# GRIEZPELKIU WIND POWER PARK PROJECT

## MONITORING REPORT NO.2

## FOR PERIOD 01.01.2012-31.10.2012

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## 1. GENERAL INFORMATION

| | |
|---|---|
| Project name | Griezpelkiu wind power park project |
| UNFCCC No. | 0200 |
| ITL project ID | LT2000025 |
| Type of project | Small |
| Sectoral scope | Energy industries (renewable/non-renewable sources) |
| Project location | Taurages district, Griezpelkiu village   |
| Host parties | Vejo gusis, UAB (Lithuania) |
| Investor parties | Ecocom BG, LTD (the Netherlands) |
| Project description | The project includes installation of 5 units of Enercon E-82 type (2MW) wind turbines manufactured by German company Enercon GmbH with total capacity 10 MW<br>The wind power park is connected to 110 kV power line. An existing transformer substation with incoming voltage of 20 kV, outgoing voltage of 110 kV and 25 MVA capacities was used for this purpose. |

## 2. IMPLEMENTATION OF THE JI PROJECT

| | |
|---|---|
| LoE issuance by host country DFP | 19 Feb 09 |
| PDD publication on UNFCCC website | 12 Nov 09-11 Dec 09 |
| LoA issuance by host country DFP | 19 Jun 10 |
| LoA issuance by investor country DFP | 22 Dec 10 |
| Determination report issuance by AIE | 28 Jul 10 |
| Final Determination on UNFCCC website | 14 Nov 10 |

Notes: DFP – designated focal point, LoE – Letter of Endorsement, LoA – Letter of Approval, AIE – accredited independent entity, PDD- Project design document, UNFCCC - United Nations Framework Convention on Climate Change

## 3. MONITORING METHODOLOGY

| | |
|---|---|
| Monitoring period | 01 Jan 12 – 31 Oct 12 |
| Methodology description | JI Project use own methodology (not CDM approved). Methodology is based on procedures defined in Section D of the project PDD. The amount of net electricity supply to the grid from JI project is defined as key activity to monitor. |

## 4. MONITORING EQUIPMENT AND ITS CALIBRATION

| | |
|---|---|
| Monitoring equipment | Due to reason that Griezpelkiu Wind Power Park Project (9,13MW) and Kreivenai wind power park (20MW) are connected to the same substation with one commercial power metering device it is necessary to separate each park energy generation/consumption. According to monitoring plan description Griezpelkiu wind power park project operations are controlled by common commercial meter (excluding its duplicate) and 1 control meter. Kreivenai wind park's operations are controlled by common commercial meter (excluding its duplicate) and 2 control meters. All meters are connected to SCADA system and monitored remotely.<br>Second commercial meter is necessary in the case of main commercial meter's failure. Control meters indicate commercial meter's deviations and helps evaluate energy consumption for own purposes (difference between generated and supplied to the grid values).<br>All metered data is double checked by receipts of electricity sales with SCADA system as backup. |
| Calibration/maintenance of energy meters | Commercial power meter together with control meters were installed by AB Litgrid, national grid operator which buys electricity from the wind power parks. The meters belong to AB Litgrid. Power meters as well as current and voltage transformers are calibrated once every 8 years. |
| Deviations | During all monitoring period wind power park operated without major technical interruptions. |

Griezpelkiu wind power park project monitoring equipment technical data

| **Energy meter** | T-101 | T-101/D | L-105 |
|---|---|---|---|
| **Purpose** | Commercial meter | Duplicate-commercial meter | Control meter |
| **Producer** | UAB "Elgama-Elektronika" | UAB "Elgama-Elektronika" | UAB "Elgama-Elektronika" |
| **Type** | EPQS 113.21.29 | EPQS 113.21.29 | EPQS 131.21.29 |
| **Measurement range** | 3x57,7/100V; 1(1,25)A | 3x57,7/100V; 1(1,25)A | 3x230/400V; 5(6,25)A |
| **Accuracy class** | 0,2s | 0,2s | 0,2s |
| **Serial number** | 649233 | 649235 | 649240 |
| **Metrological test date** | 11.12.2008 | 11.12.2008 | 11.12.2008 |
| **Breakdowns (if any)** | - | - | - |

Kreivenai wind power park monitoring equipment technical data (excluding commercial meters)

| **Energy meter** | L-103 | L-104 |
|---|---|---|
| **Purpose** | Control meter | Control meter |
| **Producer** | UAB "Elgama-Elektronika" | UAB "Elgama-Elektronika" |
| **Type** | EPQS 113.21.29 | EPQS 111.21.29 |
| **Measurement range** | 3x57,7/100V; 5(6,25)A | 3x57,7/100V; 5(6,25)A |
| **Accuracy class** | 0,2s | 0,2s |
| **Serial number** | 524226 | 649153 |
| **Metrological test date** | 12.12.2008 | 10.12.2008 |
| **Breakdowns (if any)** | - | - |

All meters functioned properly during monitoring period and therefore can be used as basis for proper achieved emission reduction calculations.

