

Department: **QHSE**

Page: 1 of 9

Revision date: 1-10-2011

Document: **Progress Report Energy Management
Q3 2011**

This progress report describes the progress of the actions following from the energy management objectives and CO₂ reduction targets until the end of the third quarter of 2011.

The action plans and progress are continually monitored by the energy management project team in the bi-weekly energy management meeting. Minutes of these meetings can be found in eDOCS.

Following colours are used for the status of the actions:

	Action not started
	Action not on schedule
	Action on schedule
	Action completed
	Action completed, reduction verified

Van Oord Nederland bv

See: eDocs # 2582004 Energiemanagement Progress Report Van Oord Nederland (v4)

Technical Department

Action	Reduction target	Target completion date	Status Q2 2011
Process			
P0 Improve procedures for fuel consumption registration and administration to enhance quality of data for monitoring fuel consumption and determination of CO ₂ footprint.	Detailed in action plan	March 2011	January 2011 Memo with procedure to fleet staff and staff TD is send in wk 3 2011. April 2011 Fuel database is set up and communicated in Energy management newsletter. July 2011 Registration is completed in ERCS and is going well, will be adjusted according audit if necessary. Also in view of upgrading certification to level 4 of the CO ₂ Prestatieladder 2.0 some adjustments will have to be made. Verification reduction target Not applicable

Department: **QHSE**

Page: 2 of 9

Revision date: 1-10-2011

Document: **Progress Report Energy Management
Q3 2011**

<p>P1. Determine baseline energy efficiency dredge type TSHD.</p> <p>Including action T4: Real time fuel consumption gauges.</p>	<p>Detailed in action plan</p>	<p>January 2011</p>	<p>January 2011 New E&E employee started 3 the January 2011 with special assignment to EMS indices</p> <p>April 2011 Not finished, E&E and TD are working on it. Due to other priorities Scada and process control did not find the time to develop with E&E</p> <p>July 2011 A best fuel point for a proces or cycle (i.e a hopper in 25 Nm trip with 250 Mu sand and unloading through rainbowing over 100 meters) is developed to see in the VODAS screen of the dredge operator. This is tested for the Vox Máxima in the office.</p> <p>October 2011 VODAS on HAM 318 is now modified for real time consumption gauges.</p> <p>Verification reduction target Not applicable</p>
<p>P2. Determine baseline energy efficiency dredge type CSD.</p> <p>Including action T4: Real time fuel consumption gauges.</p>	<p>Detailed in action plan</p>	<p>January 2011</p>	<p>January 2011 See Above</p> <p>April 2011 Not finished, E&E is working on it.</p> <p>July 2011 Not finished, definition for EEI must be set up (same principle as for hoppers).</p> <p>October 2011 Not started yet. Will be started after action P1.</p> <p>Verification reduction target Not applicable</p>
<p>P3. Energy reduction pilots on 2 TSHDs and 2 CSDs.</p> <p>Including action T4: Real time fuel consumption gauges.</p>	<p>Detailed in action plan</p>	<p>2010/2015</p>	<p>January 2011 See above</p> <p>April 2011 Pilot vessels Vox Máxima and HAM 317 determined and informed.</p> <p>July 2011 Next to Vox Máxima and HAM 317 (or other vessel with a new VODAS, subject to availability) also CSD's Castor and HAM 218 are selected and informed for pilot projects.</p> <p>October 2011 Pilot is running on one TSHD (HAM 318). Awaiting results.</p> <p>Verification reduction target Not verified yet</p>

Department: **QHSE**

Page: 3 of 9

Revision date: 1-10-2011

Document: **Progress Report Energy Management
Q3 2011**

Technology			
T1. Engines replacement.	Detailed in action plan	2011	<p>January 2011 Ham 310 started in Poland will be finished mid April 2011</p> <p>April 2011 Engines are replaced. Fuel and lube oil consumption is being monitored.</p> <p>July 2011 After almost 2 months running on new engines early measurements show a reduction in lubricants of more than 50% and fuel reduction of more than 10%. Measurements are being continued during the year to determine exact reduction on comparable projects.</p> <p>Verification reduction target Not verified yet</p>
T 2. Increase combustion efficiencies.	Detailed in action plan	2011/2015	<p>January 2011 In development</p> <p>April 2011 Engine of HAM 218 is overhauled. Fuel and lube oil consumption is being monitored.</p> <p>July 2011 After installing two injectors per cylinder on the HAM 218 the maintenance of the receiver units is decreased with 80%. Claimed fuel reduction of 7% as still to be verified. To be determined which other equipment with same engines to have the same improvements</p> <p>October 2011 No changes</p> <p>Verification reduction target Not verified yet</p>

