

Wind as a powerful resource for islands



David Cregg



# ENERCON Key Facts

- Founded 1984 by Dr. Aloys Wobben
- 100% privately owned, **rated AA-** Financially independent and strong
- Company of engineers
- Combine innovation and conservative engineering
- Highest vertical integration in the industry
- ENERCON provides all key services
- Leading onshore supplier in Europe
- >18,000 employees world wide



## Current Stats

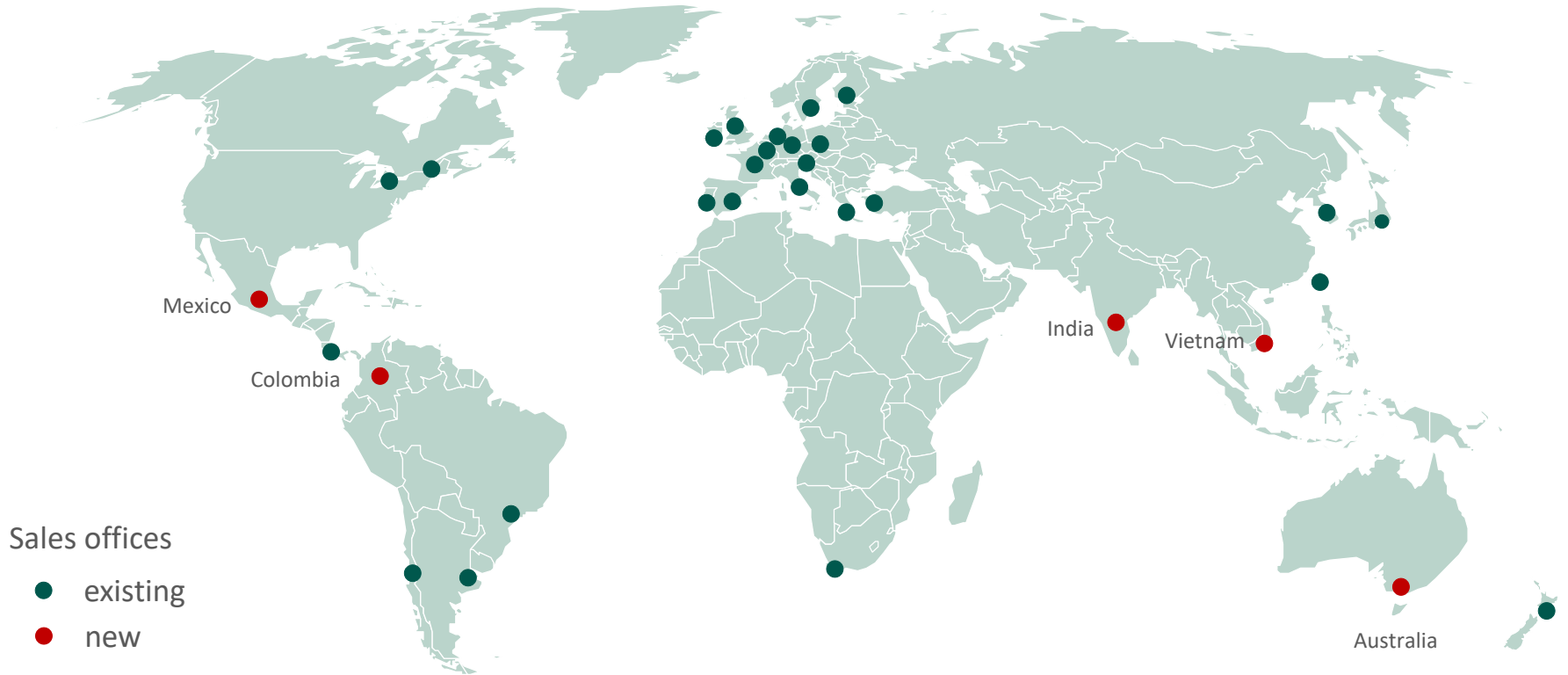
- ENERCON 21 years in the Irish market place.
- 1<sup>st</sup> ENERCON wind farm in Ireland Crockahenny Co. Donegal operational since 1998.
- To date 630 wind turbines installed.
- ENERCON Share: 1.28GW installed.
- 210 employed across the island of Ireland.
- 12 service stations across the island of Ireland.

~ **Full Range of Services with all staff based locally:**

- ~ Turbine Supply
- ~ Site Analysis
- ~ Grid Integration
- ~ Electrical Works
- ~ Civil Works
- ~ Full Service Package
- ~ System Services Market advice



# SALES OFFICES



Wind energy is a significant and powerful resource.

It is safe, clean, and abundant.

Unlike conventional fuels, wind energy is a local power source permanently available in virtually every nation in the world



## Wind as a powerful resource for islands

Small islands have to deal often with very high electricity, heating and transportation prices. The fuel, which is in many cases diesel, coal and home heating oil is transported on boats to these islands. Transportation makes up for a large part of the total energy costs.