## 5. POWER PRODUCTION

Net project production during Jan-Oct 2012

| **Month** | **Power supplied to the grid, kWh** | **Power consumed from the grid, kWh** | **Net power production, kWh*** |
|---|---|---|---|
| Jan | 3.001.350 | 698 | 3.000.652 |
| Feb | 2.564.988 | 1.126 | 2.563.862 |
| Mar | 3.119.945 | 446 | 3.119.499 |
| Apr | 2.386.085 | 534 | 2.385.551 |
| May | 1.757.577 | 669 | 1.756.908 |
| Jun | 1.803.550 | 1.549 | 1.802.001 |
| Jul | 1.431.771 | 898 | 1.430.873 |
| Aug | 1.742.724 | 741 | 1.741.983 |
| Sep | 2.325.587 | 234 | 2.325.353 |
| Oct | 2.041.010 | 762 | 2.040.248 |
| **Total:** | **22.174.587** | **7.657** | **22.166.930** |

* data of AB Litgrid

## 6. CALCULATION OF EMISSION REDUCTIONS

In accordance to Monitoring plan described in the Project PDD the following formula is used to calculate Project emission reductions:

$ER = E_{Griez(+/-)} \times EF_{LE}$ [1]

Where:
ER – annual emission reductions, tCO2
$E_{Griez(+/-)}$ – Net annual power production at Griezpelkiu wind power park project (the difference between produced and consumed power), MWh.

$EF_{LE}$ – emission factor for power production at Lietuvos elektrine, i.e. 0,626 tCO2/MWh

$E_{Griez(+/-)} = E_{T101} - E_{Kreiv(+/-)}$ [2]

Where:
$E_{T101}$ – the data of commercial power meter No.T101, i.e. net power dispatched to the grid from Griezpelkiu wind power park project (10MW) and Kreivenai wind power park (20MW), kWh
$E_{Kreiv(+/-)}$ – net power dispatched to the grid from Kreivenai wind power park, kWh

According to the power sale-purchase agreement between project owner with AB Lietuvos energija net power dispatched to the grid from each park will be recorded by 3 control meters installed on substation parallel to commercial meter

$P = P1_{(+/-)}+P2_{(+/-)}+P3_{(+/-)}$ [3]

Where:
P – the sum of net power dispatched to the grid measured by all control meters, kWh
$P1_{(+/-)}+P2_{(+/-)}+P3_{(+/-)}$ - the data from four separate control meters on net power dispatched to the grid, kWh

Based on data of all meters AB Lietuvos energija will separate Griezpelkiu wind power park project's generation/consumption proportion from net power dispatched to the grid calculated by [4] formulae:

$P4_{\%} = P3_{(+/-)} / P$ [4]

Where:
$P3_{\%}$ – Griezpelkiu wind power park project's energy generation proportion from total net power amount, %
$P3_{(+/-)}$ - the data of Griezpelkiu wind power park project's control meter, kWh

The factual net power dispatched to the grid from Griezpelkiu wind power park project calculated by [5] formulae:

$E_{Griez(+/-)} = P3_{\%} \cdot E_{T101}$ [5]

| | Jan-Oct 2012 | Total |
|---|---|---|
| Fixed data | | |
| Emission factor for power production at Lietuvos elektrine ($EF_{LE}$), tCO2/MWh | 0,626 | |
| | | |
| Monitored data | | |
| Net power generation ($E_{Griez(+/-)}$), MWh | 22.167 | 22.167 |
| | | |
| **Calculated emission reductions (ER), tCO2e** | **13.876** | **13.876** |

Griezpelkiu wind power park project generated 13.876 tCO2e of emission reductions during the monitoring period Jan-Oct 2012.

## ANNEXES

ANNEXE 1 – Monitoring form

## ANNEX 1

**YEAR: 2012**

| **Month** | Power dispatch confirmation document No. | Date of issuance of power dispatch confirmation document | Power supplied to the grid (Esup), MWh | Power consumed from the grid (Econ), MWh | Net annual power production $E_{Griez(+/-)}$, MWh | Amount of Emission Reduction (ER), $tCO_2e$ | Name of the person in charge | Signature |
|---|---|---|---|---|---|---|---|---|
| **January** | VJ-5/12/01 | 2012.02.01 | 3.001.350 | 698 | 3.000.652 | 1.878 | E.Simutis | |
| **February** | VJ-5/12/02 | 2011.03.05 | 2.564.988 | 1.126 | 2.563.862 | 1.605 | E.Simutis | |
| **March** | VJ-5/12/03 | 2011.04.03 | 3.119.945 | 446 | 3.119.499 | 1.953 | E.Simutis | |
| **April** | VJ-5/12/04 | 2011.05.04 | 2.386.085 | 534 | 2.385.551 | 1.493 | E.Simutis | |
| **May** | VJ-5/12/05 | 2011.06.04 | 1.757.577 | 669 | 1.756.908 | 1.100 | E.Simutis | |
| **June** | VJ-5/12/06 | 2011.07.03 | 1.803.550 | 1.549 | 1.802.001 | 1.128 | E.Simutis | |
| **July** | VJ-5/12/07 | 2011.08.02 | 1.431.771 | 898 | 1.430.873 | 896 | E.Simutis | |
| **August** | VJ-5/12/08 | 2011.09.04 | 1.742.724 | 741 | 1.741.983 | 1.090 | E.Simutis | |
| **September** | VJ-5/12/09 | 2011.10.02 | 2.325.587 | 234 | 2.325.353 | 1.456 | E.Simutis | |
| **October** | VJ-5/12/10 | 2011.11.05 | 2.041.010 | 762 | 2.040.248 | 1.277 | E.Simutis | |
| **November** | | | | | | | | |
| **December** | | | | | | | | |
| **Total:** | | | **22.174.587** | **7.657** | **22.166.930** | **13.876** | | |

$ER = E_{Griez(+/-)} \times 0{,}626$

$E_{VP} = Esup - Econ$