

# Project Management Plan

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<b>DEC</b>	Websites, patent fillings, videos, etc.	
<b>OTHER</b>		
<b>ETHICS</b>	Ethics requirements	
<b>ORDP</b>	Open Research Data Pilot	

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<b>Author(s)</b>		Spartaco Angelini
<b>Reviewed by</b>		Spartaco Angelini
<b>Approved by</b>		Silvio Stenta
<b>Authorized by</b>		Loris Cok
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Financial/Administrative Coordinator	
<b>Project Coordinator Name</b>	Loris COK
<b>Project Coordinator Organization Name</b>	NAVALPROGETTI Srl
<b>Address</b>	Via dei Papaveri, 21 34151 TRIESTE (Italy)
<b>Phone Numbers</b>	0039 040 212918, mob 0039 3356383587
<b>Email</b>	<a href="mailto:loris.cok@navalprogetti.net">loris.cok@navalprogetti.net</a> ; <a href="mailto:gasvessel@navalprogetti.net">gasvessel@navalprogetti.net</a>
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## Glossary, abbreviations and acronyms

<b>EU</b>	The European Commission or in general Europe
<b>INEA</b>	Innovation and Networks Executive Agency of European Commission
<b>PO</b>	Project Officer assigned by INEA to GASVESSEL Project
<b>Partner</b>	Company member of the GASVESSEL Project Consortium
<b>Project</b>	The GASVESSEL no. 723030 Project
<b>CNG</b>	Compressed Natural Gas
<b>GA</b>	Grant Agreement
<b>CA</b>	Consortium Agreement
<b>PMS</b>	Project Management System
<b>PM</b>	Project Management
<b>TM</b>	Team Management
<b>PA</b>	Project Administration
<b>P&amp;C</b>	Planning and Controls
<b>PR</b>	Project Reporting
<b>DC</b>	Document Control
<b>HSEQ</b>	Health, Safety, Environment and Quality controls and assurance
<b>PRM</b>	Procurement Management
<b>MM</b>	Materials Management
<b>WP</b>	Work Package
<b>NP</b>	Navalprogetti Srl – Trieste – Italy – The Coordinator – Partner -Lead Beneficiary of WP1 and WP5
<b>DOW</b>	Dow Deutschland Anlagengesellschaft mbH - Partner
<b>DOWA</b>	DowAksa Deutschland GMBH - Partner
<b>PNO</b>	PNO INNOVATION – Belgium – Partner – Lead Beneficiary WP9
<b>VTG</b>	VNIPITTRANSOIL – Kyiv – Ukraine – Partner – Lead Beneficiary WP6
<b>SINTEF</b>	SINTEF OCEAN AS – Trondheim – Norway – Partner – Lead Beneficiary WP7
<b>BMP</b>	BM Plus Srl – Buttrio – Italy – Partner – Lead Beneficiary WP4
<b>CNGV</b>	CNGV d.o.o. – Izola – Slovenia – Partner – Lead Beneficiary WP3
<b>CEN</b>	CENERGY Srl – Trieste – Italy - Partner
<b>HLL</b>	Hanseatic Lloyd Schiffahrt GMBH & Co – Bremen – Germany - Partner
<b>CHC</b>	Cyprus Hydrocarbon Company – Nicosia – Cyprus – Partner – Lead Beneficiary of WP2
<b>EST</b>	ESTECO S.p.A. – Trieste – Italy - Partner
<b>ABS</b>	American Bureau of Shipping (Hellenic) – Athens – Greece – Partner – Lead Beneficiary WP8
<b>O&amp;G</b>	Oil and Gas
<b>WP1</b>	Project Management
<b>WP2</b>	Scenario analyses
<b>WP3</b>	Prototyping activities, design of pressure cylinders and prototyping pilot line

<b>WP4</b>	Prototyping of pressure cylinders. Procurement/construction/arrangement of prototyping pilot line
<b>WP5</b>	Ship Design
<b>WP6</b>	Offshore & Onshore gas loading/unloading systems
<b>WP7</b>	Costs and Benefits Analysis
<b>WP8</b>	Class Design Review – Safety Assessments
<b>WP9</b>	Dissemination and Exploitation

## 1. Executive Summary

Scope of this Project Management Plan is to provide a single point of reference for the management process that will govern the GASVESSEL Project.

The present deliverable defines the Project organization, procedures, roles and responsibilities related to the management activities that will be carried out and describes how the Project will be controlled.

It describes management activities intended to ensure that processes and procedures are defined and their execution is continuously monitored, corrected if necessary and implemented, based on a common standard.

The document is based on the terms and conditions established in the Grant Agreement no.723030 and its Annexes, as well as in the Consortium Agreement.

The use of the present plan can ensure better collaboration among the Consortium Partners, individuals and groups.

The Project Management Plan is the deliverable no. D1.2 of WP1, intended to be used by all Partners, to ensure that Project processes and outputs are monitored and properly reported to prevent possible deviations from the Work Plan in Attachment 1.

**Time, budget and quality** are the overall objectives and priorities of the Consortium.

### Partners



## 2. Foreword

Every project management technique and method can be used, but without appointing a leadership to the project, it is unlikely to get anywhere.

Only if the designed Coordinator become and is acknowledged a leader and manager of the project, the project may succeed.

As a leader, the Coordinator, together with the PM Team (see 2.6), thanks to the responsibilities it assumed with EU, would have the command authority for guiding the project.

Partners will consider Coordinator and PM Team a trusted and reliable source of information for the Project.

All people governing the Project are expected to be honest, competent, and inspirational. Main job is to motivate the Partners and make sure that everybody is moving in the same direction - towards the project goals and to its completion.

### 2.1 Definitions

**Project Management System (PMS)** is the formalization of the Project Management practice within a set of documents, guidelines, and tools, to provide a formal mechanism for managing and controlling activities on the Project.

**Project Management (PM)** is a practice required to optimally plan, execute and control the complex and connected activities of the Development process. Its objective is to assure completion of the Project in the specified time, within budget, in accordance with an agreed quality specification.

Project Management focuses on different areas:

- **Team Management (TM)**, including both Project staffing (definition of adequate Project organization and selection of appropriate resources) and Team Management (e.g. team motivation, team building).
- **Project Administration (PA)** including interfaces between Project Team and other Company functions, permits and consents, office administration and action tracking.
- **Project Planning and Control (P&C)**, consisting of processes of planning and scheduling, cost estimates, cost budgeting, progress monitoring and cost control.
- **Project Reporting (PR)**, describing the processes required to collect and analyze data and to produce and deliver reports on the status of the Project.
- **Document and Data Management (DC)**, dealing with processes of planning, managing, controlling, and filing of Project data and documentation and management of approval cycles.