## Why Wind Turbine's on Islands?

Most island grids(mini grids) started out using diesel gensets.

Some islands got connected to a national grid via sub sea cables others installed wind turbines and other renewable energy technologies being used along side the gensets





# Wind as a powerful resource for islands

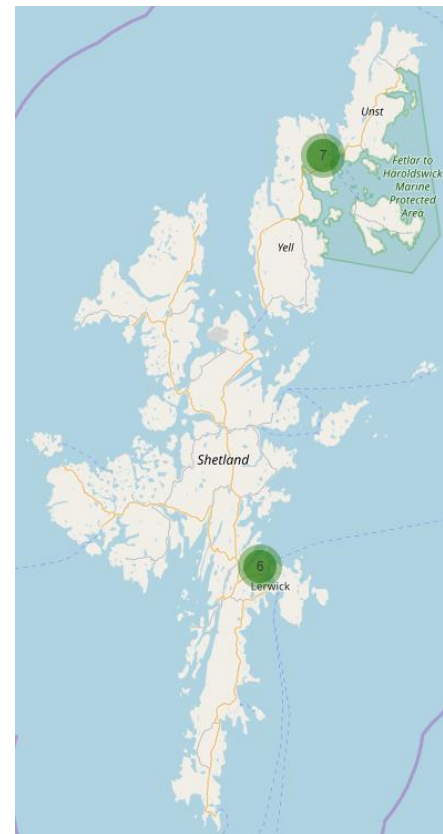
## Our nearest neighbours

### Shetland

Gremista 1xE-82 E4 78m 3MW

North Hoo 1x E-44 45m

North Yell 5xE-44 45m (Community owned)



## Wind as a powerful resource for islands

### Orkney

Flotta 1xE-70 64m

Hoy 1xE-44 45m (community?)

Rennibister 1x E-44 45m

Hammars Hill 5xE-44 45m

Burgar Hill 1xE-70 64m

Westray 1xE-44 Community)

Eday 1x E-44 (Community)

Stronsay 1xE-44 (community)

Rousay 1xE-44 (community)

Shapinsay 1xE-44 (community)

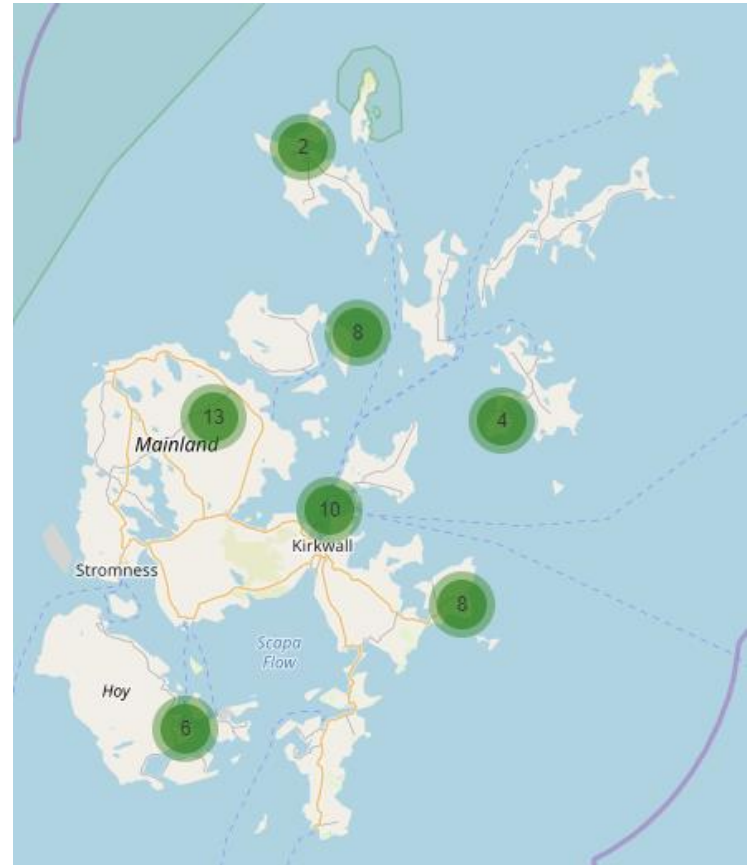
Barns of Ayre 3xE-44

Birsay 1xE-44

Hatston 1xE-44

Deerness 1xE-44

Gallowhill 1xE-44

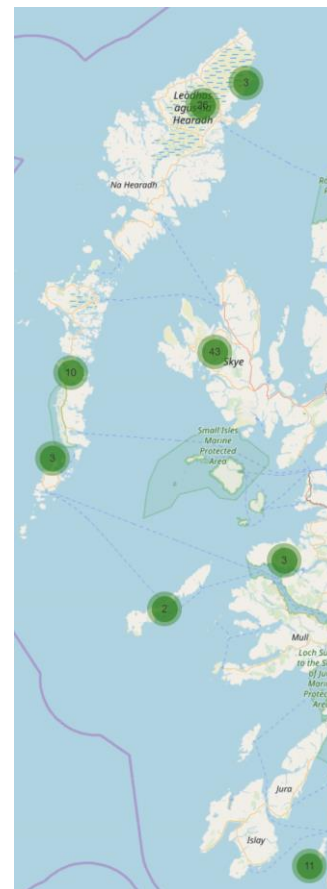


# Wind as a powerful resource for islands

## Western Isles

E-44 – E-82 E4 3MW

Projects are on the islands of Lewis, Barra, Uists, Tiree, Bencecula, Gigha several community schemes  
Beinn Ghrideag, Pentland Road, North Tolsta, Loch Carnan, Baile an Truseil, 7 Bornish



