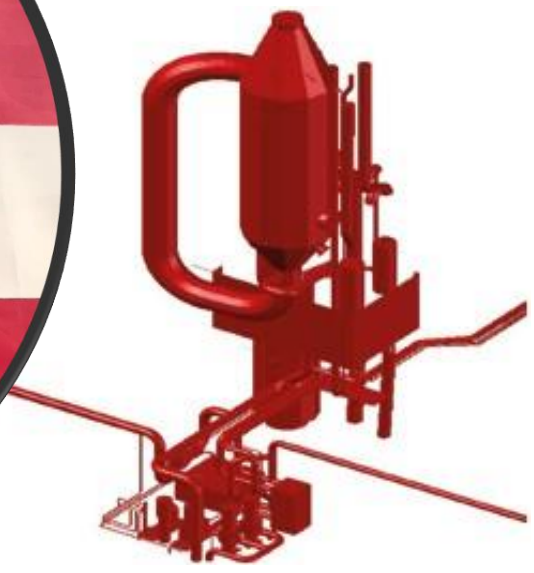
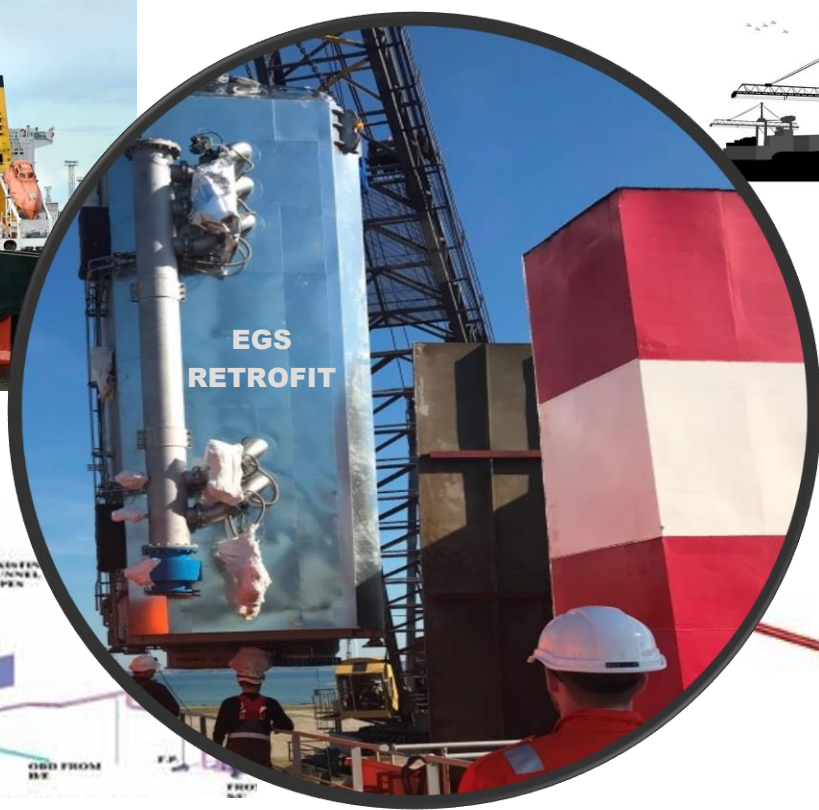


Specialist Outsourced Services(SOS)



EXHAUST GAS SCRUBBER RETROFIT

ONE-STOP COMPREHENSIVE SOLUTION

EGS SCRUBBER



FAROHAR ENTERPRIZES PRIVATE LTD

HEADQUARTERS:

Plot No. 10, Sector 10, Vashi, Navi Mumbai
 Unit No. 10, Sector 10, Vashi, Navi Mumbai
 7th Floor, Sector 10, Vashi, Navi Mumbai

WORKSITE:

T241, Tower 10 International Technology Center,
 C.B.D., Belapur, Navi Mumbai – 400614, India
 Mobile: +65 9186 8500 | Tel : +912267120701

Email: karma@faroharltd.com

URL: www.faroharltd.com

Europe, Japan, Africa, Canada, USA, Philippines, Indonesia, Thailand, Hong Kong and others

