



Advanced Maritime Emissions Control System (AMECS®)

Advantages:

- No ship modification required
- Substantial Reduction of Pollutants and Green House Gases
 - Removal percentages of sulfur dioxide (SO_x), particulate matter (PM), oxides of nitrogen NO_x all above 95%, depending on fuel type
 - Over 60% removal of Hydrocarbons
- Can capture and treat exhaust emissions while ships are berthed or at anchorage.
- Provides a Cost-Effective solution



Test Results

- Partnered with CARB, US-EPA, Placer APCD, SCAQMD, Sacramento Metro AQMD, Roseville, UPR and obtained successful testing of the AMECS/ALECS system
- Test Results on Union Pacific locomotives at Roseville, CA. in Aug.-Sept. 2006 :-
Reduction: **97.8%** NO_x; **97.3%** SO_x; **92.1%** PM; **62.7%** THC; feeding 0.05% Sulfur Diesel
- Cost Effectiveness
 - \$12,000/ton pollutants reduced - 10 yrs
 - \$8,900/ton pollutants reduced - 20 yrs



Steps Taken

- Demo. And Test Run completed
- Gained Support from Terminal Operator
- Completed First AMECS-98% Constructed
- Obtained Support from Regulators-Feb.07
- CEQA permit approved; POLB
- SCAQMD permit to construct approved



Action Plan

- Develop Investment Support
- Local permits submitted for approval
- Operational at Berth G212-POLB; Spring 2007



Options for AMECS Service

- 10 year lease of AMECS systems
- Customer purchases AMECS systems
- Alliance purchases AMECS Systems
- Customer leases AMECS system per day
- ACTI operates AMECS systems



ACTI Operating Service

- Provides Central Facility & Shuttle vessels
- Provides Operations back-up 24/7
- Provides Software back-up 24/7
- Supplies all chemicals, fuel and water
- Disposes all waste products
- Operates AMECS system
- Regulatory Compliance



Financial Cost of Barge Options

- 10 year lease \$3.85 million/year/system
- ACTI operating fee included
- Cost Effectiveness \$12,300/ton-20 yrs



Financial Cost of Barge Option

- Purchase AMECS System
 - \$9.85 million each barge system
 - ACTI Operating Fee \$2 MM/year/barge system



Financial Cost of Barge Option

- Customer leases AMECS barge system per day
 - \$15,000/day/system
 - ACTI Operating Fee Included



Financial Cost of Dock Option- 4 Berths

- Purchase Cost : \$3.4 million/berth
- ACTI Operating Fee: \$385,000/year/berth
- 10 year Lease: \$950,000/year/berth – including ACTI operating fee
- Cost Effectiveness \$5400/ton – 20 years



Potential Benefits from AMECS

- Financial Incentives from POLB/LA
 - Potential Reduction in Port Fees
 - Changes in Lease Agreements
- Dollars from Emission Reduction Credits
 - Voluntary Reduction in NOx, PM and SOx



Financial Cost of Rail Options

- Purchase ALECS System
 - \$9.0 MM each rail system. 3 Tracks; 400ft. 12 bonnets
 - ACTI Operating Fee \$1.5 MM/year/rail system



Questions & Answers

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