



SEVENTH FRAMEWORK PROGRAMME FP7-SME-2013-1

Project title ENSPIRIT - Elimination of NO_x, SO_x and particulates in Rail Transportation

Project no: 605019

PROJECT PERIODIC REPORT P1 ATTACHMENTS

Project Co-ordinator: Osprey

Version: 1.0

Date of latest version of Annex I against which the assessment will be made: 6/11/12

Periodic report: 1st (P1 – 0-9 Months)

Period covered: from 1st November 2013 to 31th July 2014

Name, title and organisation of the scientific representative of the project's coordinator:

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Coordinator Tel: +44 1227770979

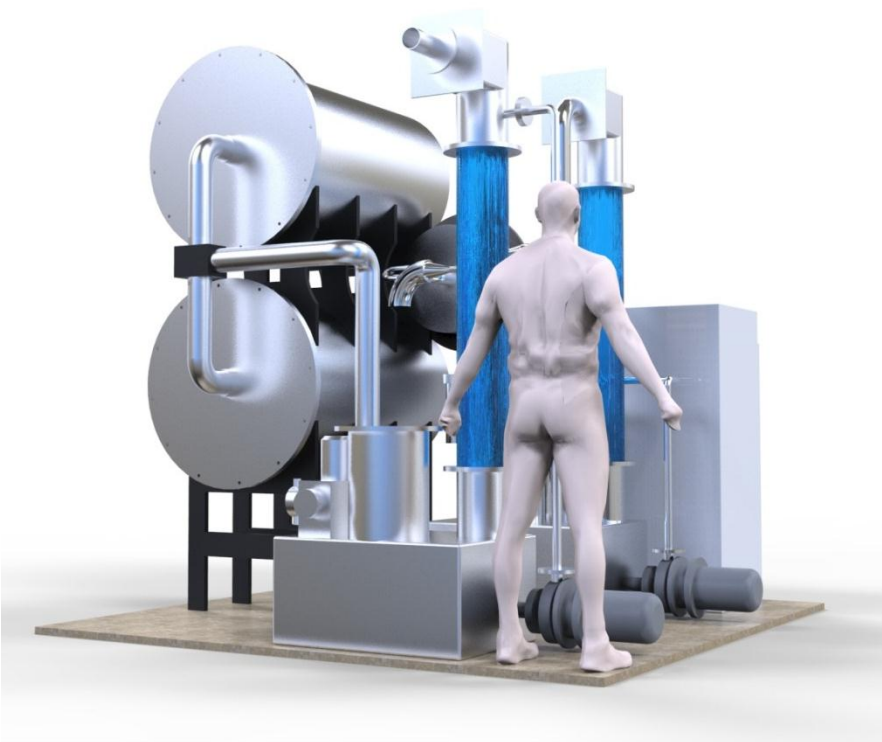
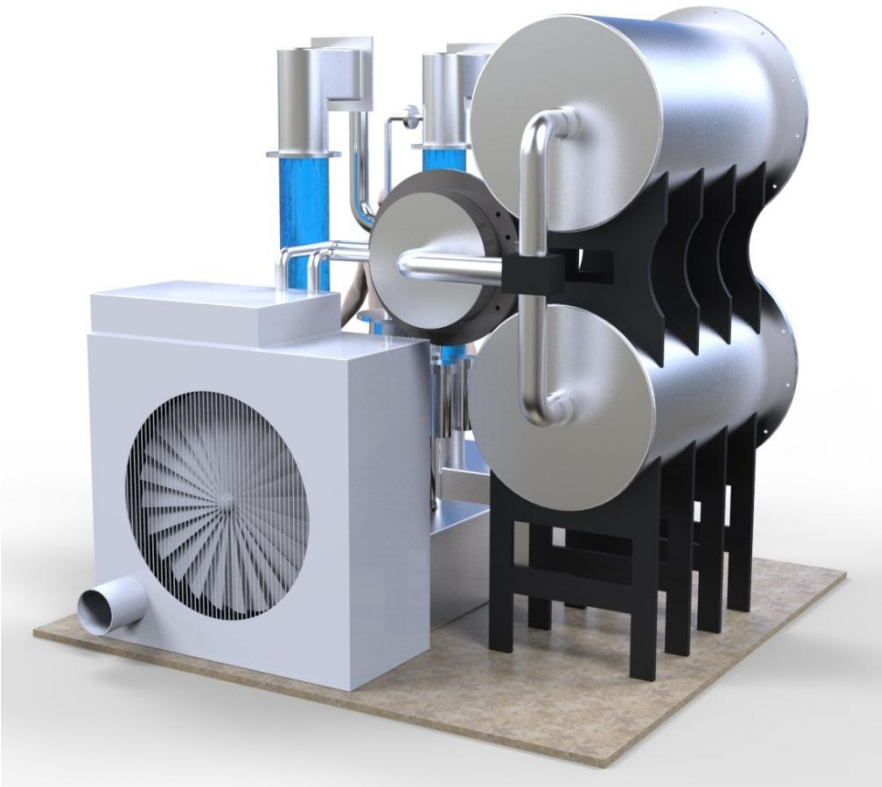
Coordinator Fax: +44 1227770949

