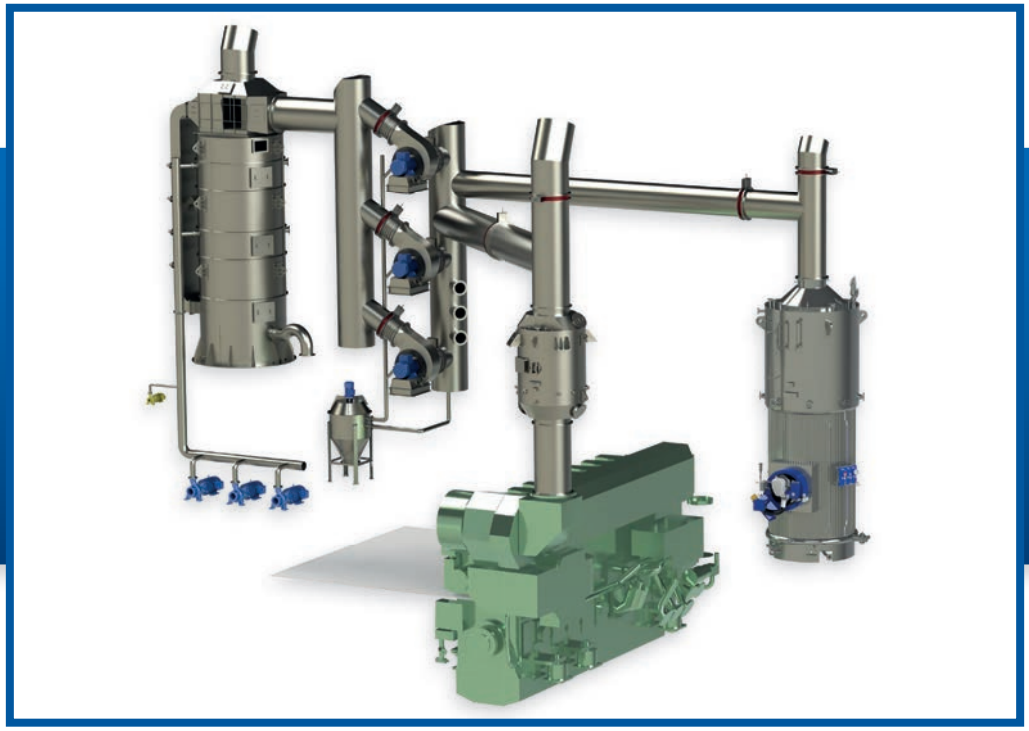
TECHNICAL DATA SHEET



Exhaust Gas Scrubber LMB-EGS

This is SAACKE's unique system for the removal of SO_x and solid particles from exhaust gases emitted by diesel engine and boiler operations. LMB-EGS features dry separation of soot prior to SO_x removal with a specially designed ventilator/separator, known as VentSep. By reduction of particulate matter (PM) in the early stage of exhaust gas purification all successive components benefit from significantly lowered PM contamination. This results in compact exhaust gas boiler designs with minimal maintenance requirements as well as the possibility to omit wash water treatment in open loop SO_x reduction. Overall system removal rates of up to 99 % regarding SO_x and up to 97 % of the solid particles can be realized with the LMB-EGS.

