E-site® with Diriflex™ by Flexenclosure

Green Power for Mobile, Working Group Presentation
Wednesday 19th November 2008, Macau

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Vice President Marketing





Fortunately, we grew up under tough conditions

- Originate from the country that invented mobile technology
- Extremely demanding customers (because their customers were)
- Today: Leading supplier with more than 8000 installations worldwide

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THE GROUP

pharmadule emtunga

No. 1 Worldwide in high tech facilities - the Modular way

THE COMPANIES

pharmadule



Turn-Key biotech and pharmaceutical production facilities.

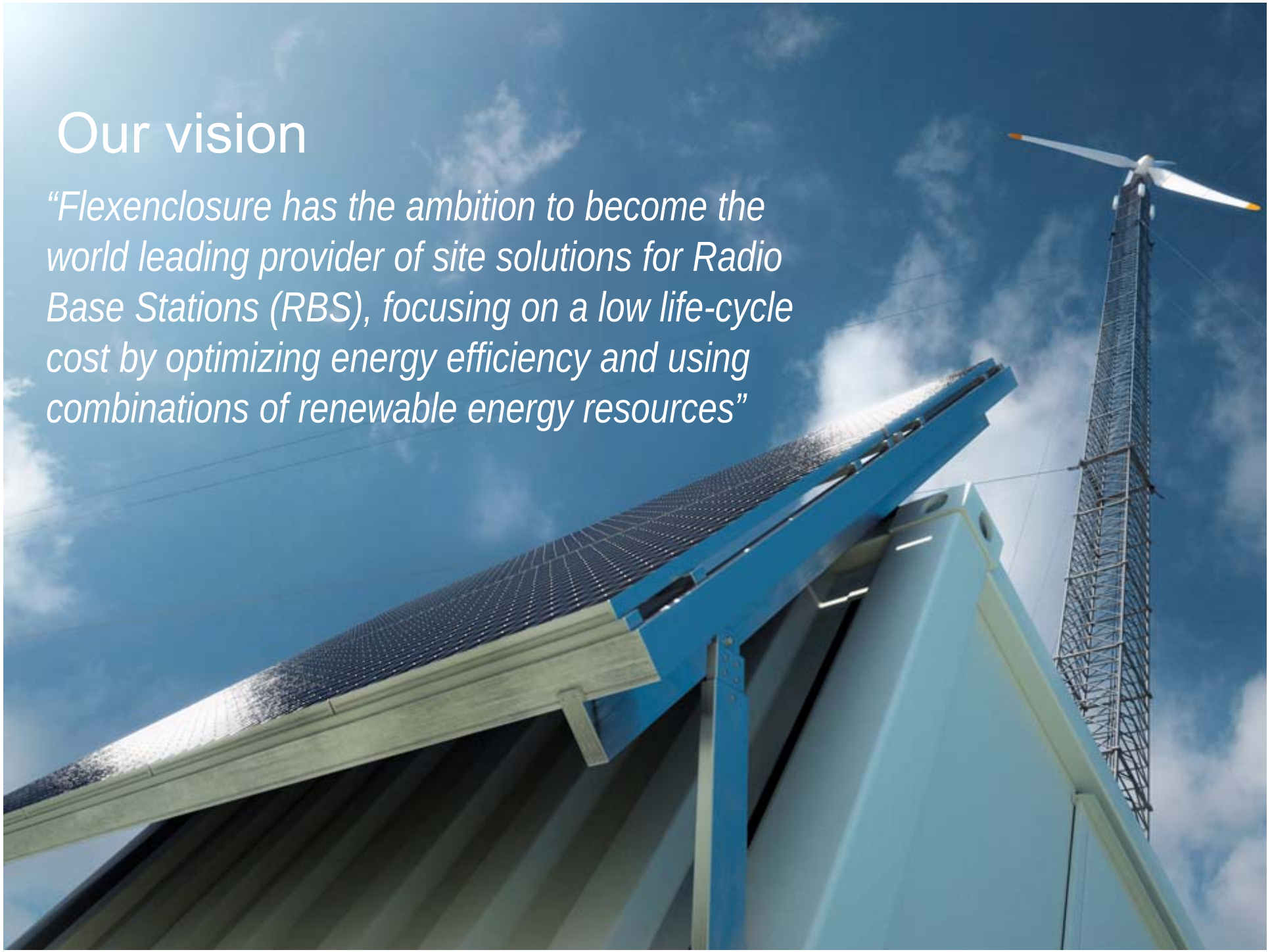
emtunga OFFSHORE



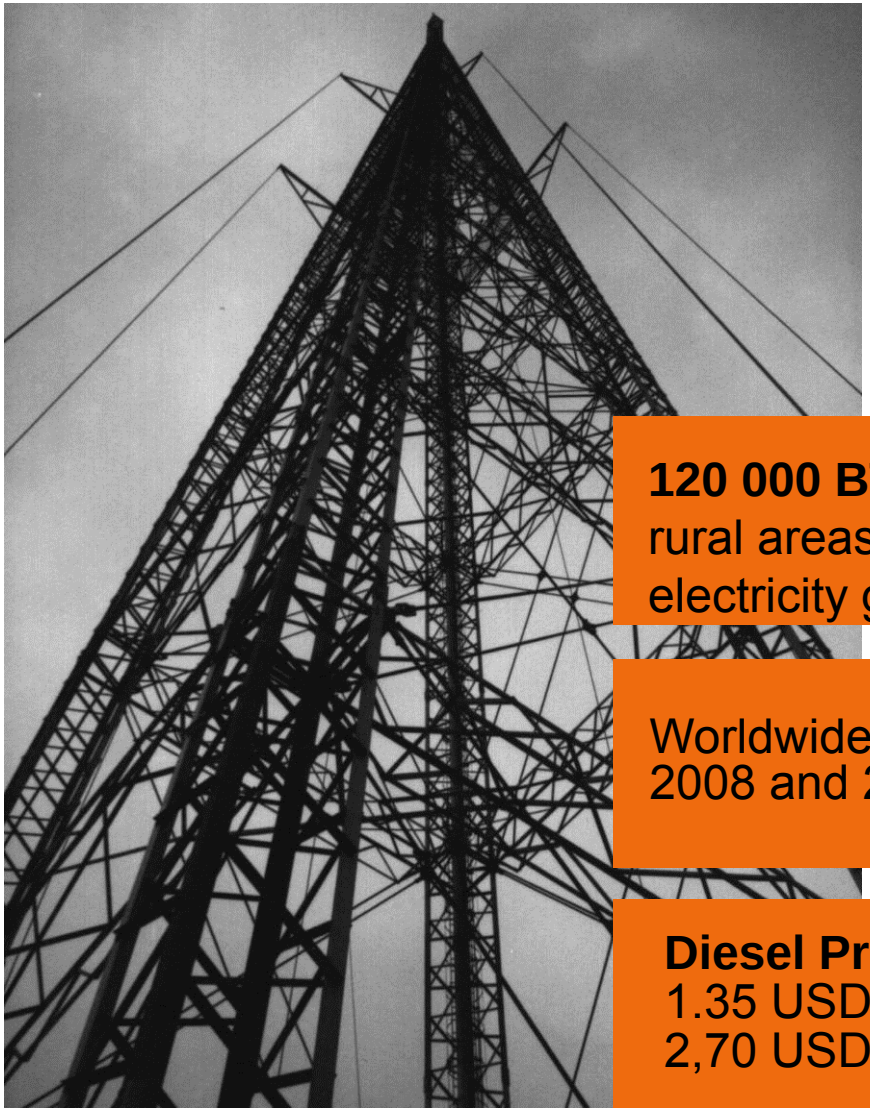
Turn-Key living quarters for the gas and oil industry.

Our vision

“Flexenclosure has the ambition to become the world leading provider of site solutions for Radio Base Stations (RBS), focusing on a low life-cycle cost by optimizing energy efficiency and using combinations of renewable energy resources”



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Reduction of OPEX – a major challenge

120 000 BTS to be built annually in rural areas without any access to reliable electricity grids.

Worldwide **ARPU down** 4 % annually in 2008 and 2009.

