

Project Title: **Pre-normative research on resistance to mechanical impact of composite overwrapped pressure vessels**

Project acronym: **HyPactor**

Instrument: **171 - Article 171 of the Treaty**

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HYPACTOR

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Deliverable name	Impact test matrix
Lead beneficiary	CEA
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1. Executive summary

1.1. Description of the deliverable content and purpose

This deliverable details the first version of the test matrix defined by the partners in order to study the damages of impacted vessels in WP2.

This test matrix is divided into two steps:

- 1) Screening impacts and identification of threshold with respect to immediate failure,
- 2) Parameters study.

The aim of the first step is:

- 1) to create various damages that will be characterized by different NDT methods (WP4),
- 2) to define the impact energy range of the test matrix.

At the end of the first step and considering the very first results, 2 or 3 impact conditions are selected to be further investigated in the second step. These impact conditions are: diameter, weight and velocity (so energy) of the projectile and inner pressure of the tank.

The aim of the second step is to study the influence of parameters related to:

- 1) Impact,
- 2) Vessel characteristics,
- 3) Boundary conditions.

The vessels are 36L@70MPa, except two 250L@95MPa. Up to 9 impacts are planned on each vessel for economic reasons. 18 vessels are impacted in step 1, and 24 vessels are impacted in step 2 (including the two 250L vessels).

The energy levels are related to deliverable D2.1 (review of international impact related incidents on pressure composite tanks).