

# Minutes of Meeting

## 3<sup>rd</sup> GASVESSEL Consortium General Assembly

<b>Meeting Date:</b>	5th of November 2018
<b>Meeting Location:</b>	Dorint Hotel – Sulzbach – Frankfurt - GERMANY
<b>Meeting requested by:</b>	Periodic Meeting planned in the GASVESSEL Project Management Plan – Meeting organized by Partner 2 – DOW Germany
<b>Purpose, Objectives and Elements of the Meeting with ref to WPs and relevant tasks (as per Meeting Agenda)</b>	<p>See approved meeting agenda. In brief:</p> <ul style="list-style-type: none"> <li>• WPs technical status and progress verification.</li> <li>• Economics and Financial.</li> <li>• Risk assessment.</li> <li>• Next actions</li> </ul> <p><b>The Assembly is valid also as 6th Executive Board Meeting</b></p>
<b>Minute prepared by:</b>	Spartaco ANGELINI and Luciano MANZON – 1 – NAVALPROGETTI
<b>Attendees approval Date :</b>	19 <sup>th</sup> of November 2018
<b>Attendees:</b>	<p>See signed Attendees list.</p> <p>Being present and represented all the Partners (more than the two-third of the Partners) the Assembly is valid in accordance with article 6.2.3 of the Consortium Agreement.</p>
<b>Summary of Significant Results</b>	<p><u>5th of November, 2018</u></p> <p>Meeting starts at 0900</p> <p>Welcome address to attendees from Mr. Ralf Brinkmann, President and Chairman of the Board of Dow Germany</p> <p>Turn of Table presentations</p> <p>Coordinator addresses to partners</p> <p>0935 - NP presents status of WP1</p> <p>0954 - BMPlus and CNGV present status of WP3 and WP4</p> <p>1130 –NP presents status of WP5, CENERGY presents status of studies relevant to the cargo handling system</p> <p>1215 – VTG presents status of WP6</p> <p>1243 – SINTEF presents status of WP7</p> <p>1420 – ABS presents status of WP8</p> <p>1500 – PNO presents status of WP9</p> <p>1530 –EST present their activities relevant to the achievement of mile stone MS3</p> <p>1615-1730 – NP supplies to Partners final recommendations and instructions for approaching and preparing mid-term reporting to EU</p> <p>1730- No AOB, no requests of intervention from CHC (WP2 concluded and closed), DOW, DowAksa and HLL. Works concluded</p> <p>1745 – Assembly closed.</p> <p style="text-align: center;">-----V-----</p> <p><u>Summary of Significant Results</u></p> <ul style="list-style-type: none"> <li>• <b>Project Technical Progress:</b> all activities are on time as per Work Plan. No criticalities denoted. Foreseen deliverables uploaded on EU portal on the correct due date. Milestones achieved in the respect of Grant Agreement provisions.</li> </ul>