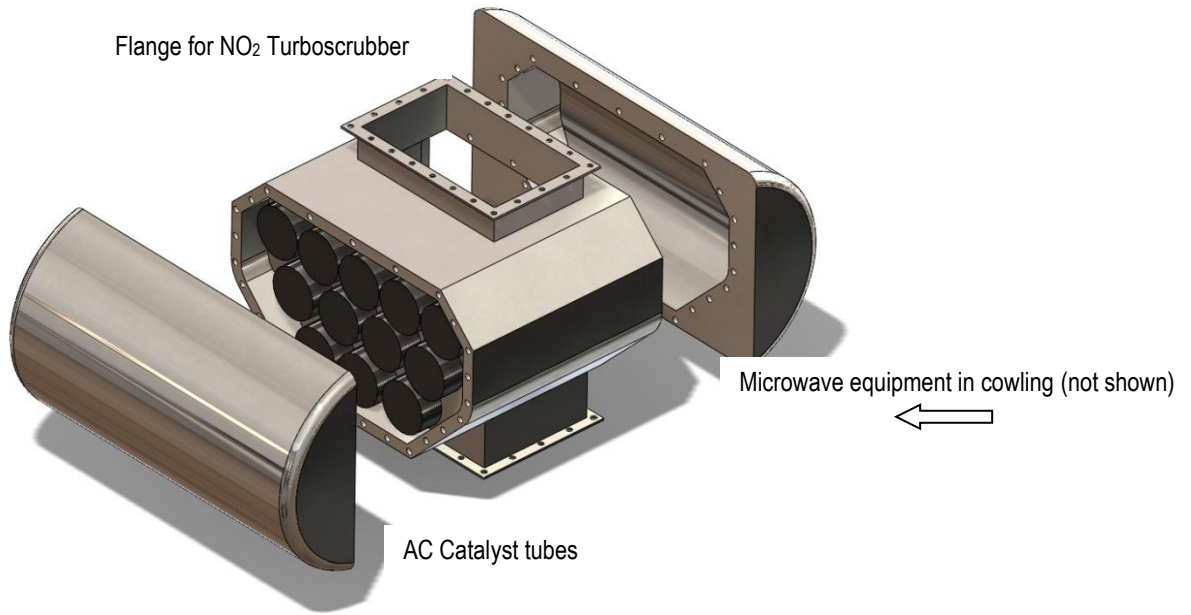
E-mail: davidm@ospreycorporation.com

Project website¹ address: <http://www.enspirit.eu/>

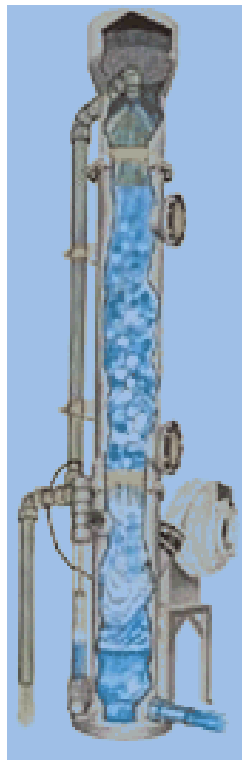
PROJECT PARTNERS

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Catalytic reactor assembly with microwave housing