THE FAROHAR ADVANTAGE

- Over 30 years collective competence & experience in Marine and Oil-Gas Industry
- Specialist outsourced services for oil-gas and marine industry
- Over 750 strong skilled workforce
- Headquartered in Singapore and operation center in India. Global presence in Europe, Japan, Africa, Canada, USA, Philippines, Indonesia, Thailand, Hong Kong and others
- Strategic alliances & joint ventures with leading specialists
- ISO 9001 & ISO 27001 certified. Highest degree of quality assurance and efficiency
- Best value and highest return on investment for clients
- Reasonable fees and no hidden charges
- Robust services contracts and warranties
- End-to-end turnkey execution from Assessment to Plant handover
- Expert Riding Teams and Supervisors
- Enroute Works cuts down Project time-cost by over 25%

OUR ACHIVEMENT & CLIENTS

- 650+ Projects Executed
- 50+ Dry-Dockings Supported
- 200+ Satisfied Customers
- 10k+ Man-days of Incident Free Inspections
- 1.6m+ Engineering Design Hours
- 30k+ Tons of Steel Recycled
- 30+ Countries Touched



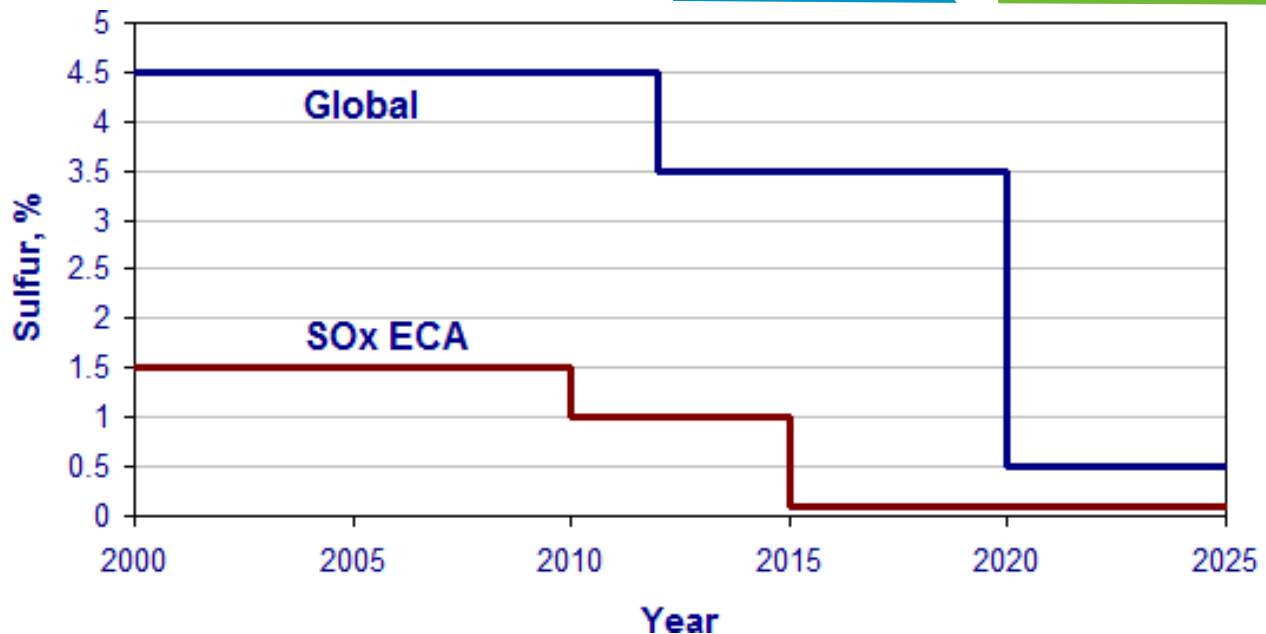
SOx REGULATIONS & COMPLIANCE

STAY AWAY FROM ECA

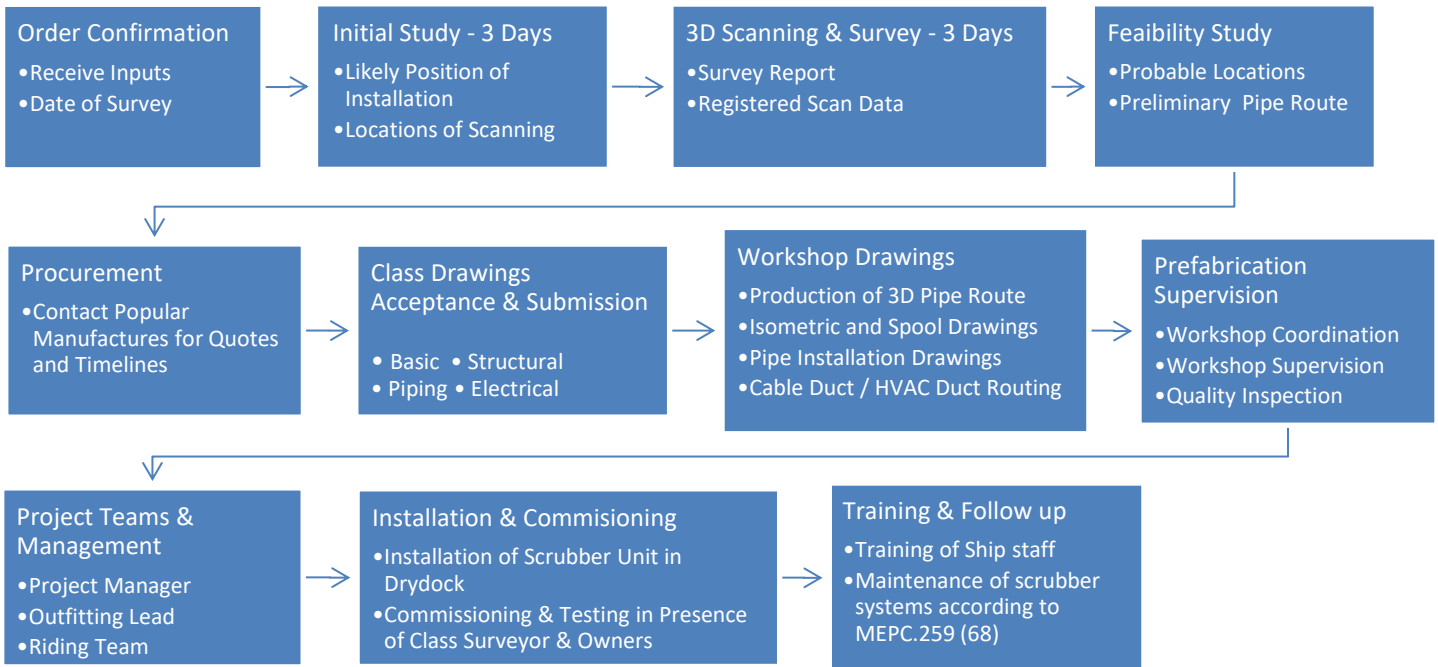
USE LOW SULPHUR

★ INSTALL SCRUBBER

CONVERT TO LNG



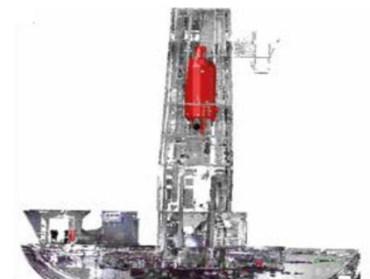
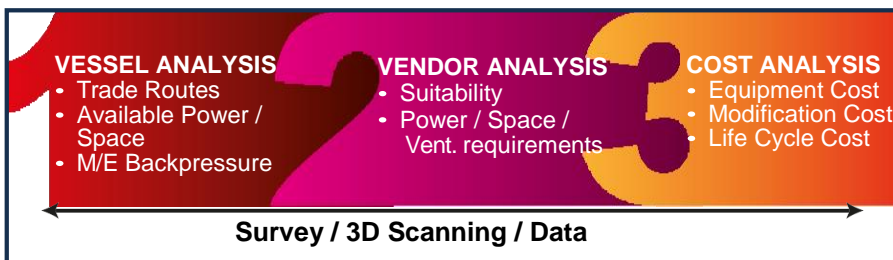
TYPICAL PROJECT STAGES



