MV MALMNES

CEMENT-SCREW DISCHARGING TEST PERFORMED AT CARBONERAS, SPAIN ON 12/03/2013

MV MALMNES

VESSEL DESCRIPTION:

General Cargo Ship / Selfunloader

Built: Flag / Homeport: Class: Ice class: GT/NT: DW summer: DW winter: Loa: Beam moulded: Air draft: Immersion (TPC): Draft summer: Draft winter: Mean ballast draft: Holds and cargo equipment: Hold 1: Hold 2: Total: Hold dimensions: (1 & 2) Hatch dimensions: (1 & 2) Self discharging gear:

Outreach boom conveyor:

SB side (only): Maximum elevation: Maximum reach above waterline: Capacities: Water ballast capacity: Bunkers Capacity HFO: Bunkers capacity DO: Consumption: Sea: In port: Machinery: Main Engine: Output: Propulsion: Bow Thruster: *Output:*

Holland 1991 Shipyard Ferus Smit BV Portugal / Madeira Lloyds register +100 A1 + LMC + UMS Finnish Swedish 1B 5883/3103 9891 MT 9599 MT 126,7 Mtrs 15.8 Mtrs 24,3 Mtrs at draft 7,69 mtrs 18,3 Mt/cm 7,69 Mtrs 7,53 Mtrs 4,60 Mtrs 5923 cbm 5947 cbm 11.870 cbm / 419 181 cuft 44 x 13,4 x 10,2 Mtrs 38,80 x 9,00 Mtrs Kvaerner Cargo scooper Mechanical Cement Discharging Screw 24,80 Mtrs 22 degrees 13,55 Mtrs 4100 m³ 255 m³ 54 m^3 abt 13 mt HFO/24h abt 1 mt DO/24h Wärtsilä 8 R 32 E 3280 KW / 4460 BHP Single screw, pitch propeller Jastram

295 kW





MV MALMNES – CEMENT-SCREW TEST

CEMENT-SCREW SYSTEM:





DESIGN:



COMPONENTS:

- 1 CEMENT-SCREW CONVEYOR
- 2 FLEXIBLE CHUTES WITH REMOTE HEIGHT ADJUSTMENT
- 2 GUILLOTINE VALVES
- 2 LOAD-SENSORS FOR AUTOMATIC CUTOFF WHEN THE TRUCK IS LOADED AT 85% CAPACITY OF THE TANK

HOW THE SYSTEM WORKS:

- CARGO SCOOPERS INSIDE THE VESSEL HOLDS FEED THE CEMENT TO THE BUCKET ELEVATORS



- VESSEL BUCKET ELEVATORS FEED A FULLY ENCLOSED HOPPER PLACED IN THE MID-SHIP OF THE VESSEL



- THE HOPPER THEN FEEDS A PIPE LEADING TO THE CEMENT-SCREW



- THE CEMENT-SCREW CONVEYOR FEEDS EITHER ONE OF THE CHUTES WHICH ARE EXTENDED TO REACH THE SILOTRUCK FEEDING HOLES



- WHEN ONE TRUCK IS FILLED, THE GUILLOTINE VALVE IS ACTIVATED, AND THE CARGO FLOWS TO THE NEXT CHUTE. THE GUILLOTINE VALVE CAN BE AUTOMATICALY TRIGGERED WHEN CARGO ON THE TRUCKS REACHES 85% OF LOAD INSIDE THE TANK, OR MANUAL IF LESS CARGO LOAD IS DESIRED INSIDE THE TRUCK





- DISCHARGING SPEED CAN BE ADJUSTED, THROUGH THE CONTROL ROOM WITH AN AVERAGE SPEED OF 120 TONS PER HOUR.



 IN ORDER TO ACHIEVE A CONTINOUS FLOW OF CARGO, IT IS ESSENTIAL TO HAVE TWO TRUCKS PLACED AND READY TO RECEIVE CARGO AT THE SAME TIME, AND A THIRD TRUCK ALWAYS ON STAND-BY TO REPLACE THE TRUCK BEING FILLED



 THE SYSTEM HAS AN ON-BOARD CONTROL MECHANISM, WHERE ONE CREW MEMBER CAN ADJUST THE POSITION OF THE CEMENT-SCREW, AS WELL AS ADJUSTING THE HEIGHT OF THE CHUTES AND THE ACTIONING OF THE GUILLOTINE VALVES



- THE DUST COLLECTOR PLACED ON THE CEMENT-SCREW PREVENTS CREATION OF DUST FROM THE SCREW CONVEYOR TO THE CHUTES





- THE CONTROL ROOM HAS A MONITOR WHICH DISPLAYS THE CAMERA PLACED TO CONTROL THE OPERATIONS ASHORE



DATA

- TEST WAS CARRIED OUT WITH 300 TONS OF CEMENT INSIDE THE HOLDS.
- THE TRIAL RAN SUCCESFFULLY, WITH AN AVERAGE RATE OF 13 MINUTES TO LOAD ABOUT 27 TONS PER TRUCK.
- THE SYSTEM IS EFFICIENT AND DUST FREE
- THE AUTOMATIC ACTIONING OF THE GUILLOTINE VALVE PREVENTS OVERFLOW FROM THE TRUCK
- IF TRUCK DRIVERS FOLLOW INSTRUCTIONS FROM THE CREW, IN ORDER TO PLACE THE TRUCKS CORRECTLY UNDER THE CHUTES, A SMOOTH CYCLE IS OBTAINED
- WITH A CONTINOUS DISCHARGING OPERATION IN THE DISCHARGE PORT, A RATE OF 2880 TONS PER DAY CAN BE OBTAINED, ENABLING DISCHARGE OF COMPLETE CARGO (ABT 9500 TONS) IN APPROXIMATELY 80 HOURS

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