

INTRODUCTION TO THE EXHAUST GAS CLEANING SYSTEMS - SCRUBBERS

2-Day Training Course

1. OVERALL AIM

A Training Course designed for Engineer Officers who are to be recruited on ships fitted with a Exhaust gas cleaning systems . The focus will be on PureSox (Alfa Laval) and PaSox (Panasia) . The overall aim of the course is to increase the awareness of the participants to the exhaust gas cleaning systems and key components.



2. LEARNING OBJECTIVES

To help the participating Officers understand:

- the combination of jet and absorber of the exhaust gas cleaning .
- the importance of exhaust gas analyzer , inlet water and effluent water analyzer.
- the design limitations of these systems and their key components installed in the engine room.

The Training Course will take place at the ATHINA Maritime Learning and Development Center.

3. SCHEDULE

1 st DAY	
Time	Topics
09:00 – 09:30	An overview of the available EGCS (Scrubbers) Technologies <ul style="list-style-type: none"> - Types of EGCS installed on Minerva Marine ships
09:30 – 10:00	Legal Framework <ul style="list-style-type: none"> - IMO Legal Framework for EGCS waste / Air Emissions - Emission limits
10:00 – 11:00	Discharge Water (Alfa Laval PureSox) <ul style="list-style-type: none"> - Turbidity - PAH - pH - Discharge Water Requirements - Particulate Matter (PM)
11:00 – 11:20	<i>Coffee Break</i>
11:20 – 12:00	Legislation for EGCS Breakdown <ul style="list-style-type: none"> - Short Term Exceedance - Interim Indication of ongoing Compliance - Notifications to Relevant Authorities
12:00 – 13:00	Main Components of an Open Loop System (Alfa Laval PureSox) <ul style="list-style-type: none"> - Scrubber (Jet , Absorber , Demister and Sprayers) - Damper Valves - Sealing air fans - Feed water pumps - Degassing and discharge arrangements
13:00 – 13:50	<i>Lunch Break</i>
13:50 – 15:00	Monitoring equipment (Alfa Laval PureSox) <ul style="list-style-type: none"> - Exhaust Gas Analysis unit and Calibration - Inlet Water Analyzer

	<ul style="list-style-type: none"> - Effluent Water Analyzer - pH sensor Calibration
15:00 – 17:00	<p>HMI (Operation Panels)</p> <ul style="list-style-type: none"> - Normal Mode - By-Pass Mode - Maneuvering Mode

2nd DAY	
Time	Topics
09:00 – 10:00	<p>An overview of the available EGCS (Panasia PaSOx) Technologies</p> <ul style="list-style-type: none"> - PaSOx Principles - Types of PaSOX EGCS Scrubbers
10:00– 11:00	<p>HMI (Operation Panels - Panasia PaSOx)</p> <ul style="list-style-type: none"> - Auto MODE - Manual MODE - Turning on the EGC system - Starting the Scrubber Unit - Warming-up Process
11:00 – 11:20	<i>Coffee Break</i>
11:20 – 12:00	<p>Main Components of an Open Loop System (PANASIA PaSOx)</p> <ul style="list-style-type: none"> - Scrubber (Jet , Absorber , Demister and Sprayers) - Damper Valves - Sealing air fans - Feed water pumps - Degassing and discharge arrangements
12:00 – 13:00	<p>Discharge Water (Panasia PaSOx)</p> <ul style="list-style-type: none"> - Turbidity - PAH - pH - Discharge Water Requirments

13:00 – 13:50	<i>Lunch Break</i>
13:50 – 15:30	Monitoring equipment (PANASIA PaSOx) <ul style="list-style-type: none">- Exhaust Gas Analysis unit and Calibration- Inlet Water Analyzer- Effluent Water Analyzer- pH sensor Calibration