Ships exhaust gas separation

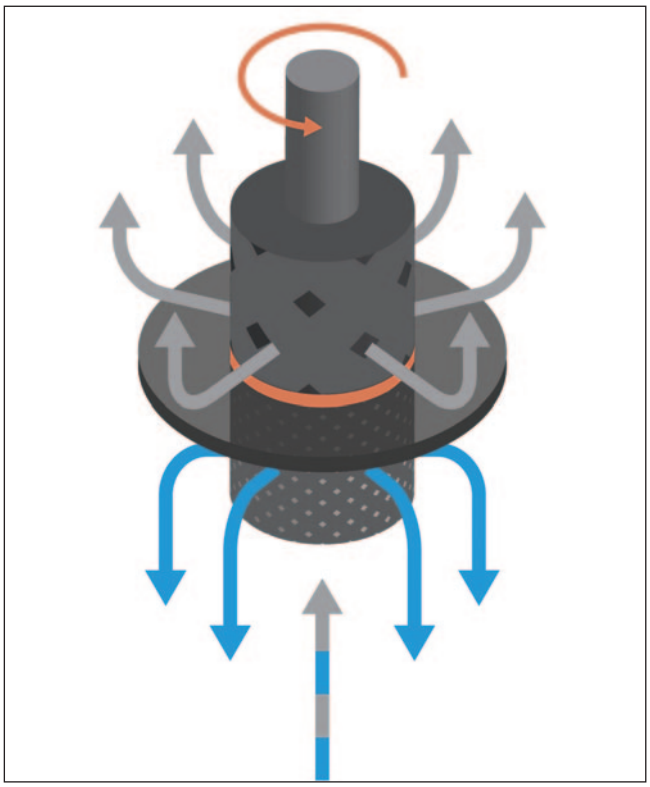
A new take on gas/liquid separation doubles the efficiency of ships exhaust scrubbing systems and reduces size by 50%

The InnSep Lynx separation system has been nominated as one of the six most influential technology developments of 2015. The new technology platform is a fundamental retake of conventional separation where gravity is the limiting factor. Conventional static gas and liquid separating systems are tailored to each application in order to handle varying droplet sizes and distributions, pressure and flow variations, and various types of liquids and gases. This is achieved by stacking and combines various separation designs such as vane packs, wire meshes and cyclones into one system. Common for all of these combined systems is the dependency on gravity to remove the accumulated liquids in the filters and surfaces that capture droplets. When the gas and liquid flow deviate from the designed values, conventional separators let liquids pass through (carry-over) and can flood. When a conventional separator is flooded, it loses all efficiency and requires a full shutdown.

The Lynx separator takes gravity out of the equation and replaces it with centrifugal force. By rotating the surface that captures the droplets, centrifugal forces replace gravity and drain the mesh, increasing the volume and efficiency of droplet capture. Droplets of all sizes are captured in one single separation stage, avoiding flooding in the conventional sense. This allows the process to handle a larger range of operational conditions, especially larger and faster flows of gas and liquid through the separator.

Rotational separation is a new technology platform that overcomes challenges associated with conventional separation. Application areas range from protection of dry gas seals for compressors, weightless separation for micro-gravity environments and major gas and liquid separation in the oil industry.

The year of 2016 marks the start of a major Joint Industry Project (JIP) pioneered by InnSep in collaboration with NTNU, SINTEF, MARINTEK and major industry partners in Europe. The JIP will work together with partners providing conventional ship exhaust cleaning systems to pioneer compact and efficient separation for removing both liquid and solid particles from the exhaust. A secondary milestone will investigate better droplet distribution for increased interaction between particles and liquids. Participation and access to project results and licensing of patented solutions is open for potential partners and customers.



Schematic of InnSep separation process. Exhaust gas with particles and liquid enter the rotating mesh from below, allowing only clean gas to pass through

Project results will be tailored for retrofit installations to increase efficiency of existing exhaust cleaning systems. For new and planned installations, complete design alternatives will be provided for the best possible size and efficiency ratios.

Sondre K Jacobsen
CEO
InnSep AS
+47 (0)9 804 3205
sondre@innsep.com
http://www.innsep.com/