- 
- **HSEQ management (HSEQ)**, meaning the processes required to ensure that Project will satisfy HSEQ needs.
  - **Procurement Management**, describing the processes required to acquire goods and services from outside the company. It includes procurement strategy, source selection and contracts administration.
  - **Materials Management**, dealing with the processes required to ensure that the necessary materials are delivered to the right place, at the right time and are maintained damage free and in a suitable condition of preservation.

## 2.2 Regulatory Framework

GASVESSEL Project execution shall comply with and governed by:

- Grant Agreement signed by the Coordinator with the European Commission-INEA and by all the Partners in the Accession Forms. Grant Agreement number 723030 entering into force on May 22<sup>nd</sup>, 2017
- Consortium Agreement signed between all Partners dated May 15<sup>th</sup>, 2017.
- National legislation frameworks, governing business administration, in the homeland of each Partner
- National legislation frameworks, governing HSE and social issues, in the homeland of each Partner

In case of conflict between the contents of Grant and Consortium Agreements, the Grant Agreement statements shall prevail.

Project Management starts on month 1 (**First of June 2017**) and ends on month 48 (**End of May 2021**).

The 48 months assigned to the Project are considered sufficient for the performance of the foreseen tasks.

## 2.3 Project Management Objectives

The aim of the PM is to manage and administrate efficiently the Project Consortium internal and external affairs.

An adequate management structure is necessary in order to coordinate the work carried out in the project, manage the quality control, the financial and thematic reporting as well as to organize communication among project Partners.

**O 1.1** Manage the communication in the Project Consortium and Executive Board

**O 1.2** Give overall project governance and provide for quality management ensuring the timely achievement of the project goals as outlined in the Work Plan (Attachment 1).

**O 1.3** Be the central point of contact to the Project and interface with the European Commission and Partners.



**O 1.4** Ensure coherence with all legal and EU requirements, rules and regulations and supervise fulfilment of Consortium Agreement, including financial and legal management.

**O 1.5** To coordinate the work in accordance with the objectives of the Project and to ensure that all Project activities are conducted and deadlines met the satisfaction of the Project Work Plan and the European Commission.

**O 1.6** To manage the individual WPs activities ensuring adherence to the Work-Plan and to ensure the achievement of all Project deliverables due-dates and milestones.

The Management & Coordination Work Package (WP1) will be carried out under the responsibility of the Coordinator NP

## 2.4 Consortium Governance Bodies

The Consortium Governance bodies are:

The **GENERAL ASSEMBLY** (all beneficiaries) is the ultimate decision-making body of the Consortium.

The ordinary General Assembly shall meet about twice a year according with the following agreed calendar:

POS	ITEM	LOCATION	PROJECT DURATION																																																			
			2017												2018												2019												2020												2021			
			J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M				
1	Kick-off	Trieste at NP																																																				
2	Periodic Meeting	Cyprus at CHC																																																				
3	Periodic Meeting	Germany at DOW																																																				
4	Periodic Meeting	Trieste at NP																																																				
5	Periodic Meeting	Buttrio at BMPlus																																																				
6	Periodic Meeting	Buttrio at BMPlus																																																				
7	Periodic Meeting	Athens at ABS																																																				
8	Periodic Meeting	Bruxelles at PNO																																																				

The Representatives of the following Partners compose General Assembly:

Partner no.	Partner Short Name	Country	Role
1	NP	Italy	Partner – Lead Beneficiary WP1 and WP5 - Coordinator
2	DOW	Germany	Partner
3	DOWA	Germany	Partner
4	PNO	Belgium	Partner – Lead Beneficiary WP9
5	VTG	Ukraine	Partner – Lead Beneficiary WP6
6	SINTEF	Norway	Partner – Lead Beneficiary WP7
7	BMP	Italy	Partner – Lead Beneficiary WP4
8	CNGV	Slovenia	Partner – Lead Beneficiary WP3
9	CEN	Italy	Partner
10	HLL	Germany	Partner
11	CHC	Cyprus	Partner – Lead Beneficiary WP2
12	EST	Italy	Partner
13	ABS	Greece	Partner – Lead Beneficiary WP8

The **EXECUTIVE BOARD** is the supervisory body for the execution of the Project, which shall report and be accountable to the General Assembly.

The representatives of Partners sitting in the Executive Board are:

Partner no.	Partner Short Name	Role
1	NP	Partner - Coordinator
3	DOWA	Partner
4	PNO	Partner
7	BMP	Partner
8	CNGV	Partner

Executive Board shall meet quarterly by default, according with the following calendar:

[illegible]

Additional Executive Board meetings shall be arranged on Partners request, if necessary, as ruled in the Consortium Agreement and shown here below.

Executive Board is furthermore in charge to address controversies that will possibly arise between the Partners.

The **COORDINATOR** (NP) is the legal entity acting as intermediary between the Partners and the European Commission. The Coordinator shall perform, in addition to its responsibilities as a Partner, the tasks assigned to it as described in the Grant Agreement and in the Consortium Agreement.

**Apart the planned meetings of General Assembly and Executive Board each Partner is entitled to call other Partners to attend separate meeting in web/call conferences on specific matters. The Partner that called the meeting will issue a MoM and circulate it to all Partners and to Coordinator.**

## 2.5 General operational procedures for all Consortium Bodies

## Representation in meetings

Any Partner which is a member of a Consortium Body:

- should be present or represented at any meeting;
- may appoint a substitute or a proxy to attend and vote at any meeting;
- shall participate in a cooperative manner in the meetings.

## Preparation and organization of meetings

The chairperson of a Consortium Body shall convene meetings of that Consortium Body.

### General Assembly

- Ordinary meeting: According with above calendar or at least once a year
- Extraordinary meeting: At any time upon written request of the Executive Board or 1/3 of the Partners in the General Assembly

### Executive Board

- Ordinary meeting: According with above calendar
- Extraordinary meeting: At any time upon written request of any Partner member of the Executive Board

## Notice of a meeting

The chairperson of a Consortium Body shall give notice in writing of a meeting, to each Partner of the Consortium Body, as soon as possible and no later than the minimum number of days preceding the meeting as indicated below.