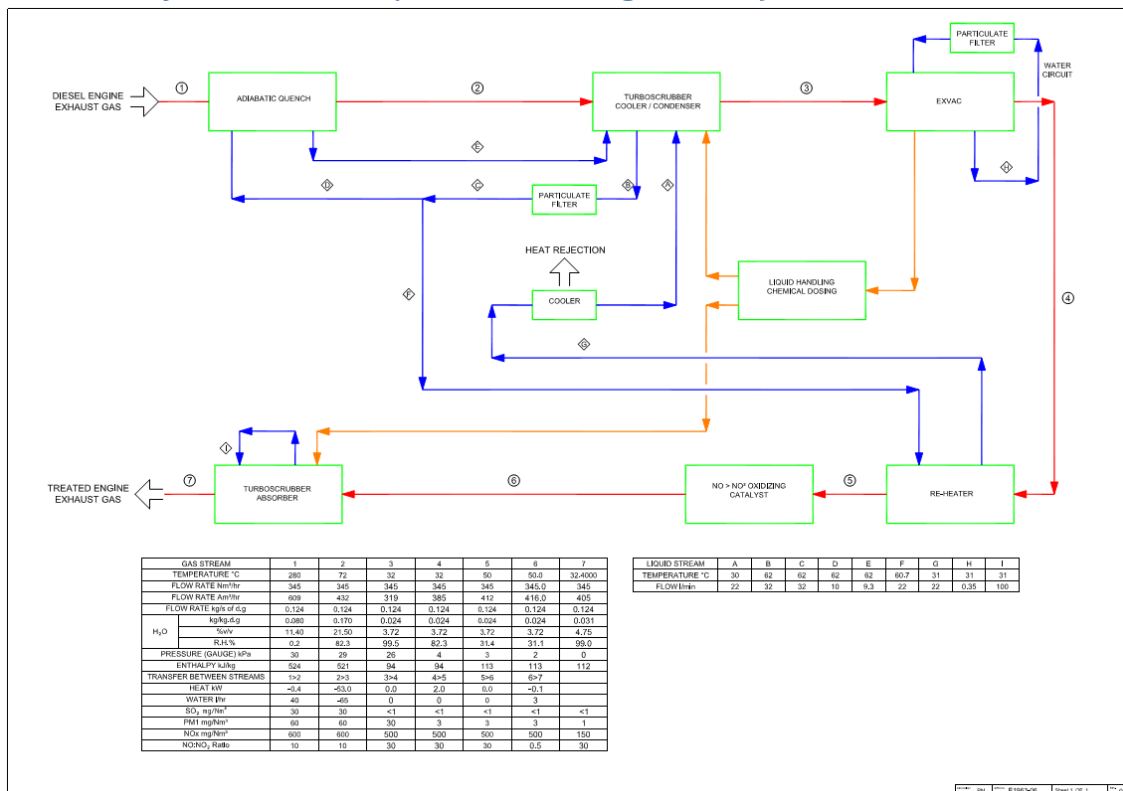


Turboscrubber unit

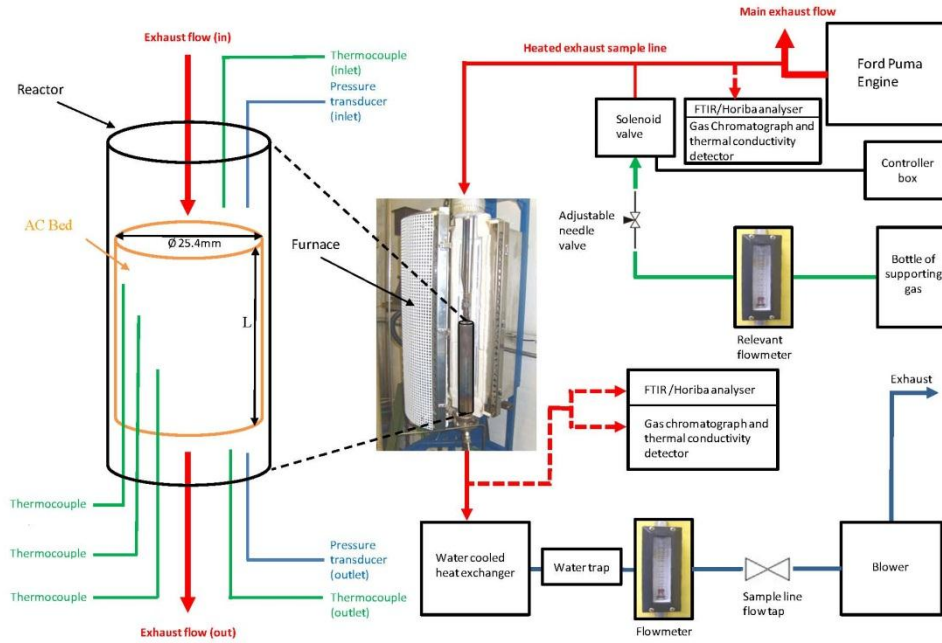