T 3. Reduce lub oil consumption.	Detailed in action plan	2011/2015	<p>January 2011 Geopotes 14 new piston and liner set installed.</p> <p>April 2011 Measurements are done and showed a reduction of 60 to 70% in the use of lube oil. Lelystad and Geopotes 15 scheduled for later this year.</p> <p>July 2011 Lelystad is being modified at the moment. Geopotes 15 is being prepared for modification.</p> <p>October 2011 Also Lelystad and Volvox Delta finished modification. Geopotes 15 will start end of 2011.</p> <p>Verification reduction target Not verified yet</p>
T 4. Real time fuel consumption gauges.	Detailed in action plan	2010/2015	<p>January 2011 VODAS in study</p> <p>April 2011 Ongoing, depends on outcome of P1 and P2.</p> <p>July 2011 This action will be incorporated with action P1, P3 and P4 (TD) as from this quarter on.</p> <p>Verification reduction target See action P1, P2, P3 (TD)</p>
T 5. Condition Based Maintenance	Detailed in action plan	2010/2015	<p>January 2011 Implemented on the Maxima and process of implementing on Athena and Stormess started</p> <p>April 2011 Progress is being monitored.</p> <p>July 2011 Now also implemented on Athena and Stormess. Results expected to be available after 15 months.</p> <p>October 2011 No changes. Awaiting results.</p> <p>Verification reduction target Not verified yet</p>
Awareness and behaviour			

Department: **QHSE**

Page: 5 of 9

Revision date: 1-10-2011

Document: **Progress Report Energy Management
Q3 2011**

B 1 Enhance maintenance procedures.	Detailed in action plan	Ongoing	<p>January 2011 In targets Plant Managers</p> <p>April 2011 Ongoing follow up of targets.</p> <p>July 2011 Ongoing. Communicated to the TD employees.</p> <p>October 2011 No changes.</p> <p>Verification reduction target Not applicable</p>
B 2 Specific attention for efficiency measures during modification of existing vessels and design of new ships.	Detailed in action plan	Ongoing	<p>January 2011 New building department pays special attention to this item.</p> <p>April 2011 Ongoing.</p> <p>July 2011 Results from a number of ongoing tests have to lead to the implementation of measures on the fleet. For example durable long life paints.</p> <p>Furthermore: Brainstorm held with EE and TD personnel to have more innovative ideas worked out.</p> <p>October 2011 Several studies going on which reduce energy use such as: reduction of sailing resistance HAM 316, reduction fuel consumption stationary modus Vox Maxima, bio degradable hydraulic oil for Aeolus, paint test Utrecht.</p> <p>Verification reduction target Not applicable</p>

Engineering and Estimating

Action	Reduction target	Target completion date	Status Q2 2011
Process			

Department: **QHSE**

Page: 6 of 9

Revision date: 1-10-2011

Document: **Progress Report Energy Management Q3 2011**

<p>P1. Development of a generic and robust method for measurement of energy efficiency of vessels (main equipment).</p>	<p>Supporting action to achieve the 5% increase in energy efficiency between 2010 en 2015.</p>	<p>March 2011</p>	<p>November 2010 First technical proposal was drafted.</p> <p>January 2011 E&E is in the process of setting up an indicator for hoppers. A meeting is planned in the beginning of Feb. to determine the use of the Data ware house for this purpose.</p> <p>April 2011 An Energy Efficiency Indicator (EEI) has been set up and is communicated in the Energy management newsletter. Person appointed for a test in VODAS for hoppers. CSD's still to be determined.</p> <p>July 2011 EEI for hoppers is tested with available data. Preparations are made for implementing the EEI in VODAS. A hopper will be selected in the coming months for implementation.</p> <p>October 2011 Now implemented in the VODAS of the HAM 318. Awaiting results.</p> <p>Verification reduction target Not applicable</p>
-------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------	-------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Personnel and Organisation