PROJECT TIMELINE

PROJECT PHASES	TIMELINE IN WEEKS (TOTAL 20)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DESK TOP FEASIBILITY & 3D SCAN	█																			
STUDY		█	█	█	█															
PROCUREMENT						█	█	█	█	█										
CLASS DRAWINGS – ACCEPTANCE & SUBMISSION						█	█	█	█	█										
WORKSHOP DRAWINGS, FABRICATION, CO-ORDINATION & SUPERVISION											█	█	█	█	█	█	█	█	█	█
INSTALLATION- DEPENDENT ON SHIPYARD. TYPICALLY																				
COMMISSIONING & TRAINING																				

1. FEASIBILITY STUDY & 3D SCANNING



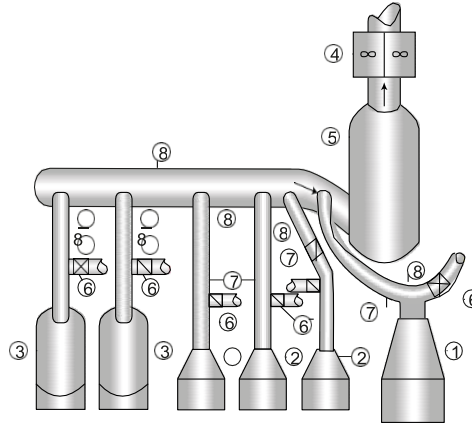
OPTION 1: DESK BASED
Basic
Fast Execution
Non-conclusive on its own

OPTION 2: 3-D Scan (Recommended)
Very Accurate
Complete Spatial Feasibility
Detailed Study for Conclusive Analysis



2. PROCUREMENT: POPULAR MANUFACTURERS - EGS

- WARTSILA
- ALFA LAVAL
- AEC MARITIME
- CLEAN MARINE
- MEP
- JET VENTURIE
- PANASIA
- POT
- YARASCRUBBER



1. Main Engine
2. Auxiliary Engines x 3
3. Boilers
4. Exhaust Fans x 2
5. Integrated Scrubber
6. Bypass Valve
7. Isolation Valve
8. Exhaust Manifold

Designs approved by most Class Societies including: DNV-GL, LR, ABS, BV, IRS, RINA

3. CLASS DRAWINGS – ACCEPTANCE & SUBMISSION

Class Approvals: Approvals for Retrofit Drawings & Coordination for Class Survey onboard

BASIC

- GA, Machinery Layout, LSW Est., Stability Analysis

STRUCTURAL DESIGN

- Foundation of Equipment
- Funnel Modification

PIPING DESIGN

- Effluent Line & Sludge Line
- M/E Exhaust modification

ELECTRICALS

- Load Analysis
- Misc. SLDs

4. WORKSHOP DRAWINGS, CO-ORDINATION & SUPERVISION

**Pre-fab of Pipe Spool
Production Design In 3D
Environment**

- 3D Pipe Route
- Cable Duct / HVAC Duct Routing
- Pipe Installation Drawings
- Isometric And Spool Drawings

Workshop Co-ordination

- Technical Specification For Retrofit
- Job Work Order & Workshop Selection

Supervision

- Quality Inspection (Critical For In-Situ Fabrication)
- Workshop inspection for pre-fab pipes

5. PROJECT TEAM & PROJECT MANAGEMENT

Typical Team Composition for a Scrubber Retrofit Engineering Design project of highly experienced and qualified professionals.