EVAC fitted to Taxi

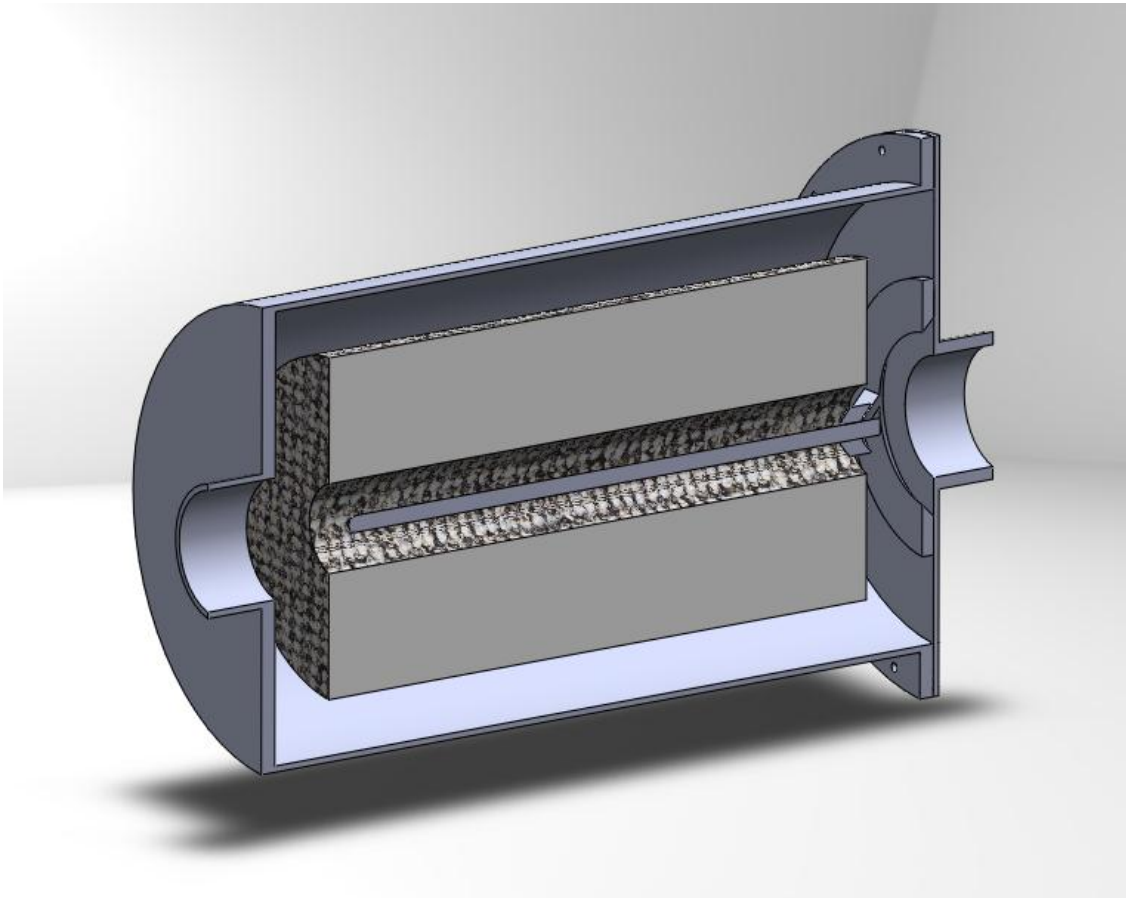
ENSPiRiT - System schematic (Process Flow Diagram, PFD)

