

## Operation of BUFD inert gas generator installations on LNG carriers

We would like to inform you about an occurrence of vacuum (under-pressure) on the combustion chamber of a SMIT GAST™ BUFD inert gas generator (IGG) installation on an LNG carrier due to incorrect installation and use which resulted in severe damage to the scrubber tower. This service letter contains a check list to help you verify the condition of your BUFD IGG installation and a quick and easy overview of actions needed.

### An incident with a BUFD inert gas generator on an LNG carrier

We would like to relate an incident of vacuum in the combustion chamber of a SMIT GAST™ BUFD inert gas generator (IGG) installation on a Liquid Natural Gas carrier which caused severe damage to the scrubber tower.

*The incident was directly related to the use of ballast water pumps instead of using a dedicated cooling water (CW) pump for cooling water supply to the IGG.*

Between the ballast pumps and the IGG a manually operated valve without interlock was installed.

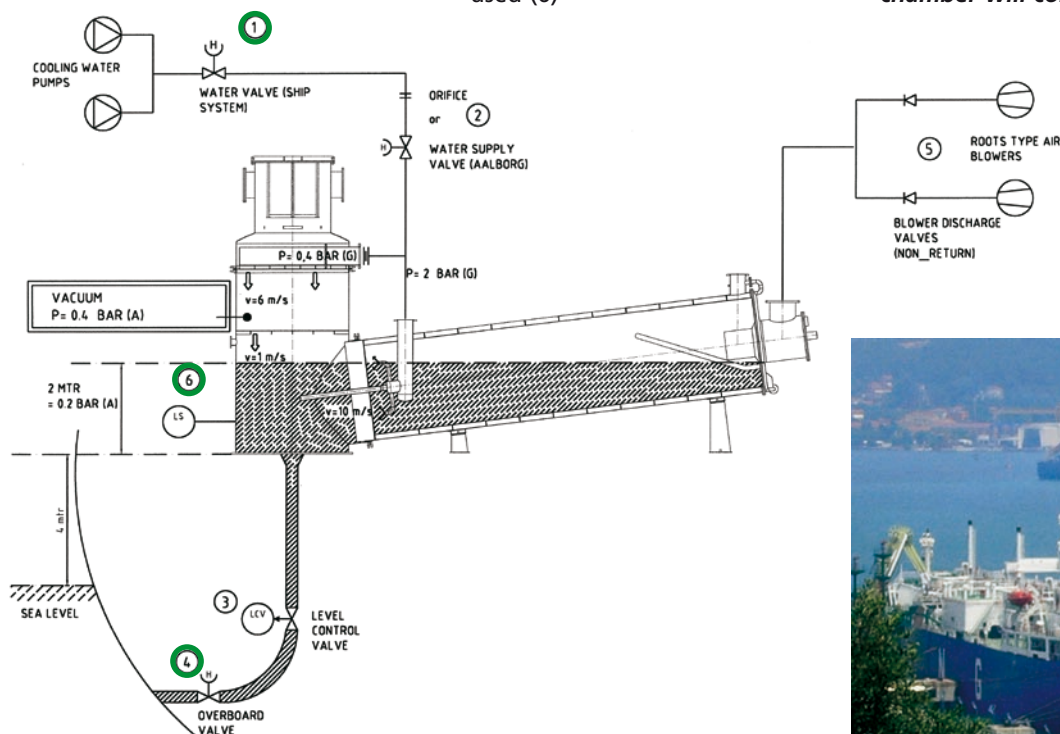
As with most accidents, this incident was a combination of factors:

1. The control panel of the IGG was switched off
2. The manual operated valve between the ballast pumps and IGG was left open (1)
3. The extra high level switch contact was not connected to the IAS (Integrated Alarm System) or used (6)

4. Overboard valve (4) may have been closed.

As a result, the combustion chamber was unintentionally filled with seawater when the ballast pumps were used while the IGG was out of operation.

***Flooding the scrubber can result in under pressure and subsequently damage of the scrubber tower when suddenly discharging the water. If the flooding continues for some time, corrosion of the combustion chamber will commence.***





## The BUFD check list

After thorough investigation of the damage to the scrubber tower onboard the LNG carrier, Aalborg Industries prepared a Check List that will help you verify the condition of your SMIT GAS™ BUFD installation and, whenever needed, provide you with a quick and easy overview of actions needed.

We recommend that you use the Check List to make sure your installation is built, connected and maintained according to Aalborg Industries' design and safety regulations.

If you have questions, please do not hesitate to contact our Service Department. When doing so, please attach the filled in Check List.