Project Manager
(Naval Architect or
Marine Engineer)

Outfitting Lead
(Mechanical Engineer)
+ 2 Designers

Riding Team
Supervisor + Electrician
+ Fitters + Welders + Helpers

Electrical & Automation Lead
(Electrical Engineer) +
2 Designers

Site Lead
(Marine Engineer)
+ QC Inspectors



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www.faroharLtd.com

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6. INSTALLATION & COMMISSIONING

- CHOICE OR COMBINATION OF YARD-BASED OR ENROUTE WORKS
- FEASIBILITY & RPI STUDIES BY FAROHAR EXPERTS TO DETERMINE BEST CHOICE (OPTIONAL ADDITIONAL SERVICE)
- PROVISION & MANAGEMENT OF EXPERT RIDING TEAMS FOR ENROUTE INSTALLATION
- INTELLIGENT PREPARATORY WORKS TO MINIMIZE INSTALLATION INVESTMENT & TIME
- HIGH QUALITY, HIGH SAFETY STANDARDS, MINIMAL INTERRUPTION OF NORMAL SHIP OPERATIONS
- EFFICIENT CO-ORDINATION WITH MAKERS, OWNERS, MANAGERS, CLASS & SHIPBOARD TEAMS
- ADEQUATE TRIALS, TESTING & COMMISSIONING WORKS LEADING TO CLASS SURVEY & PASSING
- HANDOVER OF OPERATIONAL INSTALLATION

7. TRAINING & SUPPORT

- CLIENT SPECIFIC TRAINING ON OPERATION AND MAINTENANCE OF EGS PLANT & EQUIPMENT
- PREPARATION OF VESSEL SPECIFIC COMPUTER-BASED TRAINING (CBT) APPLICATION
- SHIPBOARD & SHOREBASED TRAINING SESSIONS & MODULES CAN BE PROVIDED
- TECHNICAL & LOGISTICAL POST-INSTALLATION SUPPORT (RETAINER OR ADHOC)
- REMOTE 27/7 SUPPORT DESK SERVICE

8. COMMERCIAL & CONTRACTUAL – GENERAL TERMS

- All Works Undertaken Are Strictly Based on Signed Contracts Drafted using Internationally Accepted Terms and Jurisdiction.
- Pre-Requisites As Defined In The Contract Must Be Properly Provided By Client Including Responsibilities of Both The Parties.
- Rates For Vessel And/or Out-Station Visits By Farohar Personnel Should Be Paid As Per The Contract. Working Hours And Overtime Should Be Paid As Per The Contract. Estimates That Are Subject To Change Are Clearly Indicated.
- Approval Will Be Sought From Client Prior To Undertaking Works With Additional Fees.
- All Payments Are In USD By Bank Transfer To Farohar's Designated Account.
- Practical Change Management Should Be Provided For Within The Contract.
- Strict Mutually Applicable NDA And IP Protection Terms.
- Payment Terms 50% On Signing And Rest Will Be Pro-Rated On Release Of Deliverables.
- GST At 18% Shall Be Charged As Per Applicable Government Levy.
- Fees Do Not Include Class Approval Charges.

Given The Multiple Variables Involved Such As Type Of Vessel, Urgency, Type Of Equipment, Complexity Of Design And Location, Limitations /Delays Not Of Farohar's Doing, Etc. Specific Monetary Quotes Can Only Be Provided Upon Receipt Of Specific Information From Prospective Client. Do Contact Karma@FaroharLtd.Com With Your Requirements.

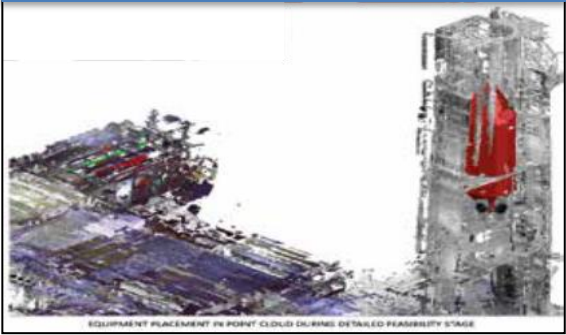
9. RELATED SERVICES FOR MARINE & OIL-GAS SECTORS

- BALLAST WATER TREATMENT SYSTEM RETROFIT TURNKEY PROJECT
- SHELL WORKS & MODIFICATIONS: DESIGN, ENGINEERING, FABRICATION, ONBOARD WORKS & FOLLOW UPS
- VESSEL VALUATION SERVICES
- VESSEL PERFORMANCE DATA MONITORING
- DIGITIZATION & E-LIBRARY WORKS FOR VESSEL/OFFSHORE ESTABLISHMENTS
- MARINE ERP SYSTEMS WORKS-SELECTION, IMPLEMENTATION, OPTIMIZATION, AUDITS, SUPPORT
- DATA POPULATION & DATA COLLECTION
- DATA MIGRATION & CONVERSION
- CREATION OF E-PLANS & DRAWINGS
- SHIP DESIGN & MODIFICATIONS
- TURNKEY PROJECT IMPLEMENTATION FOR PORTS, JETTYS, STORAGE FACILITIES, ETC.