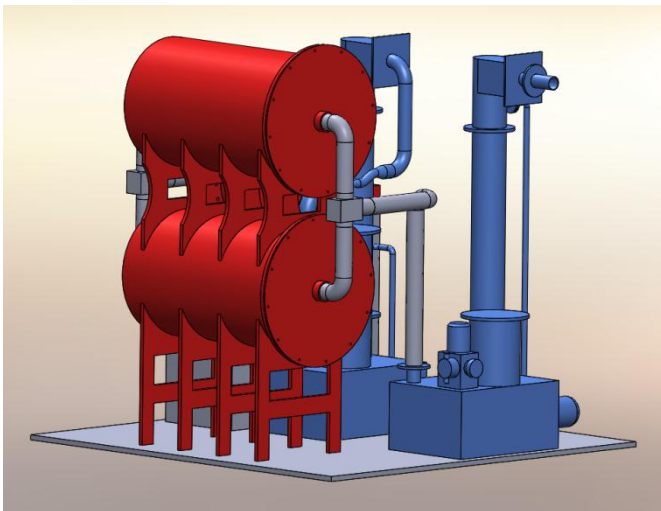
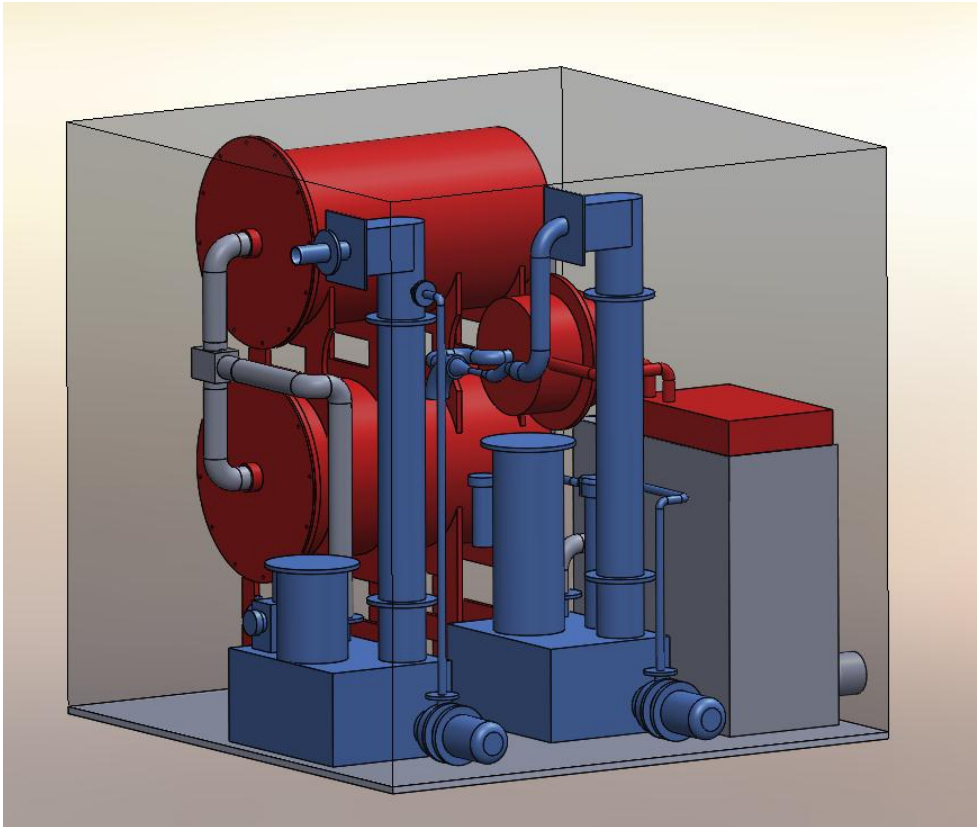