## Wind as a powerful resource for islands

### Community project Beinn Ghrideag Isle of Lewis

Beinn Ghrideag largest community wind farm in the UK

9MW can power 6000 homes.

Currently produces £900,000.00  
net income per year for community  
projects



Ref. Point & Sandwick Trust

## Wind as a powerful resource for islands

### Community project Isle of Barra (Coimhearsnachd Bharraidh agus Bhatarsaidh)

Barra and Vatersay Wind Energy Ltd

E-44 900kW

Commissioned 2014

Project was done entirely in-house

Generates approx. £100,000.00 each

Year for the community.

Ref Coimhearsnachd Bharraidh agus Bhatarsaidh



Ref. Community Energy Scotland

## Wind as a powerful resource for islands

Wind on islands is not a new development here in Ireland or Aran:

In 1985 two MAN 30kW wind turbines were installed on Cape Clear Island along with battery storage and diesel gensets.



Inis Meáin Co-Op wind farm installed 2002



## Wind as a powerful resource for islands

The present and the future for the Aran Islands energy



*“Aran islands could be carbon neutral by 2022” Irish Times 30<sup>th</sup> July 2015*



# Wind as a powerful resource for islands

Energy Consumption : 17,750 kWh

Emmissions : 1,924,663 kg CO<sub>2</sub>e Electrical load is approx 2.3MW

Electricity is distributed via a 3MW sub sea cable.

Average Wind Speed: 8.2m/s @20M hub and to 9.2m/s @ 50M hub height



Ref SEAI Wind Atlas

## Potential Options

Luckily a Research Paper was written by Eleanor Denny, Andrew Keane, called A Smart Integrated Network for an Offshore Island which has given us a number of options

The turbine best suited for the Aran Island's would be the E-44 900kW

Type:	E-44
Rated power:	900 kW
Rotor Diameter:	44 m
Hub heights:	45m, 55m
Tip height	67m, 77m
Wind class:	IEC IA
Design Life	20 Years



# Wind as a powerful resource for islands

## Potential Solutions

Option 1 place the wind turbines on the site of the old wind farm

Pro already received planning for this site

Utilise the existing infrastructure.

Con: only installed one island



# Wind as a powerful resource for islands

## Potential Solutions

Option 2 have turbines on each of the islands

Pro. 1 Each island will have an indepenat alternative power.

2 All island are interconnected so excess power can be used elsewhere

Cons. 1 Costly sent up and installation



# Wind as a powerful resource for islands

## Potential Solutions

Option 3 install one larger turbine.

Pro one installation, quicker and potentially cheaper

Con only one wind turbine so if shut down then no power production.

Transport and logistics could be difficult

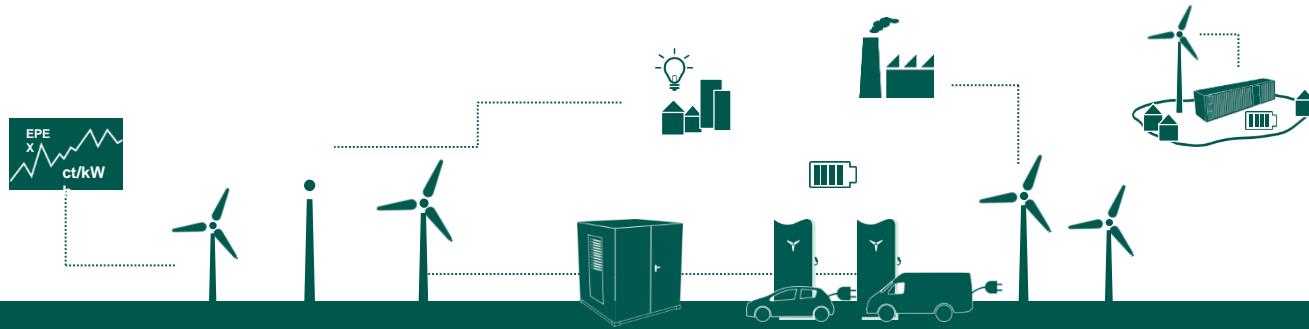


A.O.B

**Templederry Wind Farm**

**RESS(renewable Energy Support Scheme)**





# ENERCON

ENERGY FOR THE WORLD

**INTERNATIONAL. INNOVATIVE INTEGRATED.**



**THANK YOU FOR YOUR ATTENTION**

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