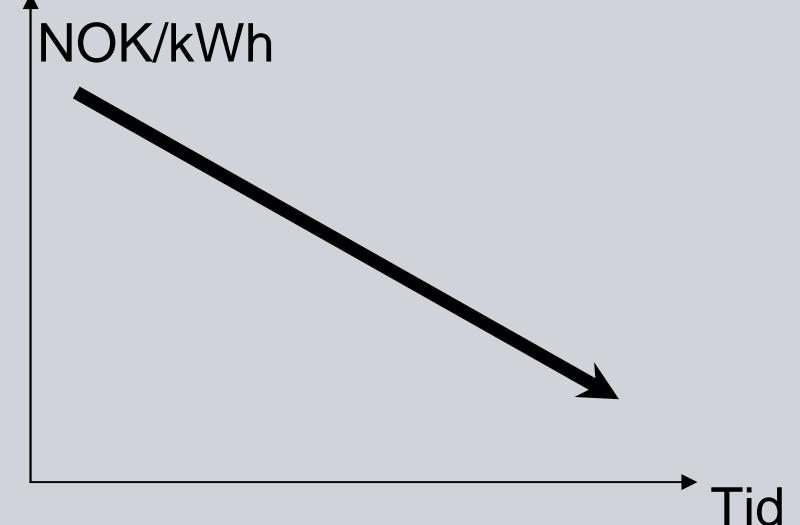
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Hva betyr et felles elsertmarked?

BLOWING COAL AWAY

Wind power now competitive with coal in some regions 37



BY TODD WOODY
7 FEB 2011 8:45 PM



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More good news on the renewable energy front Monday: The cost of onshore wind power has dropped to record lows, and in some regions is competitive with electricity generated by coal-fired plants, according to a survey by Bloomberg New Energy Finance, a market research firm.

"The latest edition of our Wind Turbine Price Index shows wind continuing to become a competitive source of large-scale power," Michael Liebreich, Bloomberg New Energy Finance's chief executive, said in a statement.



Photo: Vlasta Juricek

"For the past few years, wind turbine costs went up due to rising demand around the world and the increasing price of steel," he added. "Behind the scenes, wind manufacturers were reducing their costs, and now we are seeing just how cheap wind energy can be when overcapacity in the supply chain works its way through to developers."

I Sverige,
USA og
Brasil:

**Vind: 68
dollar/MWh**

**Kull: 67
dollar/MWh**

**Gass: 58
dollar/MWh**

Kilde: Bloomberg New Energy Finance

Takk for oppmerksomheten!

Ben Bjørke

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Det alt virkelig handler om...

$$Strømprisen + Elsert \geq \frac{CAPEX + \sum_{t=1}^T OPEX_t (1+r)^{-t}}{\sum_{t=1}^T AEP_t (1+r)^{-t}}$$

- Investeringskostnad (CAPEX)



- Drift og vedlikehold (OPEX)



- Energiproduksjon (AEP)