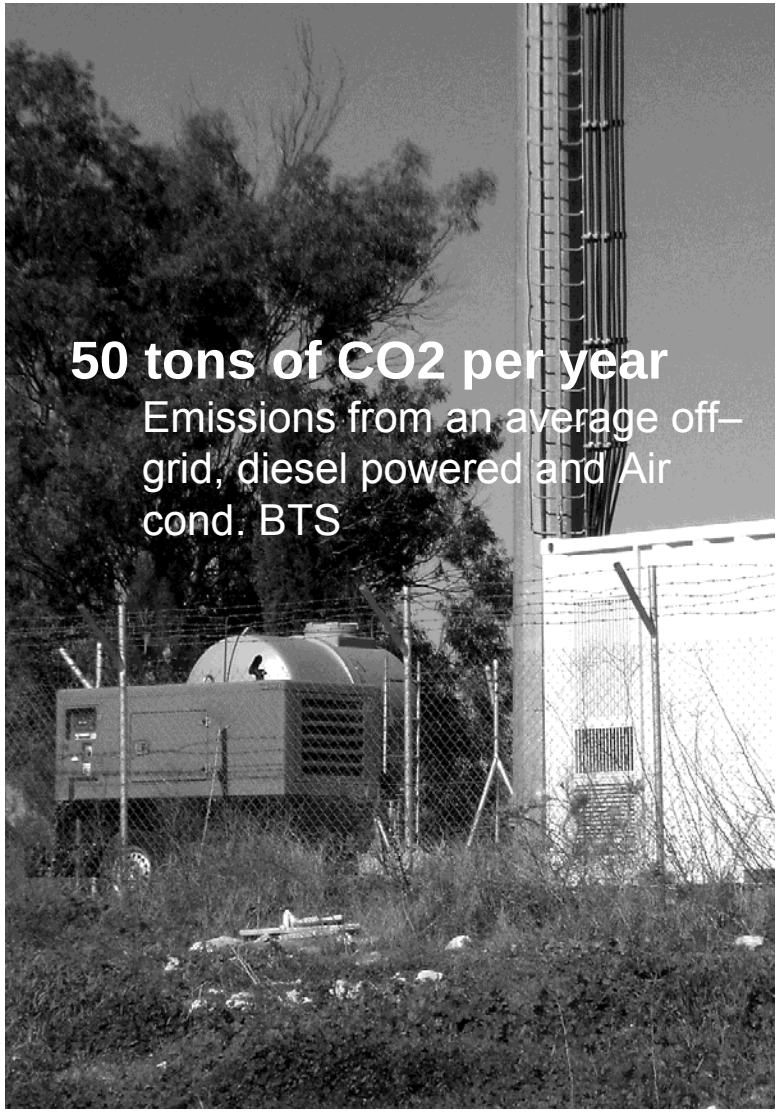
Diesel Price up.
1.35 USD/Gallon in 2002
2,70 USD/Gallon in 2007

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We are challenging the use of diesel



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Cost for each additional site annually…

+

- 30 000 USD in diesel fuel cost
  One BTS consumes approximately 20 m^3 diesel per/ year x 1,7 USD/liter
- 10 000 USD in Indirect annualized cost for replacements
  Replacement of generators and batteries

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The ”Business as usual” Scenario

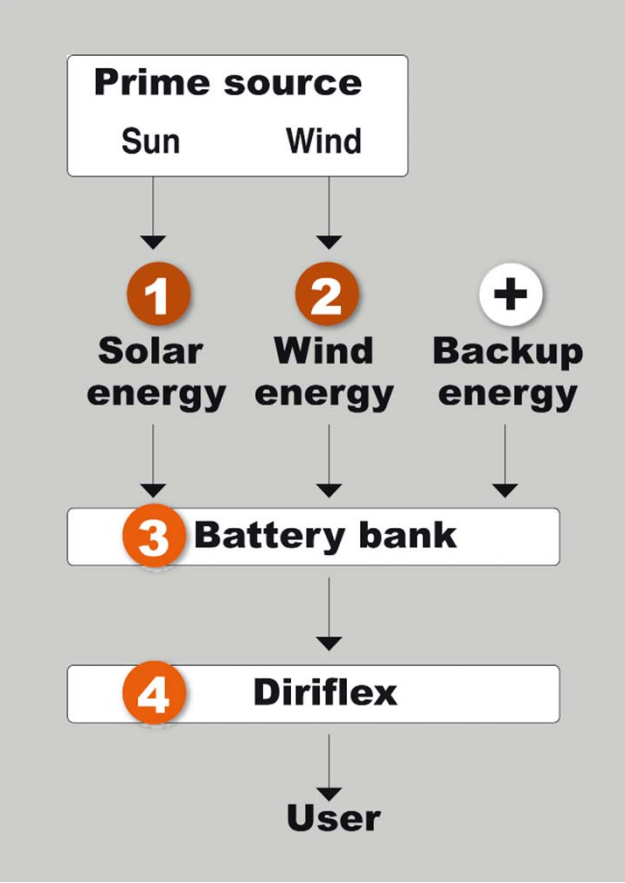
	AC. diesel BTS # of Units	**CO2 Emission*** Million Metric Tonnes	**Diesel cost** Billion USD
>2008	**150 000**	**7.9**	**4,5**
2009	**270 000**	**14.3**	**9,2**
2010	**390 000**	**20.7**	**13,3**
2011	**510 000**	**27.0**	**17,3**

As a reference; total car emissions of CO2 in London 5 million tonnes, annually.