### General Assembly

- Ordinary meeting: 45 calendar days
- Extraordinary meeting: 15 calendar days

### Executive Board

- Ordinary meeting: 14 calendar days
- Extraordinary meeting: 7 calendar days

## Sending the agenda

The chairperson of a Consortium Body shall prepare and send each Member of that Consortium Body a written agenda no later than the minimum number of days preceding the meeting as here indicated:

- General Assembly: 21 calendar days, 10 calendar days for an extraordinary meeting
- Executive Board: 7 calendar days

### Adding agenda items

Any agenda item requiring a decision by the Partners in a Consortium Body, must be identified as such on the agenda.

Any Partner in a Consortium Body may add an item to the original agenda by written notification to all of the other Partners of that Consortium Body up to the minimum number of days preceding the meeting as indicated:

- General Assembly: 14 calendar days, 7 calendar days for an extraordinary meeting
- Executive Board: 2 calendar days

During a meeting, the Partners of a Consortium Body, present or represented, can unanimously agree to add a new item to the original agenda

Meetings of each Consortium Body may also be held by teleconference or other telecommunication means.

## 2.6 Relations between Partners in the PM (WP1)

All Partners are engaged in the Project Management (Work Package 1) with a defined number of persons/month and corresponding assigned budget, as follows:

Partner Number and Short Name	WP1 Effort-Person/month
1 - NP	18,00
2 – DOW	3,00
3 – DOWA	1,00
4 – PNO	2,50
- PNO NL	1,75
- CIAOTECH	0,75
5 - VTG	2,00
6 – SINTEF	2,00
7 – BMP	2,00
8 - CNGV	4,00
9 - CEN	3,00
10 - HLL	1,00
11 - CHC	4,00
12 - EST	1,00
13 – ABS	1,00
<b>Total</b>	<b>47,00</b>

The Project Management Team listed in the table here above, will assist the Coordinator in performing the Project Management activities.

Each Partner to supply as soon as possible to the Coordinator at [gasvessel@navalprogetti.net](mailto:gasvessel@navalprogetti.net) an e-mail with the following data for the necessary contacts and exchange of information:

- 
- Name of the person in charge for the Project Management inside the Partner organization
  - Phone number
  - E-mail address

## 2.7 Communications

The efficiency and promptness of communication between the Partners is vital for the Project success.

All queries and info from one Partner to another to be processed without undue delay having well in mind the planned due dates of Deliverable and Milestones as per Grant Agreement and Work Plan.

In order to allow the Coordinator to keep informed the Executive Board about the progress and possible problems for the Project, and enable it to intervene and help or ease i.e.: for problem solving, any correspondence exchanged about the GASVESSEL Project between Partners, **to be copied** to Coordinator and shall be addressed exclusively to [gasvessel@navalprogetti.net](mailto:gasvessel@navalprogetti.net).

As far as practicable and if not stated otherwise, **all communications** between Partners will be exchanged **in written** via e-mail.

Project language is English.

Matters of particular importance for the Project, even if previously discussed and agreed by phone or in teleconference between a limited numbers of Partners, shall be confirmed in written via e – mail to **all** Partners.

Information exchanged to be clear, transparent and well timed for the whole community of Partners.

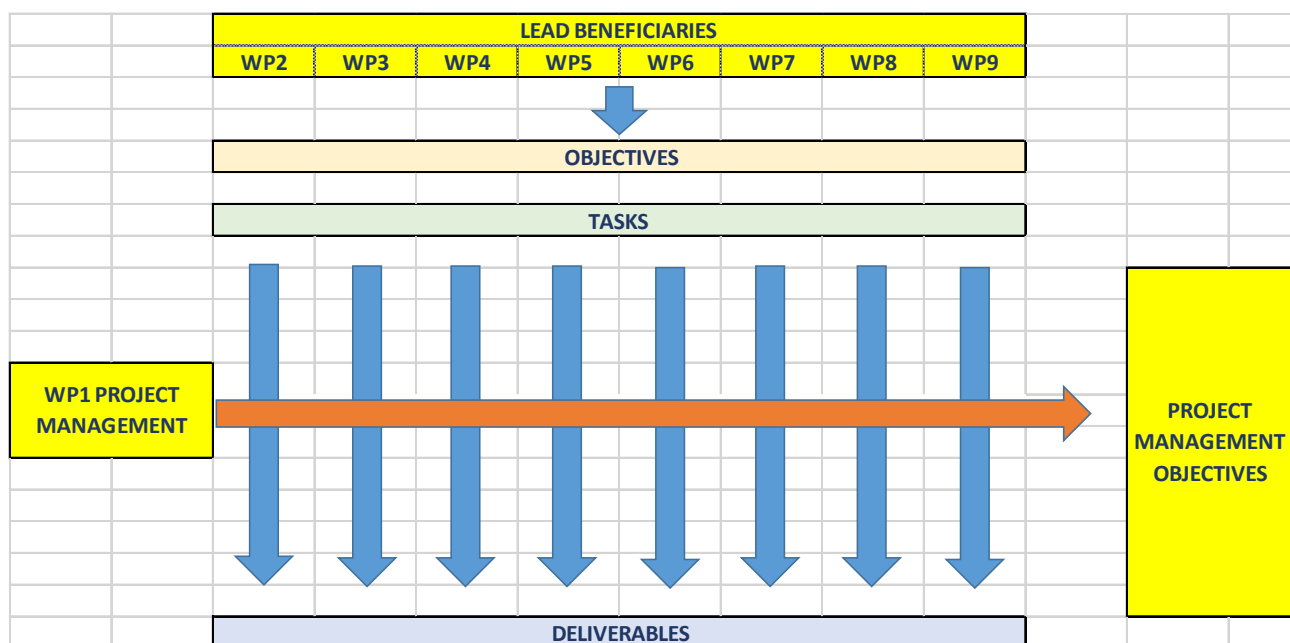
The Object of the communications shall clearly refer to:

**723030 GASVESSEL – WP no... - Task no... – Deliverable no... – Specific topic object of the communication**

### 3. Project Management Overview

To reach Project objectives, PM actions will move across the normal activities performed by the Partners, as shown in the figure here below, while Partners go through the relevant Work Packages in order to satisfy the objectives, perform the agreed tasks and issue the relevant deliverables.

It is not in the scope of the PMS to interfere with the normal management process of each Partner.



Partners are free to apply their usual internal management practice for accounting, planning, quality, risk management, HSE, reporting, etc.