Schematic diagram of AC reactor test rig

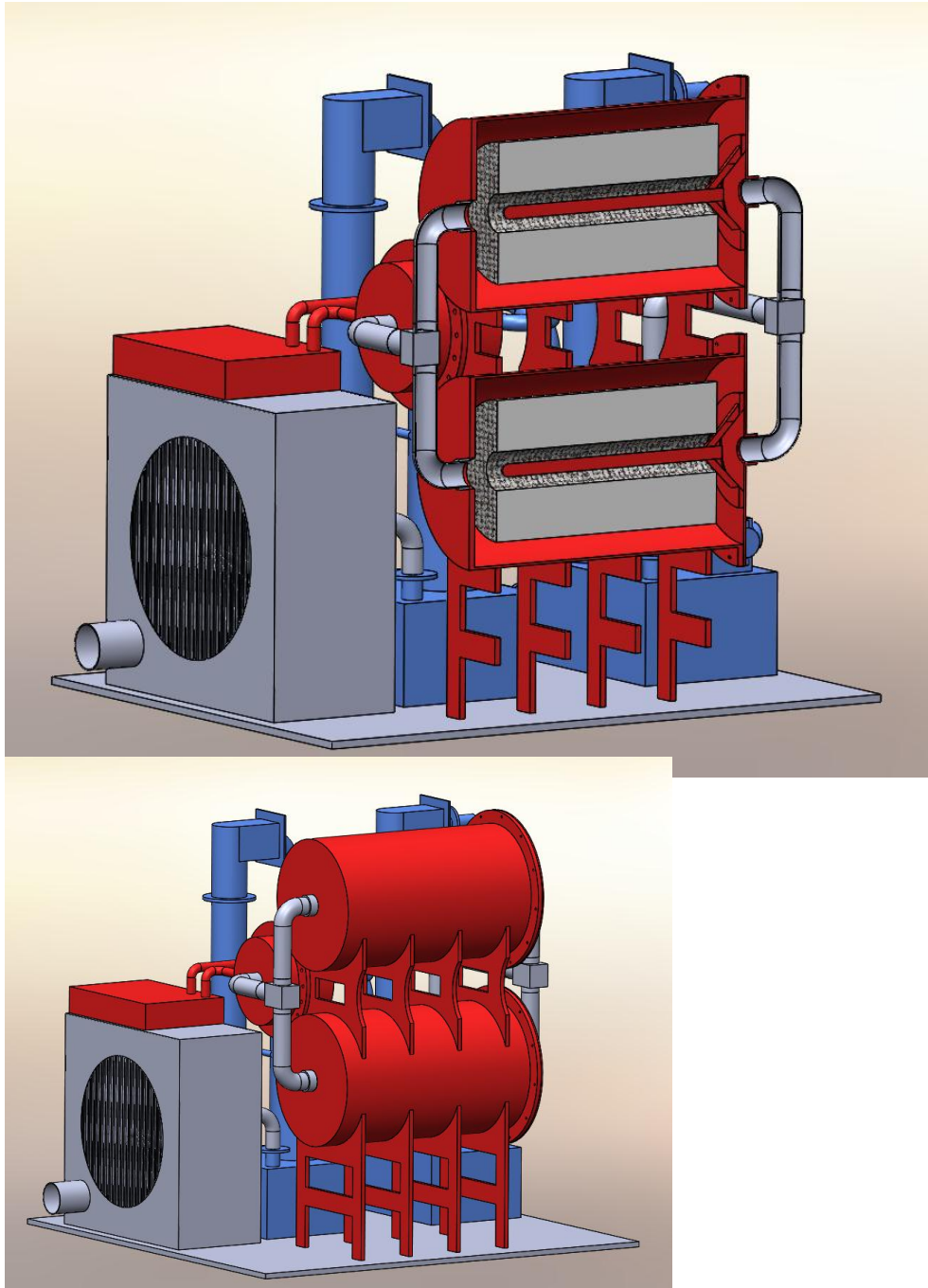


Cross section of the AC Chamber

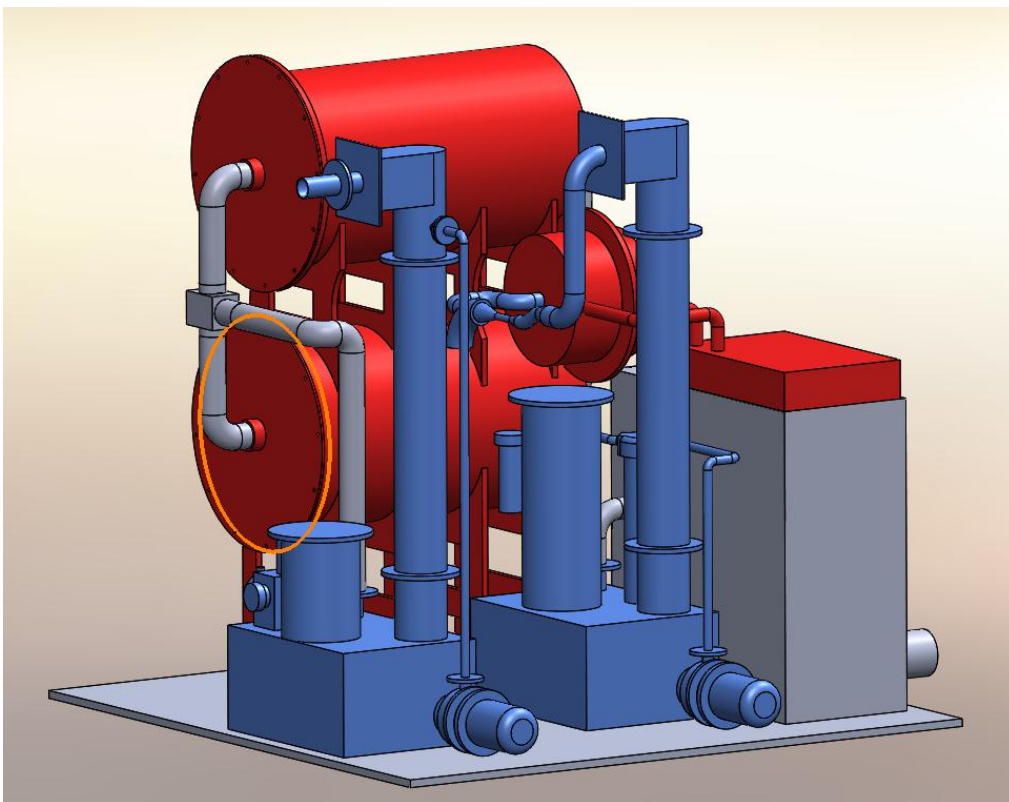
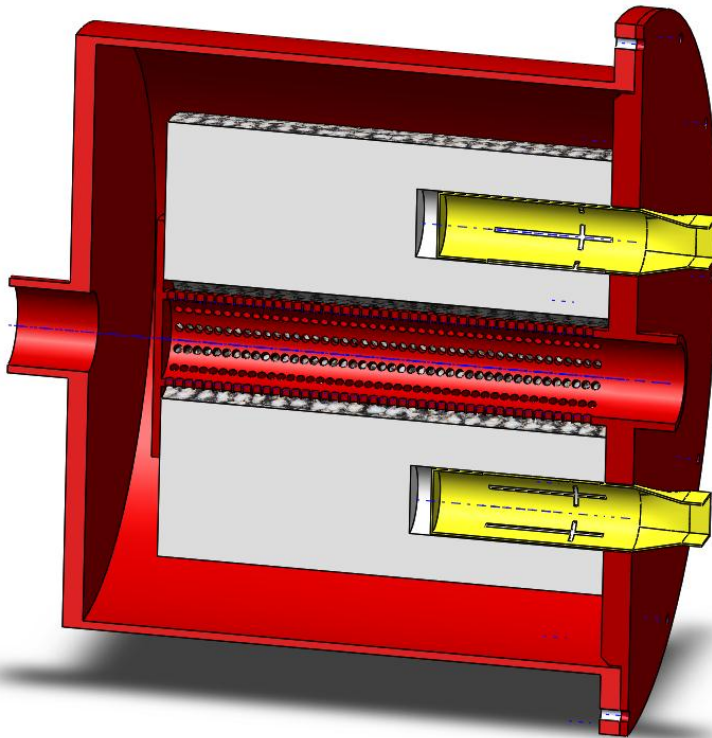