* Green House Gas protocol
1 Lit = 2.63 kg CO2

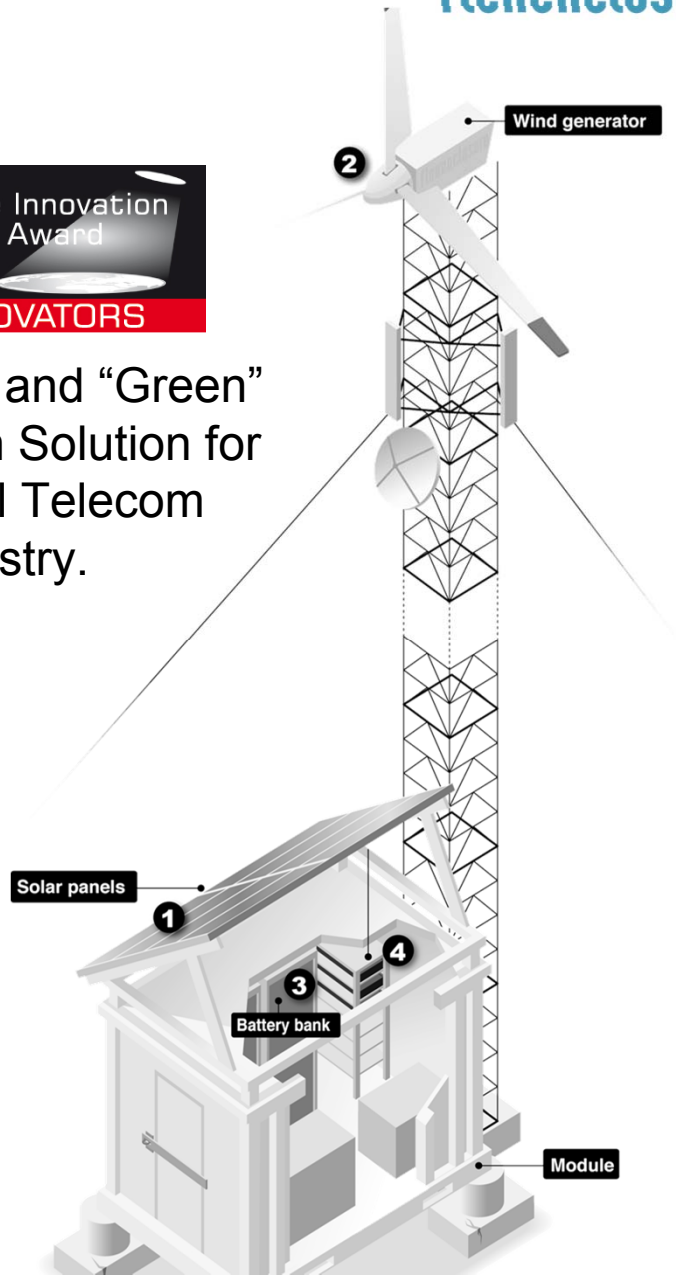
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E-site®



Mobile Innovation Global Award 2008
TOP INNOVATORS

The Flexible and “Green” Base Station Solution for the Global Telecom Industry.



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What's new?

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E-site®

Special designed site solution for Telecom

✓"Smart" power consumtion and conservation
✓ Rapid deployment
✓ 2 climate zones
✓ Small footprint