The PMS, instead, shall provide to:

- Team building
- Coordination of activities between the Partners
- Level out the outputs of our research programme
- Verify consistency and quality of deliverables and revert to the Lead Beneficiary accordingly
- Monitoring of the overall budget and resources consumption
- Monitoring the general planning and propose remedial actions, to keep the due dates of deliverables and milestones unchanged

- 
- Monitoring the Procurement Management
  - Address possible technical issues
  - Help Partners, on request, in the correct interpretation of the Grant and Consortium Agreements
  - Help and coordinate Partners in the preparation of reporting to European Commission on months 18, 36 and 48
  - Request to Partners periodical internal reporting, to be submitted to the Executive Board at every Executive Board meeting (see 2.4)
  - Overall Risks management associated to the research Project activities.
  - Highlight, during the research, the items of interest and consequently propose for conferences and dissemination.
  - Project Ethics

Final scopes of PMS are:

- **Completing the project on time**
- **Completing the project within the assigned budget and with the available resources**
- **Completing the project by achieving the desired level of quality**

## **4. Project Management Actions**

### **4.1 Team Building**

Roles and goals for each Partner are already defined in detail in the Grant Agreement and in the Work Plan (Planning of activities) – See Attachment 1.

Over Project time, the Team building is intended by PMS to improve performance in a partnership environment. Team building is fundamental for organizational development of Partners' tasks.

Team-building includes:

- Aligning Partners around project goals
- Building effective working relationships between Partners
- Reducing ambiguity in Partners' role
- Finding solutions to Partners' problems

### **4.2 Project Coordination**

Project coordination generally refers to planning and managing multiple tasks simultaneously in the Project.

Coordination is essential for GASVESSEL Project that deals with a number of Partners with related objectives, tasks and deliverables, clearly detailed in the Grant Agreement.

In point 2.4 is reported the division of responsibilities between Consortium Governance Bodies.

In addition, all Partners, by signing the Grant and Consortium Agreements, have recognized to the Coordinator the authority and skill to achieve the Project objectives.

According with the above, the Coordinator expects from the Partners a sound commitment and spirit of cooperation, loyalty and transparency each other, as proven up to now, to realize the necessary synergies for the success of the Project. PM coordination activity will proceed on this path during its monitoring actions.

**Expediting** is another important aspect of the Coordination activity. It will be performed by the PM, that will monitor, examine the progress of research activities, verify the correct interface and get in touch with the Partners proposing and agreeing remedial actions when needed.

### 4.3 Level-out outputs

As far as practicable, all Deliverables shall be levelled-out according with a common standard suitable for the GASVESSEL Project and in line with other EU granted projects.

In the Deliverable D1.3 Quality Management Plan a number of standard forms will be made available to Partners for the documents having EU and Project web site as final destinations, i.e.:

- Documents numbering procedure
- Standard EU form for time sheets
- Deliverables front page
- Etc.

### 4.4 Consistency and Quality of Deliverables

Each Lead Beneficiary is responsible for performing its activities among the following constrains:

- Completing the project/tasks on time, as planned
- Completing the project/tasks within the specified budget and with the available resources
- Completing the project/tasks by achieving the desired quality

PM will verify that Consistency and Quality of Deliverables characteristics are ensuring that it is **“fit for the purpose”**.

To measure consistency and quality of a deliverable, first of all it will be checked that each Partner - consulting a Deliverable prepared by another Partner - has to find in it, clearly presented and easy to understand, all the information needed to progress in its own research activity, along the planned duration of each WP.



## 4.5 Deliverables Issuing Procedures

Responsible Partner (Lead Beneficiary of each WP) is in charge of the deliverable consistency, quality and timely issuing within the budget.

**One month before the deliverable due date** (see Grant Agreement), the deliverable will be circulated to all Partners for comments.

Partners to submit comments to Lead Beneficiary **within 2 weeks at the latest**.

Deliverables not commented within the two weeks are considered **“Approved”**.

Responsible Partner will forward final version of deliverable to Coordinator **within 1 week** from Partners comments receipt.

Coordinator will upload the deliverables on EU portal and on GASVESSEL web site.

## 4.6 Planning and Budget Monitoring

### Progress Control

Executive board meetings dates (see 1.4) represent the checkpoints for progress control.

Each Executive Board meeting is considered, in addition to what specifically present in the agreed agenda of meeting, as a “Phase Review” of the Project for monitoring the progress and fairly prepare the Consortium for the official reporting to EU on months 18, 36 and 48.

Status Reports presented by Partners to the Executive Board quarterly are a fundamental monitoring tool to identify progress and problems.

Partners are encouraged to take Status Reports seriously.

Each Partner shall complete Status updates **one week in advance to each Executive Board meeting date**. Partners Status updates will be gathered and summarized by the PMS.

Partner Status Reports, for each WP of competence, shall briefly contain:

- **Detail of the actions completed in the reporting period**
- **Cumulated progress of budget and resources consumed up to the closing date of the reporting period (see below in the Cost Control section)**
- **Detail of actions foreseen in the next reporting period**
- **Risk assessment and possible mitigation actions**
- **HSE assessment**

A standard form for Status Reports will be part of Project Quality Management Plan (Deliverable D1.3 of WP1).

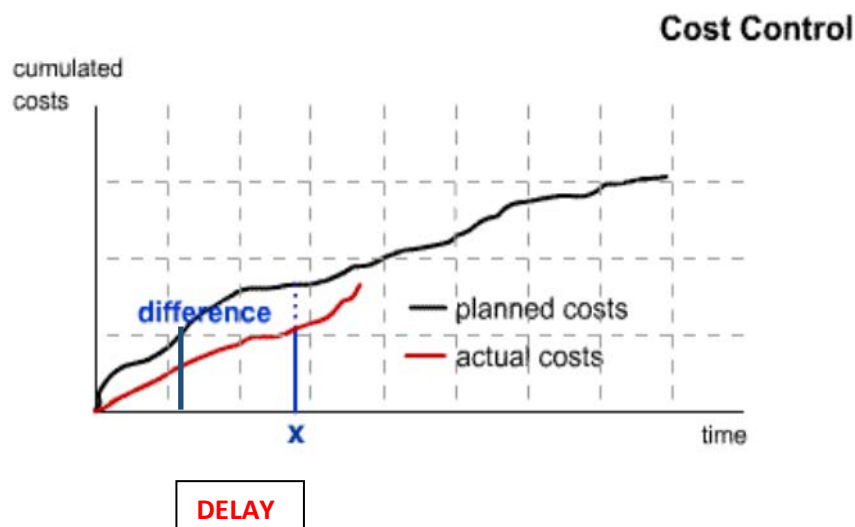
A suggested way to monitor Status is to use two columns in a table and compare the current schedule with the original plan (see Attachment 1 Work Plan which is integral part of this Project Management Plan) When visualizing it in a chart Partner might get an even more powerful tool to envision the progress of the Project.