Action	Reduction target	Target completion date	Status Q2 2011
Awareness and behaviour			

<p>B1. Communication program energy management.</p>	<p>Supporting actions for realisation of 5% increase of energy efficiency between 2010 and 2015.</p>	<p>Sept 2011</p>	<p>November 2010 Fleet management days: energy management introduced.</p> <p>January 2011 No changes.</p> <p>April 2011 Discussion started between QHSE, E&E, TD and P&O about how to encourage efficient operation of vessels in combination with technological improvements.</p> <p>July 2011 Brainstorm held with EE and TD personnel to have more innovative ideas worked out.</p> <p>October 2011 This action is now continued by the Fleet Management department instead of the P&O department. No further updates.</p> <p>Verification reduction target Not applicable</p>
<p>B2. Program efficient driving.</p>	<p>To be determined</p>	<p>Sept 2011.</p>	<p>January 2011 Not started</p> <p>April 2011 Discussion started between QHSE, E&E, TD and P&O about individual monitoring of efficient driving with leased cars.</p> <p>July 2011 Individual monitoring of leased cars by employees is being investigated by lease companies (Aval and Lease Plan).</p> <p>October 2011 Individual monitoring is now possible for all lease car users. This is communicated in a P&O bulletin topic.</p> <p>Verification reduction target Not applicable</p>

Facility Services

Action	Reduction target	Target completion date	Status Q2 2011
<p>Process</p>			

Department: **QHSE**

Page: 8 of 9

Revision date: 1-10-2011

Document: **Progress Report Energy Management
Q3 2011**

<p>P1. Purchase of green energy for offices Rotterdam and Gorinchem.</p>	<p>1700 ton CO2/jaar</p>	<p>1 January 2012</p>	<p>November 2010 After the existing contract has expired (expiry date 31-12-2011) the electrical energy will be sustainable energy.</p> <p>January 2011 Appointment made for 8th of February with consultant.</p> <p>April 2011 Agreement has been made to purchase 100% green energy after current contract ends on the 1st of January 2012.</p> <p>July 2011 No changes.</p> <p>October 2011 Contract with Delta Energy B.V. is signed for the purchase of green electricity for the period 2012 until the end of 2014.</p> <p>Verification reduction target Not verified yet</p>
Technology			
<p>T1. Steam moisturizers for Gorinchem office.</p>	<p>40 ton CO2 / year</p>	<p>Finished 2010</p>	<p>Effectiveness will be measured in February 2011.</p> <p>Verification reduction target Not verified yet</p>
<p>T2. Initiatives in relation to the construction of the new head office: - Heat-Cold storage installation (WKO) - Energy efficient general installations - Insulation general</p>	<p>300 ton CO2 / year</p>	<p>Specifications: August 2011.</p> <p>Construction completion: March 2012</p>	<p>November 2010 Construction has started.</p> <p>January 2011 Construction ongoing, no new changes.</p> <p>April 2011 Geotechnical survey by Dura Vermeer is being executed for the 'WKO' installation.</p> <p>July 2011 Construction of the building is on schedule. Heat-Cold storage installation is being installed. Further measures described in Energy management newsletter 2-2011 (see SAWP #2758122).</p> <p>October 2011 No further changes.</p> <p>Verification reduction target Not verified yet</p>
Awareness and behaviour			

Department: **QHSE**

Page: 9 of 9

Revision date: 1-10-2011

Document: **Progress Report Energy Management
Q3 2011**

B1.Communication to stimulate efficient use of energy by employees.	5% per year / m2.	August 2011	<p>January 2011 Action planned for February 2011</p> <p>April 2011 Email presentation about awareness on energy in the office sent to office employees Rotterdam/Gorinchem</p> <p>July 2011 QHSE has issued an Energy management newsletter (see SAWP #2758122), after interview with Martijn van den Bergh (Facility Dept.)</p> <p>October 2011 Paper coffee cups instead of plastic ones. In November another message to the office personnel in the Netherlands will be sent in order to raise awareness.</p> <p>Verification reduction target Not verified yet</p>
---------------------------------------------------------------------	-------------------	-------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------