## Prevention against vacuum or corrosion

- Make sure that the IGG control panel is always powered on.
- Check if the overboard valve (4) is fully open when using the IGG.
- Check if the two high level alarms are used (one to IGG panel and one to IAS (Integrated Alarm System)).
- Cooling water may only be supplied to the IGG when the IGG is operated. The best way to achieve this is to install an automatic valve (or manual valve with interlock) in the cooling water supply line (2B). This automatic valve closes when a Hi water level is detected in the IGG or when the IGG is not in operation.

### Please note:

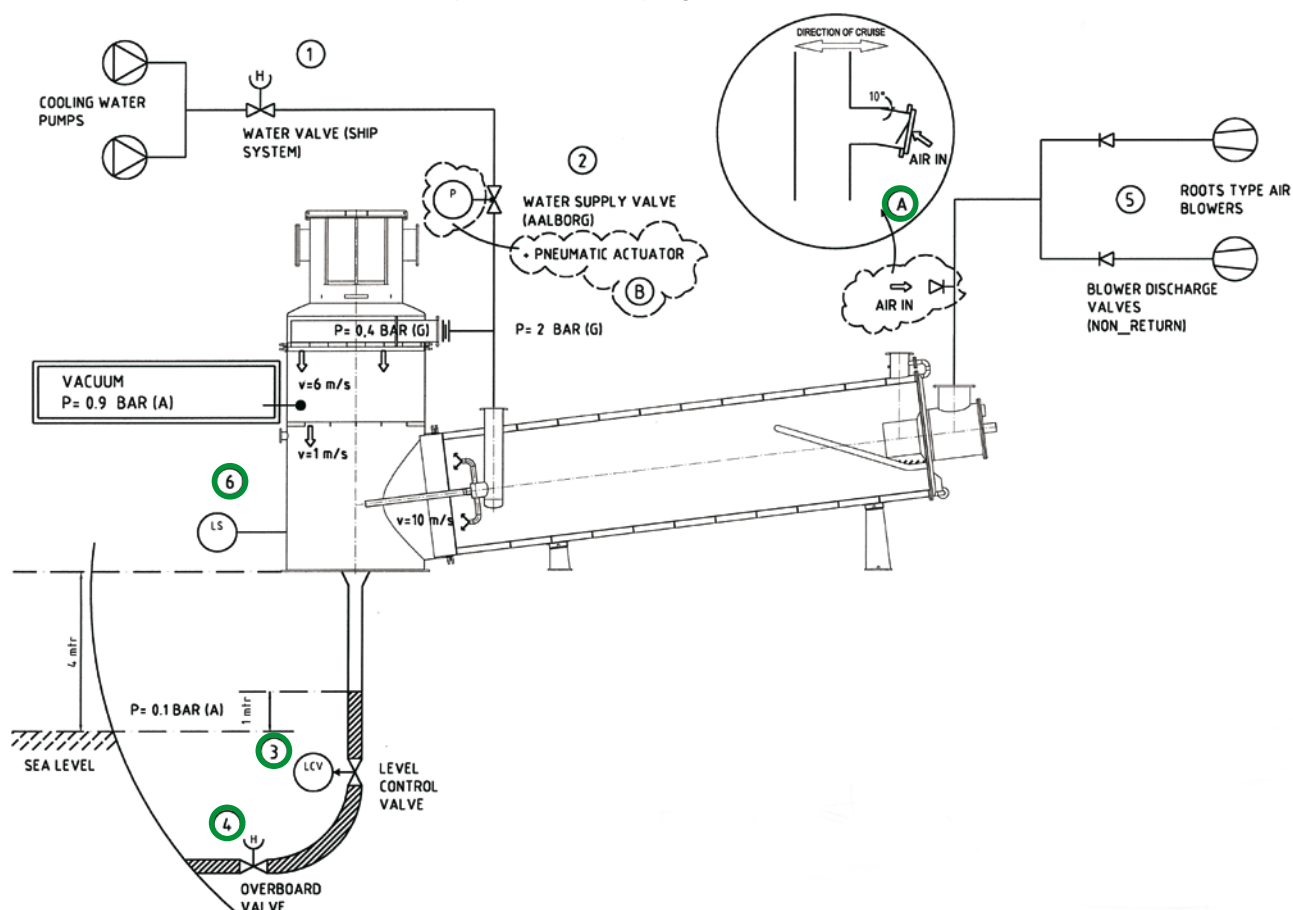
*The wiring of the safety circuit towards the combined pumps is not provided by Aalborg Industries. We only provide the contacts for safe operation and stop signals!*

## Further recommendation

The earlier mentioned recommendations ensure safe operation of the installation. However, in order to prevent a vacuum situation under all circumstances from occurring, a Vacuum Relief Valve can be installed. Aalborg Industries recommends to install this additional safety. The valve acts like a mechanical, low pressure relief valve.

