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OXYGEN PRODUCTION ON THE CRT NARROWBOAT IN RIVER

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In the River project oxygen production on the CRT narrowboat will be achieved using compressed oxygen cylinders.

The cylinders are pressurised to 230 bar with industrial oxygen at a purity of 99.5 %

Two W type oxygen cylinders each with a weight of 85 kg and a capacity of 11.09 m3 of oxygen will supply the engine /generator unit.

The two oxygen bottles will be fitted into a safety lifting cage and fixed at min. of two points to ensure operational safety.

The oxygen bottles and safety cage are shown in Fig 1 below.

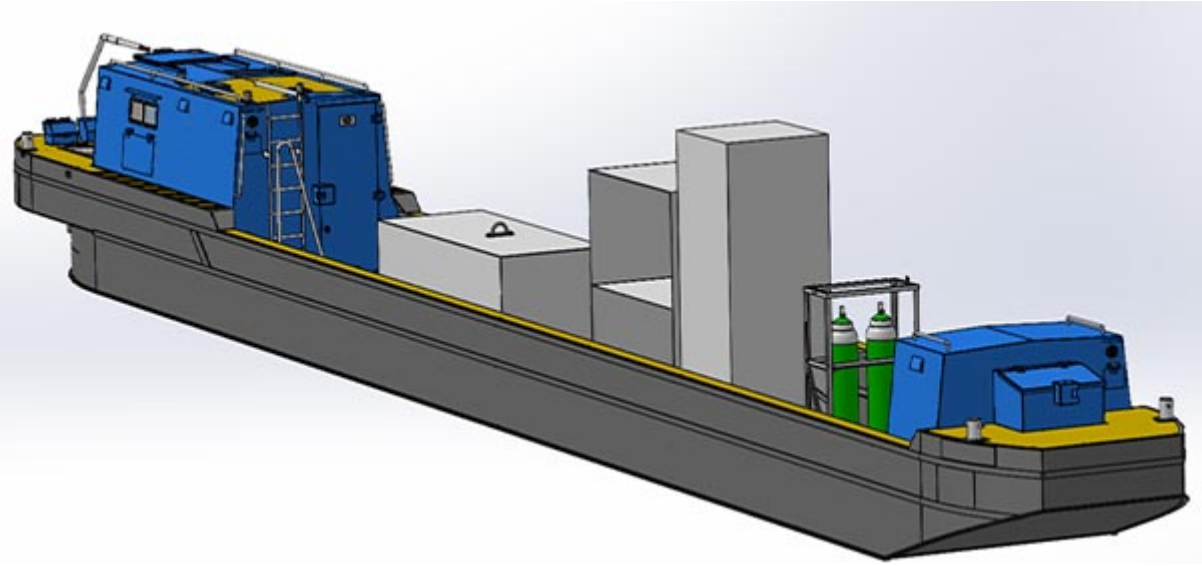

Figure 1. CRT Narrowboat schematic showing oxygen cylinders along with oxyfuel and CO2 storage system

A BOC 8500 inline pressure regulator with a pressure range of 0-10bar and electronic flow control valve will provide an oxygen flow rate of 0-38 kg/h oxygen for oxyfuel combustion.

The energy required to produce 1 kg of oxygen is approximately 1 kWh when produced on a an industrial scale. This information is based on data provided by Oxywise oxygen generator manufacturer.

Oxygen is mixed after the electronic flow control valve with exhaust gas regeneration CO2 and then fed via an inlet mixing chamber into the engine for oxyfuel combustion.

The ratio of oxygen and carbon dioxide at the engine /generator intake will be controlled electronically by the software from ECE.

The oxygen supply system on the narrowboat has a capacity to supply oxygen for about one hour of oxyfuel combustion depending on the load and speed of the Narrowboat.

Refuelling of oxygen cylinders will be carried out using a mobile crane located on the quayside

Oxygen cylinders and lifting cage will be at the ready to ensure the refuelling can be carried out as quick as possible.

Oxygen can also be produced on the boat using a series of compressors, seperators and air driers.However in order to save weight and space on the Narrowboat it has been decided to use compressed oxygen cylinders

TECHNICAL AND STEERING COMMITTEE MEETINGS IN LUXEMBURG

The technical and the steering committee have been held in December 12th in Luxemburg.

During the meetings, these subjects were discussed :
1. Installation of Testbed
2. Control of oxyfuel combustion engine)
3. Oxygen equipment for the narrowboat
4. Narrowboat preparation with required equipment
5. Business case report & layout and factsheets
6. Outputs expected
7. Questionnaire
8. Technical discussion and solution

FOCUS ON SME: CLEANCARB

Cleancarb supplies state of the art energy storage systems for all types of applications including automotive, rail, construction, solar systems, industrial and marine energy storage systems, electric scooters and e-bikes, etc.

Our systems use Lithium based battery and battery cell technologies. Furthermore, we also provide energy storage systems based on Ultracapacitor technologies using standard and custom made systems.

Main Applications : High-voltage battery pack for heavy duty vehicles, Battery for solar powered vehicles in industry, Batteries for electric vehicles, Battery design for Superbus project at TU delft, Solar car batteries, oxygen, etc..

Cleancarb is a Luxembourg SME operating since 2010.

In the River project Cleancarb is working on oxygen supply for the oxyfuel combustion system

Apart from this Cleancarb’s main activites are in the area of energy storage, renewable and alternative energies.

Cleancarb works with clients all over Europe , North America and the Middle East.

Cleancarb has participated in 9 EU funded research and development projects including River and also works with industrial partners to provide tailor made solutionsInland navigations.