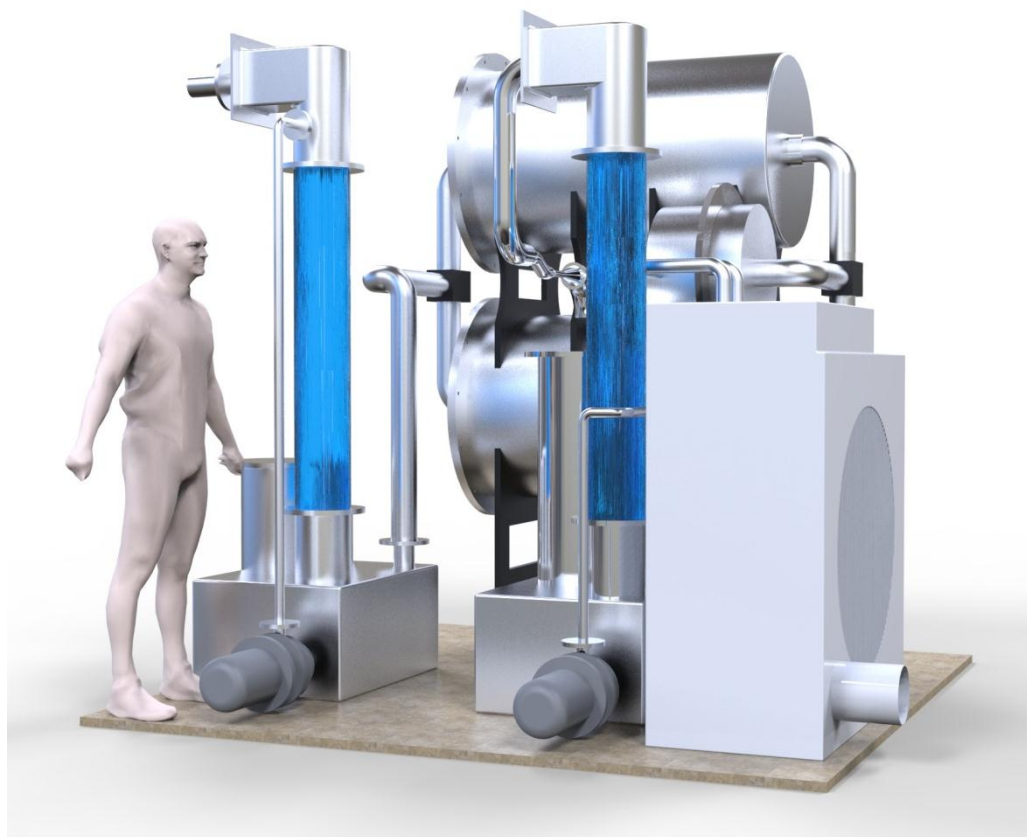
T4.1 Least volume Configuration



T4.3 Integration of reactor cooling and canister array



T4.5 Integrate Turboscrubber and EXVAC

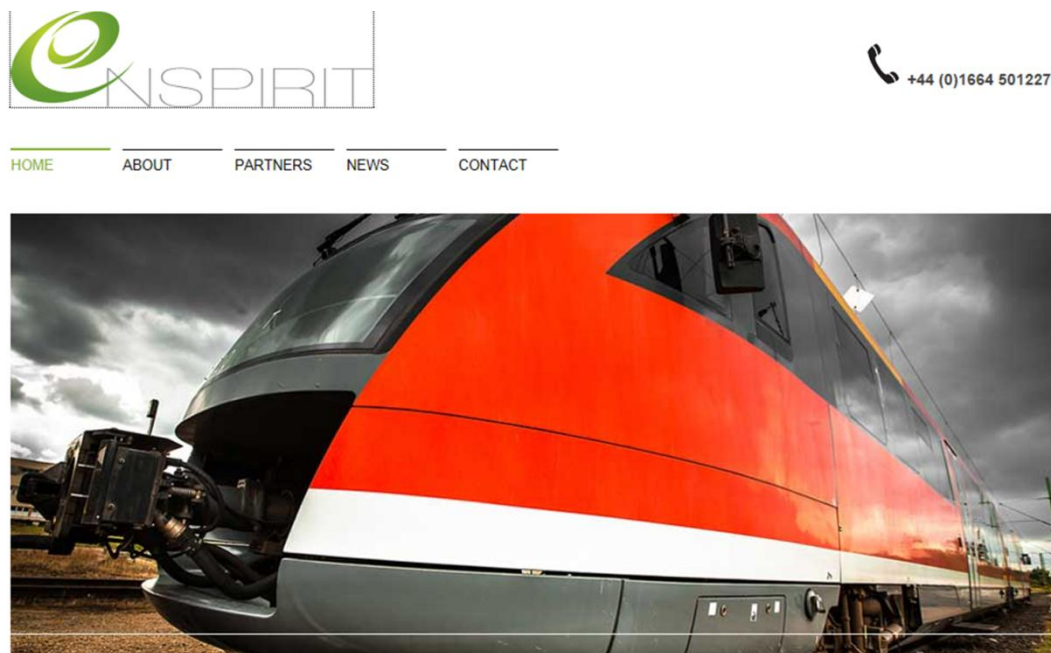


System Integration

Dissemination activities

Website

A website for the project was developed and implemented in the first 2-3 months of the project start date. Deliverable Report D8.2 'Project Website' describes the portal in more detail.



ENSPIRIT A NOVEL EMISSIONS ABATEMENT SYSTEM FOCUSED ON

The following is a brief specification for the project website:

- Public area with whichever pages that are needed
- Private area which allows access to contacts
- And a file store to which partners can both upload and download

The web portal is password protected so that only the Consortium Beneficiaries can access the File Store.

The address of the website is: <http://www.enspirit.eu/>

On accessing the website, the public area pages containing non-confidential information can be viewed:

The website has been set up for the dissemination of information about the ENSPIRIT project and the individual collaborators to all stake holders and the general public.

Project Logo

A project logo was developed at the same time and included in the website. This logo was approved by partners present at the Kick-off meeting and will be used for all future paperwork related to the AquaConserver project.



We are in the process of having it registered as a trade mark

Press Release**Case Study Flyers**

A two page A4-size Case Study Flyer was produced at Month M5 for distribution at exhibitions, conferences etc:

Enspirit Case Study

A novel emissions abatement system focused on reduced particle matter from diesel trains

Diesel locomotive engines are a major contributor to air pollution in cities and ports around the world. The Enspirit project is developing an innovative emissions abatement system to reduce pollution and to meet stringent new particle matter regulations.



“The Enspirit project holds huge potential to transform the transport industry and make it more environmentally friendly. OSPREY is excited at the prospect of the consortium developing new technologies and their application as part of the Enspirit project”.