## Cost Control

To review the project cost it is useful to compare the actual cost to date with the budget plan (see Attachment 1 Work Plan).

Partner might use the cumulated budget plan for the planned costs and compare it to the actual costs to the reporting date.

Always consider the project's progress when doing an evaluation. As in the example below, the actual costs might be a lot less than the planned ones, while at the same time the project's progress might be weeks behind its planned status.



## Changes

To grant a fair progress to the Project, no substantial changes are allowed. Objectives, tasks, deliverables, milestones, due dates to EU remain as defined in detail in the Grant Agreement.

Small modifications in internal procedures, Consortium management aspects, technical aspects are acceptable. Partner proposing modifications, with written justifications, shall address them to the Executive Board and Coordinator. Executive board reserves itself the final decision on the proposed change, or otherwise decide to ask by e-mail for the approval of all other Partners, that may accept or reject the proposed change.

The budget granted by EU, globally to the project and to each Partner, cannot be exceeded.

Partners to expect some budget downgrading due to the foreseen EU auditors actions or for inconsistency of their cost reporting to Europe.

## Force Majeure

Force Majeure is governed by Section 4 – Article 51 of the Grant Agreement.

### 4.7 Monitoring the Procurement Management

Each Partner to perform its procurement actions freely, but in line with EU and national legislation on the matter.

Partners to document Coordinator and Executive Board that value of procured goods is “**best for money**”, that quality is as necessary to satisfy Project needs and that delivery time will not affect Project schedule.

### 4.8 Addressing technical issues

Each partner is in charge to address technical issues as it will be necessary and/or discovered during Project progress, or requested by another Partner.

Coordinator team remain available anytime to address technical issues if so requested by Partners

### 4.9 Reporting

As already mentioned above in this document there are two aspects of reporting:

- Reporting to EU
- Internal reporting

Reporting to EU, requiring many preparatory works, will be made ready in due time by each Partner. Coordinator team will assist Partners in this activity as far as practicable.

During kick-off meeting, PO suggested Partner to register costs on a monthly basis, at least.

According to previous experiences, Coordinator suggest Partners to provide internal costs accounting on a weekly basis, for prompt references to events, or not to lose documents/papers for costs justification.

Nearly all articles of the Grant Agreement, at the end of each section, foresee a paragraph named “Consequences of non-compliance”. Partners are invited to monitor carefully this warning not to fall in non-compliances.

For internal reporting see 4.6 Planning and Budget Monitoring

## 4.10 Risk Management

Risk management is the identification, assessment, and prioritization of risks.

Risks are defined as the effect of uncertainty on objectives.

Risks are followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events.

Risk management's objective is to assure uncertainty does not affect the endeavor from the Project goals.

For the time being, Risks identified are:

### Project External Risks

Risks	Likelihood (0-5)	Contingency/Opportunities
Unforeseen too low gas sale price and in consequence less demand from Oil and Gas companies to exploit stranded and associated gas off-shore	2	Alternative market opportunities e.g. CNG as a more flexible and less risky solution compared to LNG exploitation
Storage facilities offshore and onshore require specific considerations regarding space and safety	2	Depending on the local development plans and urgency to adopt alternative energy supply. Risk and safety constraints will be evaluated from the beginning i.e., scenario analyses with multiple potential users (Greek and Italian Islands)
Technology breakthrough in alternative sources of energy	2	Gas will continue to be a raw material for petrochemical industry. Alternative logistics and storage solutions for petrochemical plants.
Oil and Gas continue to be down in a cost cycle and O&G companies are reluctant to invest into new technologies and solutions	4	Demonstrating cost effectiveness and positive business case of CNG solution for short distances delivery will actually provide an alternative for more risky (e.g. LNG) exploitation routes and offer additional turnover resources
O&G companies are reluctant to guarantee long term take or pay contracts for logistics/ ship owners	2	Involve local Governments for long-term demands commitments. Involve whole value chain into commitment including final gas users

## Project internal Risks

Description of risk	Likelihood Level	WP(s) involved	Proposed risk-mitigation measures
Technology applied for the Pressure Cylinders does not confirm the technical and economic benefits	3	3, 4, 7	Design the whole process (material & equipment) as close as possible to the original consideration.
New resin system development unmet specific needs regarding technology selection	1	4	Dow broad Epoxy resin system portfolio is assumed to be appropriate for one of the technologies
Translation of properties between Carbon Fibre & Epoxy resin is not sufficient to meet mechanical performance of the composite	1	4	Newly developed sizing agent will be used for the process. Design of experiment will be run early on to test Inter laminar shear and impregnation properties
Participants' non-performance in terms of quality and timing of deliverables submittal. Budget is not spent correctly or contributors do not deliver according to the plan	Low	All	Proper use and management of Consortium Agreement clauses. For these cases, Consortium Agreement will provide tools for the Coordinator and the Consortium to react on time and redistribute work and/or budget.
Increase of procurement costs for prototyping machinery and equipment due to market changes	Low	3	Efficient Procurement Policy Design to cost
Delay issuing work packages and deliverables	Low	3	Work has to be stringently and efficiently managed, planned and monitored. This will be done e.g. through a close follow-up by the Coordinator and the review meetings with the work package leaders. The compliance has to be followed up through quality management.
Prototyping results not in line with expectations and calculations	Low	4	Prototyping phases split in two: deficiency discovered during the 1 <sup>st</sup> phase will be tuned during the 2 <sup>nd</sup> phase.

As pointed out in 4.6, each Partner shall submit to the Executive Board in the periodic reports the detail of risks discovered while performing tasks and the mitigation actions proposed, together with the proposal of cancellation of risks in the meantime expired.

## Technical Risks

Technical Risks relevant to the waterborne transportation of CNG are part of the WP8 and will be dealt separately there, as directed by ABS.

## 5. HSE

Each Lead Beneficiary/Partner is fully responsible and in charge for the respect of the HSE laws, rules and regulations in force in its Country.