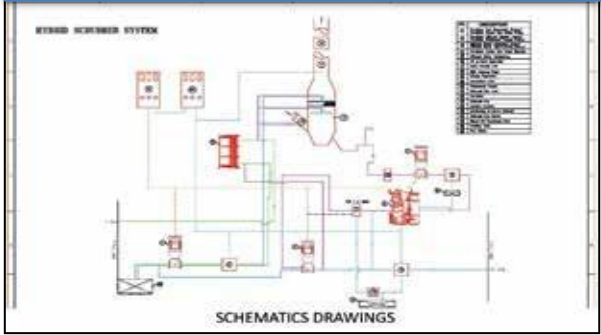


10. SAMPLES FOR EGS

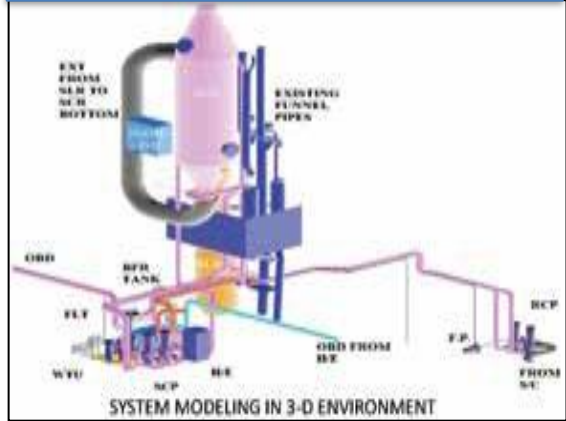
Equipment Placement in Point Cloud



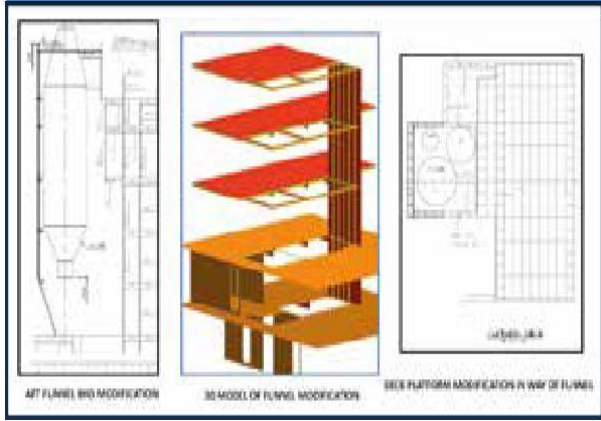
Schematics Drawings



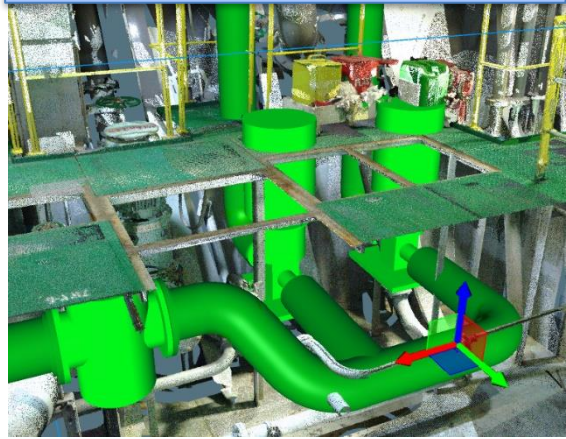
System Modeling in 3-D Environment



Schematics Drawings



System Modeling in 3-D Environment



3D Scanning of Seachest Area – EGS-BWTS

