Assignment student EnTranCe Energy Transition Community

Project title: Small Wind Turbines/Fortis 3/ Data Monitoring system
Suitable for students of: *Multiple choices are possible* O MBO O Buiten Werkplaats Built Environment (2nd yr, 1 block) O Vastgoed lab V&M (3rd yr) **x** Bachelor graduation assignment (4th yr) O Bachelor internship (limited possibility in daily guidance) O Research assignment in curriculum year……. **x** Honors research assignment **x** Master thesis **Study Program:** Ba/ Ma Computer Science/Electrical/Mechanical/ Mechatronic Engineering, EMRE, Physics, Aeronautics ,or equivalent.
Period: semester 2 2017/2018
Language: English, Dutch, German
Client: Fortis Wind Energy; Ir. J. Kuikman; www.fortiswindenergy.com; kuikman@fortiswindenergy.com
Internal client: EnTranCe; RAAK-MKB Project PUMSwindT; Ir. R. A. Alberts

Background (facts, situation sketch and parent/organization goals)

Fortis Wind Energy is a company that produced hundreds of Small Wind Turbines(**SWT**) over the last decades and installed these wind turbines all over the world. There are three sizes available:

- F1; P=1,5 [kW]; E(electr)=ca. 1.500 [kWh/y]; D(rotor)= 3 [m]; C(F1)=ca. 8.000 [€]
- F2; P=5,0 [kW]; E(electr)=ca. 5.000 [kWh/y]; D(rotor)= 5 [m]; C(F2)=ca. 20.000 [€]
- F3; P= 10 [kW]; E(electr)=ca. 10.000 [kWh/y]; D(rotor)=10 [m]; C(F3)=ca. 40.000 [€]

Problem (description of the undesirable situation)

Because the price-performance of Solar PV- and big wind turbine(**BWT**)-systems went up the last decade where that of the SWT didn't. So the market position for the SWT marginalised, except for some niche markets, like rural stand alone farms.

SWT manufacturers did not have the capabilities and capital of the BWT manufacturers so couldn't keep up with the latest scientific insights and lagged behind.

With regard to the Data monitoring system, the situation is not as optimized as the Status Quo for modern PV-systems. A general data measuring, logging, calculating, displaying and retrieving system for SWT is missing in most cases.

EnTranCe has a test set up for SWT and a lot of energy production data is available, but it is hard to monitor the data. The relevance of this historical data has to be examined in order to design an optimised data monitoring system.

Objective (description of the desired situation)

Research all relevant aspects of the energy data production of SWT systems and design a theoretical data monitoring system for SWT.
Make an optimised prototype for the three SMT systems (F1, F2, F3)
Test the prototypes and verify the test data with the theoretical performance
Write a Ba/Ma report, with all the relevant project data.

Result deliverable/product (what is ready if the project is finished) with list of part results

A theoretical model for designing an optimal SWT data monitoring system
Optimized designs for SMT as well as production of Prototypes
Design of a test set up for the prototypes and validation.
A Ba/Ma report, with all the relevant project data.

Competence level

3

Connected to Change Agency ETC

Multiple choices are possible
O   Sustainable Building
O   Sustainable Mobility
O   Local Communities

Interested or further information

You will be working in a multidisciplinary team. For detailed information on this assignment contact *A.S.J.Joosse*(EnTranCe) *etc@org.hanze.nl*

How to respond to the vacancy

Send a motivation letter and CV to EnTranCe, Energy Transition Community, etc@org.hanze.nl
Attn. Mrs. Jacqueline Joosse, Office Manager EnTranCe. Note: If the job does not fit directly with your specific interest, please visit our website to discuss other possibilities.

Website: www.en-tran-ce.org

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