Every Partner is committed to improve health, safety and wellbeing of researchers in the workplaces, encouraging researchers' involvement to enable them to better understand the health risks, consequences and control measures associated with the GASVESSEL Project activities.

**In association with the nature of GASVESSEL Project, that foresee pressure testing, fatigue testing and burst tests, it is necessary to raise awareness of the potential consequences of pressure systems failures and the importance of implementing and sustaining robust control measures.**

Partners to ensure that researchers have right to the Social Security as per national and EU laws.

Partners to provide Environment protection as per national and EU directives, which scopes are summarizes in:

- to protect, conserve and enhance the European Union's natural capital
- to turn the Union into a resource-efficient, green, and competitive low-carbon economy
- to safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing

## 6. Proposals for Workshops and Dissemination

Aside the foreseen and planned Dissemination and workshop actions in WP9, it could be of interest, on Project completion, a document reporting the cumulated experience in the GASVESSEL Project Management.

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# **Attachment 1 to PROJECT MANAGEMENT PLAN WORK PLAN**

[illegible]





WP 2 SCENARIOS ANALYSIS	
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LEAD BENEFICIARY: CYPRUS HYDROCARBON COMPANY

[illegible]

MS1

MS2

MS3

MS4

MS5

MS6

MS7

MS9

MS1 - Scenario description and characterization; Decision Support Model definition (Leader:CHC)

MS2 - Scenario analyses performed with the Decision support model (Leader:CHC)

NP	PNO	VTG	MTEK	CHC	EST
2.00	1.00	1.00	9.00	28.00	14.00

WP 3 DESIGN OF PRESSURE VESSELS AND PILOT LINE
--

LEAD BENEFICIARY: CNGV
------------------------

[illegible]

MS1

MS2

MS8

MS3

MS4

MS5

MS6

MS7

MS9

**MS3 -MFD Platform (Leader: ESTECO)**

NP	DWAK	BMP	CNGV	EST	ABS
14.00	4.00	6.00	60.00	17.00	2.00

WP 4 PRE-INDUSTRIAL PROTOTYPING OF PRESSURE VESSELS
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LEAD BENEFICIARY: BMPlus
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[illegible]

MS9

**MS4 - Pressure Vessels - Pilot Line ready even (Leader: BM Plus)**

**MS5 - Results of PV pilot productions and Tailored Ship design and (on/off) loading system (Leader: NP)**

NP	DOW	BMP	CNGV	ABS
14.00	2.00	26.00	48.00	8.00



[illegible]

WP 7 COST - BENEFIT ANALYSIS

LEAD BENEFICIARY: SINTEF OCEAN - MARINTEK

[illegible]

**MS7 - Proof-of-concept (Tool for CNG cost simulation validated by means of verification Results of CBS, Enviromental assessment and safety assessment) (Leader: MARINTEK)**

NP	DOWA	PNO	VTG	MTEK	CNGV	HLS	CHC	ABS
11.00	0.00	2.00	9.00	14.00	20.00	5.00	30.00	5.00

WP8 CLASS DESIGN REVIEW - SAFETY ASSESSMENT

LEAD BENEFICIARY: ABS GREECE

[illegible]

MS1

MS2

MS8

MS2

MS8

MS3

MS4

MS5

MS6

MS7

MS9

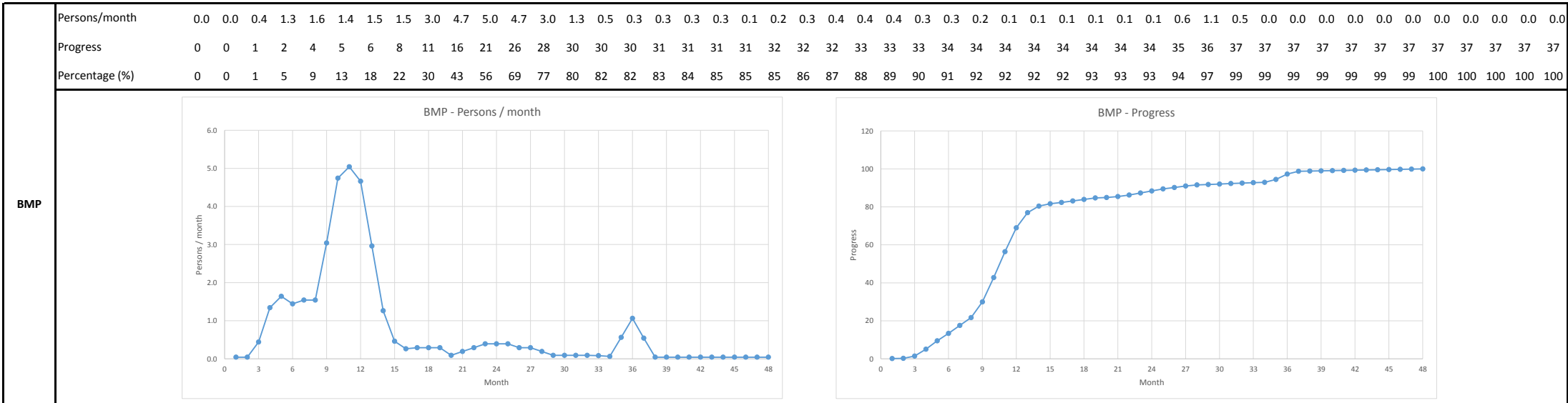
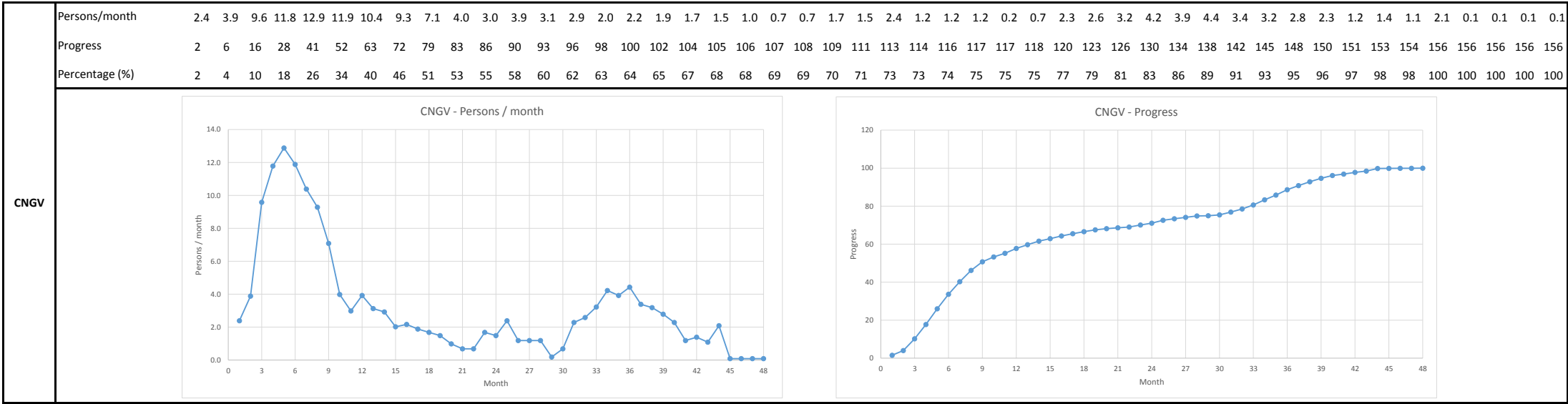
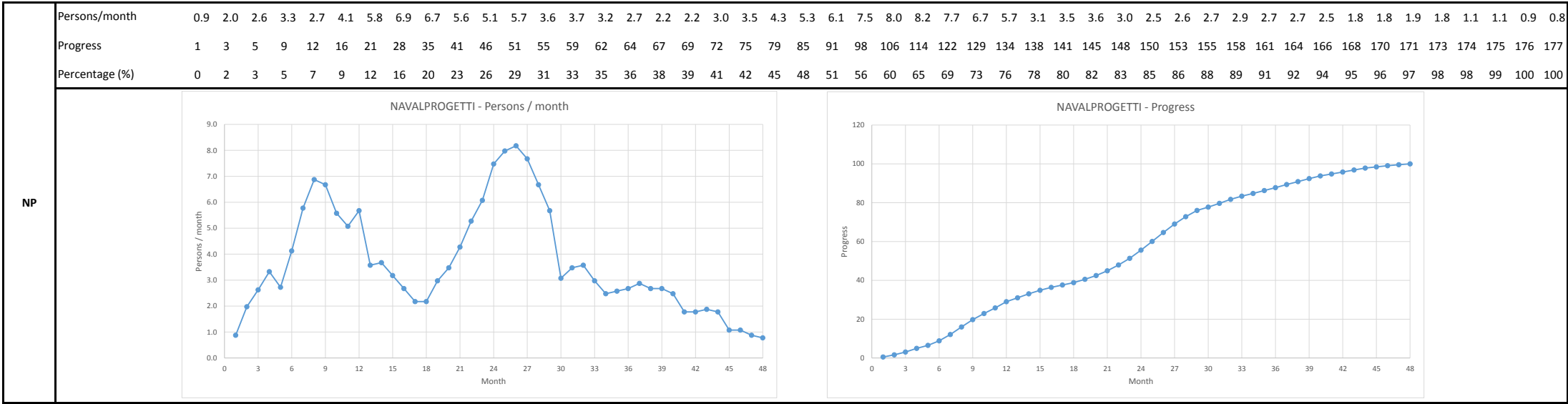
NP	BMP	CNGV	EST	ABS
23.00	2.00	20.00	14.00	22.00