1

Solar panels

✓w/USD

2

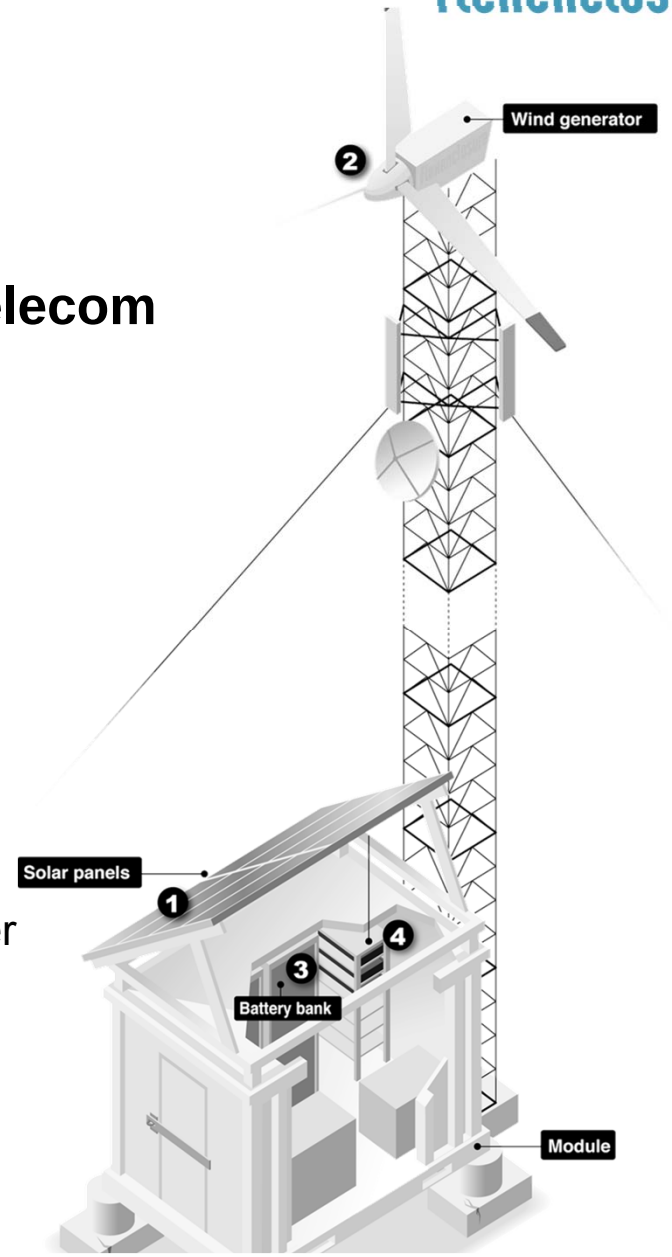
Wind generator

✓ Mounted on the equipment mast/ tower
✓ Blades, active steering, security etc

3

Battery bank

✓ Separate battery cooling



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4 Diriflex™ customer value

Increase efficiency - Highly developed software and hardware

Adaptive: adjust and ”learns” the conditions on the ground.



Increase components lifespan

Optimize the use of renewable energy.

Ensures safe and functional operation.

- Reduced CAPEX / OPEX
- Prolonged life expectancy
- Increased reliability

(patent pending)

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~80% savings in site related OPEX

Conventional diesel based site

Component	Annualized Replacement ($/yr)	Annual O&M ($/yr)	Annual Fuel ($/yr)	Annual OPEX ($/yr)
Generator	7,644	2,143	36,947	**46,734**
Battery	2,667	1000	0	**5,675**
Converter	0	0	0	**0**
Other	0	1,000	0	**1000**
Totals	10,311	4,143	36,947	51,401

Σ Cost saving over 5 y = $ 200 000

E-site with diesel as back-up

Component	Annualized Replacement ($/yr)	Annual O&M ($/yr)	Annual Fuel ($/yr)	Annual OPEX ($/yr)
Solar Array	0	500	0	**500**
Wind Generator	0	2000	0	**2000**
Generator	1,836	202	5,058	**7,096**
Battery	1,287	100	0	**1,387**
Other	0	1,000	0	**1,000**
Totals	3,123	3,802	5,058	11,983

OPEX savings not only on fuel but also significant savings on equipment replacement and O&M

Numbers based on actual base station operations in Africa over 10 years

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Impact of average wind on business case

Equipment at site

- BTS: 1 pcs 3x4, -48 VDC, 900 MHz
- Backhaul: 1 pcs Microwave link
- Shelter system, including cooling, management, lights, etc

Site location

- Kenya (in NE territories)
- E-site with wind, solar, batteries and diesel back-up

Average wind speed	Annual OPEX ($/yr)	Annual Fuel (L/yr)	Annual Fuel ($/yr)
2	**20,414**	6,163	10,477
3	**12,632**	3,304	5,617
3,5	**12,074**	3,162	5,375
4	**11,883**	2,975	5,058
5	**7,468**	1,620	2,755
6	**5,182**	950	1,615
7	**4,775**	712	1,210
8	**4,500**	680	1,156

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The new (diesel-free) scenario



In 2011

- Reduced global CO2 emission with 20 MMT
- Global operator cost saving of 21 Billion USD

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Made in Sweden by

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