RAZEM®
A Recovering And Zero Emission Modular System

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In conformity with the will to reduce ODS emissions and the necessity to protect biodiversity and public health by effective quarantine measures, DESCLEAN BELGIUM developed a modular system, RAZEM, allowing recovering and eventually recycling of methyl bromide used in gas tight volumes as prepared sea going containers.

Goal:

- Reduce to a maximum the emissions of methyl bromide, before, during and after QPS treatments.
- Reduce the residual emissions to reach maximum protection of the end users of the treated goods.
- Reduce the necessity for fresh methyl bromide top-up.
- Reduce transportation and storage of methyl bromide as a liquid gas.
- Make QPS fumigations safe for the operators, the environment or an occasional passing-by
- Reduce to a minimum the quantity of waste material.
- Reduce the necessity for waste treatment, especially incineration at high temperatures of residual waste and reduce extra production of global warming gasses.
- Avoid extra production of global warming gasses as proposed by heating up cargo and / or loaded consignments.
- Reducing the energy consumption by reducing waste transportation and / or incineration.
- By eventually reusing all basic products, reduce transportation and production of those components, making QPS methyl bromide and process linked material renewable products.
- All combined in one mobile, compact, safe and easy to handle unit on all grounds.

RAZEM features:

- RAZEM is equipped with DDC couplings, which comply with the highest chemical standards, and remain gas tight as well when connecting as disconnecting RAZEM components.
- RAZEM uses small interchangeable cartridges filled with an adsorbing support to capture methyl bromide. The cartridges are light weight (maximum 16 kg) and can easily be handled by one person.
- The RAZEM cartridges are interchangeable allowing eventually endless recovering steps to reach a zero level of methyl bromide.
- The connection with sea going containers to be fumigated is simple and safe, foreseen of DDC couplings and automatically closing connections for measuring equipment.

- Simple 1 x 1 cm cell rubber strings can easily be placed between existing rubber door seals to get a completely gas tight container.
- RAZEM technology permits to mix the heated gas in the container and eventually increase the emission of residual (adsorbed) gas from the cargo which can further been recaptured.
- The pressure and volumetric range of the installation allows a high recapturing / adsorption material, ratio.
- The gas treatment system allows the reuse of recaptured methyl bromide.
- Heating up the loaded cartridge only, allows maximum reuse of the captured gas.
- Due to the restrictive and direct application of energy on methyl bromide, the fumigation of QPS containers with methyl bromide using RAZEM, has the smallest power consumption of the available recapturing systems.
- RAZEM is applicable on phosphine gas and all other industrial gasses that can be captured by any captive support that can be used by the RAZEM cartridge system.

Legal context:

- RAZEM units have been tested by the independent Flemish Research Center VITO, a reference lab for air quality and gas measurements in Europe with a worldwide reputation in this matter.
  The test program protocol has been written by a team of specialists appointed by the Belgian Federal Public Service Environment and the EU Environment (Drs Smith and Bell, Prof. Coosemans and Steurbaut, UK, New-Zealand and Belgium).
- The RAZEM technology and any available recovering technology is mandatory in Belgium since July 1 2007.
- Recovering is mandatory in Hamburg (Germany) from September 1 2008.
- QPS Methyl bromide is currently under re-registration in Annex I of EC 91/414 thanks to the safe working of RAZEM for operators and the environment.

Presentation:

The presentation tends to show the used technology and its features, as well as the ease and safe functioning of a RAZEM unit.
It will be possible to consult research reports if .