1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

PERSON / MONTH DISTRIBUTION



[illegible][illegible]

DOW	Persons/month	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	1.1	1.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
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Persons/month

Progress

Percentage (%)

0.5	0.5	0.5	0.7	1.5	2.0	1.5	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	1	2	2	4	6	7	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	10	11	11	12	12	13	13	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15
3	7	10	15	25	39	49	54	55	55	55	55	55	56	56	56	57	57	58	58	59	59	60	60	60	61	61	62	62	63	67	70	74	78	81	85	88	92	95	99	99	99	99	99	99	100	100	100	100	100	100

DOWAKSA - Persons / month

DOWAKSA - Progress

Persons / month

Progress

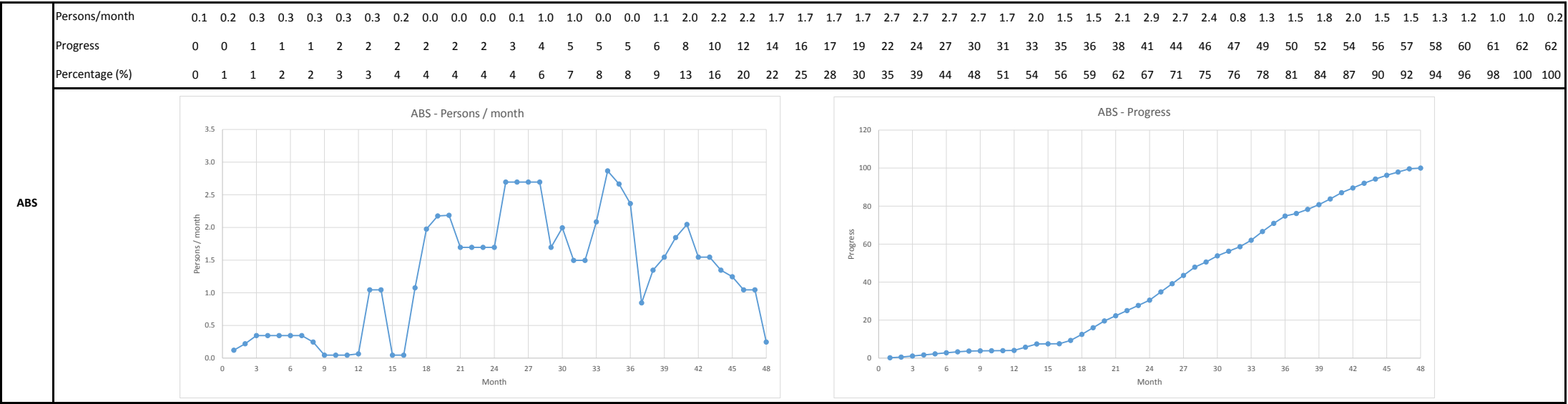
Month

Month

[illegible]

VTG	Persons/month	0.0	0.2	0.3	0.8	0.7	1.0	2.0	2.0	2.0	1.0	1.0	1.1	1.1	0.6	0.6	0.6	0.6	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Progress	0	0	1	1	2	3	5	7	9	10	11	12	14	14	15	15	16	16	16	16	17	17	18	18	19	19	20	20	21	21	22	22	23	23	24	24	25	26	26	27	27	27	27	27	27	27	27	27	
	Percentage (%)	0	1	2	5	8	12	19	27	35	38	42	46	50	52	54	56	59	59	59	60	61	63	65	67	69	71	72	74	76	78	80	82	84	86	89	91	93	95	97	99	99	99	99	99	99	99	100	100	100
	<div><div>VTG - Persons / month</div></div>																																																	
	<div><div>VTG - Progress</div></div>																																																	