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	<ul style="list-style-type: none"> <li>○ <b>WP1</b> – See attached the relevant NP presentation – Partners are informed about the commitments and objectives up to the first half of 2019. Global financial situation and economics remain fair.</li> <li>○ <b>WP2</b> – The WP is closed since May 2018. No comments</li> <li>○ <b>WP3</b> - See attached the relevant CNGV presentation. Design activities of experimental pilot line equipment progressing as per program. Performed the hydroforming on the first liner with the assistance of BMPlus for preparation and performance of tests. After hydroforming, from the first liner obtained specimens in selected positions and carried out technological tests. Based on the results of above, progressing in the construction of the second liner and testing two additional ogives to better understand the behavior of material already stressed by the construction method of ogives. The two ogives provided by BMPlus in a few days. ESTECO is completing the studies relevant to the Design Optimization Platform and confirms that MS3 will be achieved in month 18.</li> <li>○ <b>WP4</b> - Real concrete progress visible in BMPlus presentation. Hydroforming equipment completed, installed and tested with the first liner. Construction of winding machine and other equipment in good progress status.</li> <li>○ <b>WP5</b> – See NP presentation. Ship’s experimental towing tank tests defined and in progress. Seakeeping tests completed in the course of the next two months. 15.000.000 Nm3 capacity ship design in progress. General Arrangement Plan and Outline technical specification forwarded to Partners HLL and ABS for preliminary examination and comments. CENERGY activities relevant to the compressed gas system and gas thermodynamics in progress. Get in touch with BH/GE – Nuovo Pignone in Florence and started obtaining the information on gas compressors and relevant auxiliary systems as necessary for the progress of ship design.</li> <li>○ <b>WP6</b> – According to VTG presentation, loading/unloading facilities need to be further deeply investigated to better define the most economically viable and safe solution for each scenario. Study is progressing on the tracks defined during the meeting in Kyiv at VTG</li> <li>○ <b>WP7</b> – See SINTEF Ocean presentation. A meeting is planned between the Partners involved in WP7 at</li> </ul>
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	<p><i>SINTEF premises in Norway early 2019 (February-March 2019) to set the main frames of CBA.</i></p> <ul style="list-style-type: none"> <li>○ <b>WP8</b> – See ABS presentation. ABS will anticipate its activities in order to start HAZID meetings in line with the progress of WP5.</li> <li>○ <b>WP9</b> – Dissemination and Exploitation. To improve dissemination actions necessary to better define the application of new European rules for the protection of the privacy and personal data. Actions relevant to the exploitation plans presented.</li> </ul> <ul style="list-style-type: none"> <li>● <b>Economics and Financial:</b> Fair situation. No remarks or comments from Partners in this regard.</li> <li>● <b>Risks:</b> Some new risks highlighted in Partners presentations. For the time being risks are duly monitored but there is not significant impact to report or additional mitigation actions to be provided</li> <li>● <b>Next steps:</b> Refer to attached Partner presentations.</li> </ul> <p><b>Comments</b></p> <ul style="list-style-type: none"> <li>● <b>WP1</b> In the course of preparation of midterm reporting to EU, NP is available to help Partners for the financial aspects and for the correct application of Grant Agreement. In agreement with ABS, HAZID sessions to start as soon as practicable. BMPlus is requested to prepare and submit safety procedures relevant to winding, curing, autofrattage, fatigue and burst tests operations. Dissemination actions need to be more effective by all Partners.</li> <li>● <b>WP3 and WP4</b> CNGV explains Partners the basic behavior of stainless steel liner and the results of additional investigations done after the first hydroforming tests. Most of the specs and most of shop drawings for the construction of pilot line equipment are available. BMPlus shows the major aspects of the works done up to now for completing the first hydroforming test and the progress of works for the preparation of the complete experimental pilot line. ESTECO presented the study under completion for the pattern optimization of winding process.</li> <li>● <b>WP5</b> For the proper progress of ship design it is worthy to start as soon as practicable the HAZID sessions. In the meantime NP will proceed with the HAZID prepared at the time of the Approval in Principle from ABS. Next HAZID sessions will be performed in Trieste at NP. CHC asked to attend. According to SINTEF comments the ship designed for operations in North Europe will foresee loading/unloading via STL buoy and provided with Dynamic Positioning. NP agrees. It is requested the issuing of a report on the energy recovery study for the CNG ship. CENERGY has in progress the preparatory activities for the simulation model. The cargo system distribution is nearly defined and needs to be</li> </ul>
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	<p>completed for what compressors, heaters/coolers, separators, controls and alarms, flexible hoses etc. are concerned. ESTECO already involved by NP for starting the “Special Studies” (gas leakages, fire, explosions, etc.) and evaluation of consequences.</p> <ul style="list-style-type: none"> <li>• <b>WP6</b> The work performed by VTG foresee the issuing of 8 interim reports giving each one a complete picture of the loading/unloading facilities required fixing operative parameters and allowing consequent cost estimates. Interim report 1 already circulated between Partners by VTG. Comments on Interim Report 1 from Partners involved, if any, need to be sent to VTG as soon as possible.</li> <li>• <b>WP7</b> For the time being not all required data to start CBA activity are available. SINTEF has planned to start CBA early 2019 and for the scope a meeting will be arranged in Norway at SINTEF in February or beginning of March 2019 where all interested Partners will be invited to attend. Benefit analysis to consider also the benefits for the environment.</li> <li>• <b>WP8</b> Safety assessment workshop relevant to ship design and cargo system planned in Trieste about on March 2019 (2 or 3 days workshop). CNGV will provide ABS with the basic parameters of CNG Cylinders in order to allow ABS to assess the design.</li> <li>• <b>WP9</b> It is necessary to find a solution for the difficulties faced in the dissemination activities caused by the new European directives relevant to the personal data protection and privacy. This is very important because the majority of potential stakeholders have not taken the matter in due consideration and given a written consent to store their data in a Project data base. Presenting GASVESSEL Project in a conference at EUROYARDS could help. The exploitation guidelines pictured by PNO, even if demanding, will be followed and experimented in the months to come with the direct help of PNO.</li> <li>• <b>NP (Mr. L. Manzon)</b> repeats, for Partners benefit, the presentation already done during the previous assembly in Cyprus and relevant to the guidelines for the midterm reporting to EU.</li> </ul>												
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<table border="1"> <thead> <tr> <th data-bbox="146 1780 598 1818"><b>Action Item</b></th> <th data-bbox="598 1780 1050 1818"><b>Partner Responsible</b></th> <th data-bbox="1050 1780 1441 1818"><b>Due Date</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="146 1818 598 1856"></td> <td data-bbox="598 1818 1050 1856"></td> <td data-bbox="1050 1818 1441 1856"></td> </tr> <tr> <td data-bbox="146 1856 598 1895"></td> <td data-bbox="598 1856 1050 1895"></td> <td data-bbox="1050 1856 1441 1895"></td> </tr> <tr> <td data-bbox="146 1895 598 1928"></td> <td data-bbox="598 1895 1050 1928"></td> <td data-bbox="1050 1895 1441 1928"></td> </tr> </tbody> </table>	<b>Action Item</b>	<b>Partner Responsible</b>	<b>Due Date</b>										
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<p><b>List of Attachments:</b></p>	<ol style="list-style-type: none"> <li>1. Status of WP1, presentation by NP</li> <li>2. Status of WP3, presentation by CNGV</li> <li>3. Status of WP4, presentation by BMPlus</li> <li>4. Status of WP5, presentation by NP</li> </ol>												

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	<ol style="list-style-type: none"> <li>5. <i>Status of WP6, presentation by VTG</i></li> <li>6. <i>Status of WP7, presentation by SINTEF</i></li> <li>7. <i>Status of WP8, presentation by ABS</i></li> <li>8. <i>Status of WP9, presentation by PNO</i></li> <li>9. <i>Partner EST presentation</i></li> <li>10. <i>Partner CEN presentation</i></li> <li>11. <i>NP presentation relevant to the mid-term reporting to EU (month 18)</i></li> <li>12. <i>Signed attendees list</i></li> </ol>
<p><b><i>Comments on Meeting effectiveness, if any</i></b></p>	<p><i>Meeting confirmed the good relationship between the Partners and the strong spirit of cooperation, oriented to a fair execution of tasks, to smooth sharp edges over and to achieve GASVESSEL Project goals.</i></p> <p><i>Next Consortium General Assembly on April 2019 in Trieste</i></p>