Key technical data: LMB-EGS

Scrubbing capacity	up to 16 MW
SO_x removal rate	99 %
Soot removal rate	97 %

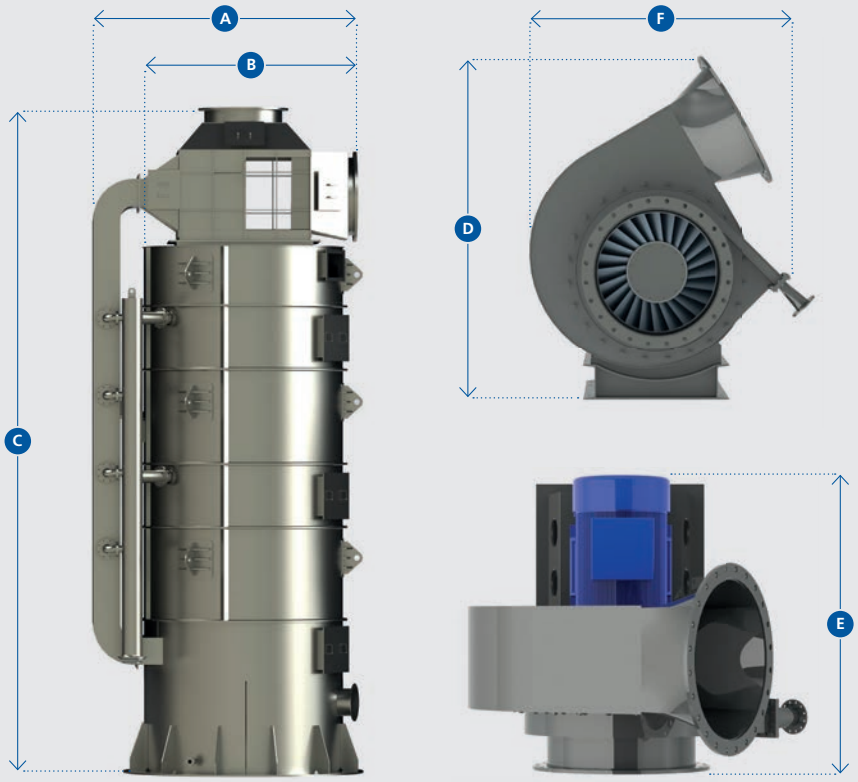
SOOT REMOVAL AND ENERGY-EFFICIENT DESIGN

By placing the VentSeps in front of the exhaust gas boilers, these are protected from any fouling and the risk of fire from soot is reduced. Soot blowers are now no longer required and the period between necessary overhauls is significantly extended. After the exhaust gas boiler, clean gases – no longer containing soot but still with sulfur content – enter the heat exchanger which is placed on the top of the scrubber. The heat exchanger is cross-designed; exhaust gases that enter the heat exchanger are cooled down by the cold exhaust emitting from the scrubber. At the same time, the exhaust is being heated up with the entering gases, before passing through to the funnel – eliminating the vapour plume. This energy-saving design is the second main characteristic of the LMB-EGS scrubber process. For SO_x removal the gases are guided via the channel that connects the heat exchanger on the top, and scrubber at the bottom. This channel is designed with wash water nozzles, which are used to lower the temperature of the gases as well as to act as first stage of scrubbing, i.e. removing SO_x. From the bottom of the scrubber, the exhaust gases flow through the two-stage packed bed reactor, in which remaining SO_x is being removed. The system is offered in either open or hybrid loop configuration.

SAACKE GmbH | Head Office in Bremen: Südweststrasse 13 | 28237 Bremen | Germany | Tel.: +49 421 6495 0 | Fax: +49 421 6495 5224
International contact details: www.saacke.com | info@saacke.com
0-0750-0083-02

PRODUCT INFORMATION

- Removal of up to 99 % SO_X occurring in exhaust gases meeting the IMO sulfur emission limits
- 97 % removal of soot particles in exhaust gas
- Dry separation of soot and other harmful matters with a specially designed ventilator/separator
- More compact design of exhaust gas boilers possible due to reduced exposure of soot
- Soot blowers are not required thanks to SAACKE VentSeps
- Integrated energy-efficient design



SO_x SCRUBBER TOWER VENTSEP

Scrubber

VentSep

Power	C	B	A	Dry weight	Required number of VentSeps	F	E	D
MW	mm	mm	mm	t		mm	mm	mm
2	5000	1700	2000	12	1	1225	1194	1070
4	5500	2100	2450	14	2	1225	1194	1070
6	6500	2600	3200	15	2	1420	1410	1600
8	7000	3000	3900	16	2	1725	1720	1870
10	7600	3300	4200	17,5	2	1987	1970	2120
12	8000	3600	4700	19	3	1725	1720	1870
16	9500	4000	5500	21	3	1987	1970	2120

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