# **Work Plan**

## **APPENDIX 1**

### **Detail of activities of the Prototyping Pilot line and construction of the liners**

<b>Project:</b>	<b>GASVESSEL</b>
<b>Project No.:</b>	<b>723030</b>
<b>Deliverable No.:</b>	
<b>Document Version:</b>	<b>revision no.7</b>
<b>Document Preparation Date:</b>	<b>date 2017-06-14</b>
<b>Responsibility:</b>	<b>PARTNER No.1</b>

TASK	ACTIVITY	RESPONSABILITY	2017							2018											2018													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
			G	L	A	S	O	N	D	G	F	M	A	M	G	L	A	S	O	N	D	G	F	M	A	M	G	L	A	S	O	N	D	G
	Procurement by Gortani	BMPlus																																
	Ricezione della specifica da CNGV per fornitura Gortani	CNGV																																
	Emissione richiesta di offerta a Gortani per: a - materiali saldati per esecuzione prove tecnologiche, b - fornitura di un cilindro, secondo indicazioni definitive CNGV, c - fornitura di 5 cilindri, dopo prove sul primo, d - completamento forniture. 10 cilindri su indicazioni definitive di CNGV	BMP-CNGV																																
	Verifica offerta Gortani con CNGV	BMP-CNGV																																
	Emissione ordine quadro a Gortani	BMP																																
3.1.C	Technological tests on steel plates (Mech. Coeff. Determination)	BMPlus			0,4	0,6	0,6	0,3																										
	Ricezione della specifica da CNGV per preparazione provini	CNGV																																
	Preparazione dei provini secondo specifica CNGV	BMP																																
	Scelta Laboratorio tecnologico, in accordo e secondo specifiche CNGV	BMP-CNGV																																
	Emissione ordine a Laboratorio tecnologico	BMP																																
	Esecuzione prove di laboratorio	BMP																																
	Valutazione risultati di laboratorio	CNGV																																
	3.1.E	Procurement and supply of First cylinder by Gortani	BMPlus						0,1	0,1	0,1																							
	Conferma caratteristiche primo serbatoio a Gortani	BMP-CNGV																																
	Fornitura e ricezione del primo serbatoio da Gortani	BMP-Gortani																																
	3.1.F	Hydroforming of the First cylinder for testing specimens(1 pc)	BMPlus																															
	Assistenza a CNGV per esecuzione idroformatura	BMP																																
	3.1.G	Technological tests on cylinder welded joints (Mech. Coeff. Determ.)	BMPlus																															
	Ricezione della specifica da CNGV per preparazione provini	CNGV																																
	Preparazione dei provini secondo specifica CNGV	BMP																																
	Emissione ordine a Laboratorio tecnologico	BMP																																
	Esecuzione prove di laboratorio	BMP																																
	Valutazione risultati di laboratorio	CNGV																																
	4.1.D	Hydroforming mould and relevant plants construction and installation	BMPlus				0,7	1,0	1,0	1,0	0,5																							
	Ricezione della specifica da CNGV per studio di fattibilità impianto	CNGV																																
	Studio fattibilità impianto su specifiche CNGV	BMP-CNGV																																
	Scelta parti make/buy e programmazione attività interne/esterne	BMP																																
	Richieste di offerta per buy	BMP																																
	Emissioni ordini buy con benessere CNGV	BMP-CNGV																																
	Forniture parti	BMP																																
	Lavorazioni interne parti	BMP																																
(4.1.I)	Studio fondazioni impianto su istruzione CNGV	BMP-CNGV																																
(4.1.I)	Predisposizione area per montaggio impianto	BMP																																
	Assiemaggio impianto in sito	BMP																																
	Impianto pronto per collaudo	BMP																																
(4.1.I)	Studio layout campate per impianto di ricerca su indicazioni CNGV	BMP-CNGV																																
	Definizione ed acquisto attrezzature specifiche per impianto ricerca	BMP																																
	Definizione ed acquisto impianti di campata non specifici	BMP																																
	4.1.E	Winding machine construction and installation	BMPlus							0,4	0,4	1,0	2,0	2,0	1,0	1,0																		
	Ricezione della specifica da CNGV per studio di fattibilità impianto	CNGV																																
	Studio fattibilità impianto su specifiche CNGV	BMP-CNGV																																
	Scelta parti make/buy e programmazione attività interne/esterne	BMP																																
	Richieste di offerta per buy	BMP																																
	Emissioni ordini buy con benessere CNGV	BMP-CNGV																																
	Forniture parti	BMP																																
	Lavorazioni interne parti	BMP																																
	(4.1.I)	Studio fondazioni impianto su istruzione CNGV	BMP-CNGV																															
(4.1.I)	Predisposizione area per montaggio impianto	BMP																																
	Assiemaggio impianto in sito	BMP																																
	Impianto pronto per collaudo	BMP																																
	4.1.F	Curring and autofrattage plants construction and installation	BMPlus																															
	Ricezione della specifica da CNGV per studio di fattibilità impianto	CNGV																																
	Studio fattibilità impianto su specifiche CNGV	BMP-CNGV																																
	Scelta parti make/buy	BMP																																
	Richieste di offerta per buy	BMP																																
	Emissioni ordini buy con benessere CNGV	BMP-CNGV																																
	Forniture parti	BMP																																
	Lavorazioni interne parti	BMP																																
	(4.1.I)	Studio fondazioni impianto su istruzione CNGV	BMP-CNGV																															
(4.1.I)	Predisposizione area per montaggio impianto	BMP																																
	Assiemaggio impianto in sito	BMP																																
	Impianto pronto per collaudo	BMP																																
	4.1.G	Testing of single component of pilot line	BMPlus																															
	Collaudo hydroforming mould and relevant plants	BMP-CNGV																																
	Collaudo winding machine	BMP-CNGV																																
	Collaudo curing and autofattage plants	BMP-CNGV																																
	4.1.I	Installation workshop	BMPlus																															
	4.1.L	Pilot line commissioning	BMP-CNGV																															
	Assistenza a CNGV per commissioning	BMP												</																				



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