[Form 2 (to be reported to Committee on Countermeasures for Contaminated Water Treatment and to be disclosed to public)

Technology Information	
Area	(1) (Select the number from “Areas of Technologies Requested”)
Title	Global tank retrofit solution
Submitted by	NUVIA

1. Overview of Technologies (features, specification, functions, owners, etc.)

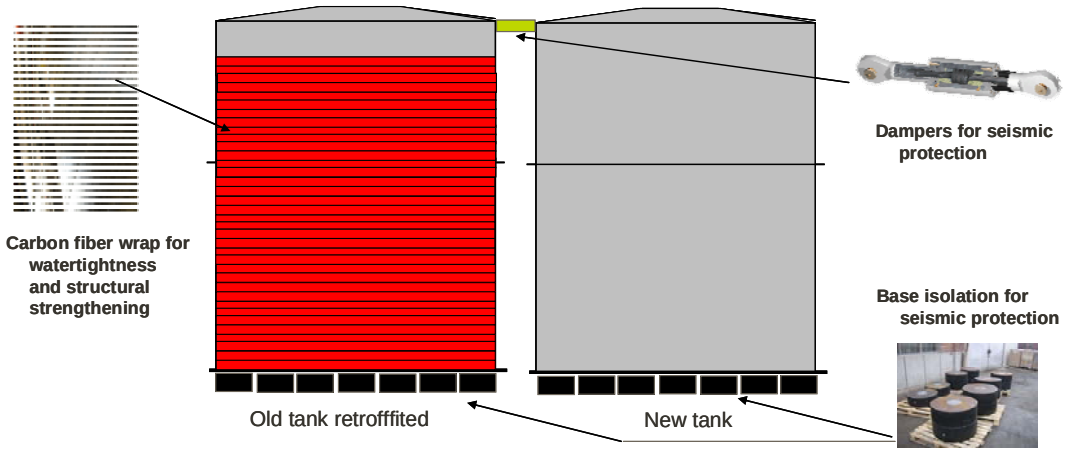
Technical solution principle:

- Retrofit the existing tank in order to create a tank fleet composed of new tanks and the retrofitted existing ones included the following steps:
  - Tank decontamination
  - Tank defects expertise
  - Tank retrofit operations on workshop close to the site
- Increase the safety margin of the new tank and retrofitted tanks by seismic protection solution implementation
- Solutions using the NUVIA group technologies (FOREVA TFC and other products)

Main advantages:

- cope with the duration supply
- increase the robustness (safety increase due to more storage capacity and design margin)

Solution feature:



External structural watertightness and strengthening using carbon fiber wrap

- Composite based on carbon fiber and expoxy resine made on site
- Materials properties, applications, reliability of the product have been demonstrated by large number of lab tests and application

- Tested and approved under ionisation radiation, fire, …
- The FOREVA TFC® Technical Document summarizes the properties and the condition of use of the material
- Agreed by the Nuclear French Authority

<u>Base Isolation using laminated bearing (low damping, high damping, lead rubber bearing)</u>

- Isolate the motion of the superstructure from that of the ground by using flexible horizontal isolators (ASB) by lengthening and shifting away the natural period from the high frequency range of the earthquakes (reducing the amount of energy transferred to the structure).
- Reduction significantly the acceleration and thus the shear forces induced by the earthquakes in the structure (F = M x A)
- Design robustness (margin) gain

2. Notes (Please provide following information if possible.)

- Technology readiness level (including cases of application, not limited to nuclear industry, time line for application)

Technologies improved and solution already implemented.

- Challenges:
  - To empty the tank, is there any issue? Is there any debris, mood? The decontamination process has to be addressed in this.
  - The tank handling for retrofit have to be considered
  - Does an inner layer coating would be necessary?
  - Does a treatment surface will be required? If yes, sand blasting would be the best, how manage the waste? Could be joined to the decontamination process?
  - Does any load case induce up fit in the base isolations? If yes, an anti-uplift system would be necessary (e.g ties)
  - Effect of radiation on the elastomeric pads to be estimated

- Others (referential information on patent if any)

Solution patented in France