When choosing this option, the Vacuum Relief Valve must be installed as shown in the drawing (pos. A).

The valve must be mounted at an angle because when angled, the weight of the valve will keep the valve closed during normal operation. This valve is fairly easy to install and a low cost item.



# Check List

SMIT GAS™ BUFD inert gas generator on LNG carrier

Please circle your Yes or No result clearly.

1. IGG main power DOWN and pump selector switch in IGG mode (if switch applicable)	Possible to start cooling water pump on IGG panel?	Possible to start cooling pump locally on pump panel?
Emergency stop activated on IGG	Y / N	Y / N
High water level switch activated	Y / N	Y / N

2. IGG main power UP and pump selector switch in IGG mode (if switch applicable)	Possible to start cooling water pump on IGG panel?	Possible to start cooling pump locally on pump panel?
Emergency stop activated on IGG	Y / N	Y / N
Level control valve closed (3)	Y / N	Y / N
Scrubber overboard valve closed (4)	Y / N	Y / N
High water level switch activated (6)	Y / N	Y / N
Jacket water pressure high	Y / N	Y / N

3. IGG main power UP and pump selector switch in ballast mode (if switch applicable)	Possible to start cooling water pump on IGG panel?	Possible to start cooling pump locally on pump panel?
Emergency stop activated on IGG	Y / N	Y / N
Level control valve closed (3)	Y / N	Y / N
Scrubber overboard valve closed (4)	Y / N	Y / N
High water level switch activated (6)	Y / N	Y / N
Jacket water pressure high	Y / N	Y / N

Are ballast pumps used for IGG cooling? Y / N

Automatic valve used between cooling water pumps and IGG? Y\*/ N

\*) If Yes, please specify type:

Is Hi level alarm connected to IAS? Y / N

Installation running hours:

Ship's name:

IMO number (or yard + hull No.)

Company:

Contact person:

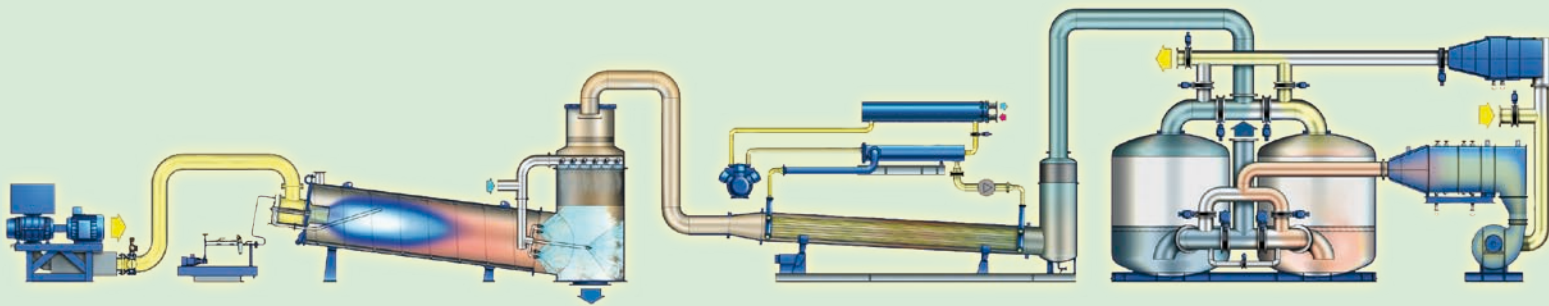
E-mail:

Telephone:

If one or more from the above checks 1., 2. or 3. is answered with "Yes", further action may be required.

In such an event, please return the completed form by e-mail to our After Sales department:

inertgas.aftersales@aalborg-industries.com



#### Contact us

If you have **technical questions** or require support, please contact our Service Department:  
 inertgas.aftersales@  
 aalborg-industries.com

If you wish to order **spare parts** or have questions concerning spare parts and consumables, please contact our Spare Parts Department:  
 inertgas.parts@ aalborg-industries.com

When contacting Aalborg Industries, please provide us with the full Factory Reference of your equipment, the ship's name and your contact details in order for us to give you optimal service.



The "Aalborg Proactive" service letter is published by Aalborg Industries' global business centre for Inert Gas Systems and deals with operation and maintenance of inert gas generators and inert gas systems. Ideas and suggestions for topics are most welcome.

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