David Hirston - Technical Director, Osprey

Conceive, create, commercialise

Objectives

Locomotive engines are significant contributors to air pollution in many cities and ports. Although locomotive engines being produced today must meet relatively modest emission requirements set in 1987, they continue to emit large amounts of nitrogen oxides and particulate matter (PM).

In the ENSPIRIT project, the core research work will focus on the production of a pre-production prototype catalytic device for NO_x reduction over Activated Carbon at ambient temperature. The catalytic device will be integrated into a system of combined devices for the removal of heat, moisture, sulphur oxides, ultrafine particulate matter and Nitrogen oxides.

Companies involved

- Osprey Corporation Limited
- Pera Technologies (Governmental) Ltd
- Fricke Urd Metall Mikrowave Technology GmbH
- Brunel University
- Azienda Speciale SimoHub - Standort Spertmental Per l'Industria
- Ocaton AB
- The UK Intelligent Systems Research Institute Limited (A Pera Technology company)

Funding

Seventh Framework Programme (FP7)

Enspirit

With Pera Technology central to the programme, the Enspirit project will also create an optimised microwave irradiation technique to enable a method and apparatus for optimised desorption of contaminants from carbon catalysts with minimal damage to the internal porous structure.

By 2030, the EPA (Environment Protection Agency) estimate that trains will be responsible for around 30% of all particulate pollution in the air from the transportation sector. The danger lies in the fact that diesel locomotives produce nitrogen oxides, which cause a wide variety of health and environmental impacts.

Harmful nitrogen oxides
Nitrogen oxides contribute to ground level ozone, which damages lung tissue and reduces lung function in children, and proves harmful to people with lung diseases and those who work or exercise outside.

Ozone can also be transported by wind and affect the health of people far from original sources. Ozone can even damage vegetation and reduce crop yields.

Emissions abatement
The Enspirit project aims to reduce this level of pollution by developing an innovative diesel emissions abatement system. This will also enable locomotive operators to meet new emissions regulations covering both new and older remanufactured locomotives, such as the 2008 Clean Air Non-road Diesel Rule which requires the allowable levels of sulphur in fuel used in locomotives to be decreased by 99%.

Nitrogen oxide removal system
To achieve these objectives, the FP7 funded Enspirit project is developing an advanced oxidative catalytic technique to enable the development of a nitrogen oxide removal system to work at ambient temperature.

With Pera Technology central to the programme, the Enspirit project will also create an optimised microwave irradiation technique to enable a method and apparatus for optimised desorption of contaminants from carbon catalysts with minimal damage to the internal porous structure.

Combined devices
Ultimately, the catalytic device will be integrated into a system of combined devices for the removal of heat, moisture, sulphur oxides, ultrafine particulate matter and nitrogen oxides. This will provide a complete, cost-effective, energy-efficient way of meeting the EPA's new tier 4 emission rules for new and older diesel trains beginning in 2015.

To find out more...
If you'd like to know more about this project, please email enquiries@peratechnology.com or call 01664 501501 www.peratechnology.com/leap

Roll-up Banner for Exhibitions

A large (2.0m x 0.8m) printed roll-up banner was produced at Month M5 for display purposes at exhibitions, conferences etc



Handout

Enspirit handout:



Enspirit A novel emissions abatement system focused on Multi-Pollutant Emissions Control from diesel trains

Diesel locomotive engines are a major contributor to air pollution in cities and ports around the world. By 2030, the EPA (Environment Protection Agency) estimate that trains will be responsible for around 30% of all particulate pollution in the air from the transportation sector. The danger lies in the fact that diesel locomotives produce nitrogen oxides, which cause a wide variety of health and environmental impacts.

The Enspirit ('Eliminating NO_x, SO_x & Particulate in Rail Transportation') project aims to reduce the level of pollution by developing an innovative diesel emissions abatement system. that will meet stringent new particle matter regulations. This will also enable locomotive operators to meet new emissions regulations covering both new and older remanufactured locomotives, such as the 2008 Clean Air Non-road Diesel Rule which requires the allowable levels of sulphur in fuel used in locomotives to be decreased by 99%

This will be achieved through the creation of:

- Advanced low temperature oxidative NO_x catalysis
- Integrated NO_x, SO_x & PM removal system
- Enhanced microwave catalyst regeneration techniques
- Optimised apparatus for contaminant removal & bi-product generation

Enspirit is a 24 month European collaborative project, consisting of 4 SMES and 3 research organisations from across Europe, funded from the European Union's Seventh Framework Programme.

To find out more about the Enspirit project contact: Mick Parmar, Project Manager, Mick.parmar@uk-isri.org

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Conference Attendance

Project partners attended the Clean Energy Private Equity & Venture Capital Conference (CEPEC 2014) on 28 May 2014 in Central London.

David Mission of OSPREY and Howard Davis from Fluid Technologies attended the Clean Energy Private Equity & Venture Capital Conference and presented ENSPIRIT to top movers and shakers in resource efficiency and clean energy to make them aware of the project and for future potential investment once the project it is at the right stage of exploitation.

A video of our partner's feed back to the organisers can be viewed from the project web site and from the following link.

http://www.youtube.com/watch?v=6yHDUffmdYw&feature=player_embedded