

Rpt. 17 (a)

Date of writing Report 16-4-60 Received London Aalborg Port 22-2-60 No. of visits 8 First date 21-3-60 Last date 18 23 6.
Survey held at Aarhus Machine Nos. 39311-12-13-14 When made 1960

REFRIGERATED CARGO INSTALLATION REPORT ON REFRIGERATING MACHINERY

Machinery made by Messrs. A/S Thomas Ths. Sabroe & Co. Machine Nos. 39311-12-13-14 When made 1960
Intended for Yard No. or Ship's Name 161
Built or building at Split, Yugoslavia By whom Brodogradiliste, Split.
OWNERS The Polish Ocean Line, Gdynia
Primary refrigerant Ammonia Medium for cooling chambers (brine, primary refrigerant, etc.) brine.

PARTICULARS OF REFRIGERATING MACHINES OF EACH SIZE (Including machines (if any) for cooling liquid refrigerant)

RECIPROCATING TYPES

(1) No. of machines 4 No. of cylinders per machine 6 Single or double acting single Single or two-stage single
Diameter of cylinders 100 mm Vertical, horizontal or Vee Vee Diameter of piston rod if double acting
No. of cranks Stroke 780 Speed of machines as fitted: Maximum R.P.M. 975 Minimum R.P.M.
Single speed, set speeds or variable speed single speed Clearance volume as percentage of swept volume 4
Swept volume of machine(s) at maximum R.P.M. 900,000 cubic ft. How driven (direct, V belt, gearing, etc.) direct
Prime Movers (steam engine, oil engine, electric motor, etc.) electric AC motors B.H.P. 55 Maximum R.P.M. 975

(2) No. of machines No. of cylinders per machine Single or double acting Single or two-stage
Diameter of cylinders Vertical, horizontal or Vee Diameter of piston rod if double acting
No. of cranks Stroke Speed of machines as fitted: Maximum R.P.M. Minimum R.P.M.
Single speed, set speeds or variable speed Clearance volume as percentage of swept volume
Swept volume of machine(s) at maximum R.P.M. How driven (direct, V belt, gearing, etc.)
Prime Movers (steam engine, oil engine, electric motor, etc.) B.H.P. Maximum R.P.M.

Material of compressor crankshafts speriodal graphite cast iron Have they been manufactured and tested in accordance with the Rules and/or Secretary's letters? yes
Tensile strength 81.5 - 85.3 kg/mm² Have other important steel forgings and castings been manufactured and tested in accordance with the Rules? yes
Are safety devices fitted to compressors in accordance with the Rules? yes Are compressors arranged for multiple-effect compression? no

OTHER TYPES (e.g., Centrifugal, steam jet, etc.)

(3)

Where two machines only are provided, are all the working parts interchangeable? working parts of compressors interchangeable
Is provision to be made for liquid refrigerant sub-cooling? no If so, state method

PARTICULARS OF GAS CONDENSERS OF EACH TYPE AND SIZE

No. of shell-and-tube type 4 No. of shells in each 1 No. of tubes per shell 116 Material and thickness of tubes SM Steel 33.8/25.7 mm
Cooling medium and No. of passes sea water, 4 passes No. of tubes each pass 29 Internal diameter of tubes 25.7 mm
Total No. of tubes per condenser 116 Total external surface of tubes in each condenser 30 sq. meters
No. of coil-in-casing type No. of casings No. of coils each casing Material, external diameter and thickness of coils
External surface of each coil Cooling medium and No. of passes
Total external surface of coils each condenser Can each coil be readily shut off or disconnected?
Other types

PARTICULARS OF EVAPORATORS (BRINE COOLERS) OF EACH TYPE AND SIZE.

No. of shell-and-tube type 24 No. of shells in each 2 No. of tubes per shell 153 Material and thickness of tubes SM Steel 33.8/25.7 mm
No. of passes of brine 6 No. of tubes each pass 25 Internal diameter of tubes 25.7 mm
Total No. of tubes per evaporator 306 153 Total external surface of tubes in each evaporator 40 sq. meters
No. of coil-in-casing type No. of casings No. of coils each casing Material, external diameter and thickness of coils
External surface of each coil Total external surface of coils in each evaporator Can each coil be readily shut off or disconnected?
Other types

OTHER COMPONENTS, ETC.

No. of oil separators 4 No. of filters 1 No. of liquid receivers 2 No. of driers No. of brine heaters 1 electric
Other pressure vessels, give particulars
Particulars of air cooler coils and cooling grids: Plain coils, external diameter Thickness Material
Extended surface coils, internal diameter Thickness Material
Pitch of fins or plates 20 mm Dimensions of fins or plates 25 x 1.0 mm Total extended surface per foot of pipe 2.06
Air cooler coil assemblies, total No. 26 Length of pipe and No. of coils of each size 2 - 410 m² coolers each in 6 sections, 2 - 190
m² coolers each 4 sections. Can each coil be readily shut off or disconnected? yes
Cooling grid sections, total No. and length of pipe of each size section

Primary refrigerant piping, internal diameter and thickness of each size

Material How manufactured
Have all components of the refrigerating plant been constructed strictly in accordance with the Rules and approved plans?
Has the spare gear required by the Rules been supplied? Where additional spare gear has been supplied a list is to be attached to the Report.
The foregoing is a correct description of the refrigerating machinery.

PRESSURE TESTS AT WORKS						
DESCRIPTION	Working Pressure	Hydraulic Pressure	Date of Test	Air Test Pressure	Date of Test	Stamped
Compressor cylinders & covers		42	15-3-60	21	15-3-60	all parts
Compressor crankcases		21	15-3-60	10.5	15-3-60	stamped
Oil separators, oil rectifiers		35	8-3-60	17.5	8-3-60	Lloyds test
Filters						ABG H/A
Driers						MM and date.
Strainers						
Stop valves and connections						
Liquid receivers		35	24-3-60	17.5	24-3-60	
Condenser shells or coils		35	11-15-24/3	17.5	11-15-24/3	
Evaporator (brine cooler) shells or coils		35	24-3-60	17.5	24-3-60	
Condenser headers and connections						
Condenser coil casings or water ends						
Evaporator headers and connections						
Evaporator coil casings or brine ends						
Air cooler coil assemblies		7	8-11-15/3			
Chamber grid sections						
Float regulators						
Brine heaters						
Primary refrigerant piping						
Other pressure parts						

PLANS: Drawing No. and date of approval of each plan concerned.
Messrs. Sulzer
Compressors, crankshaft. 142/553-1 6/10-54
Filters 121213 17-9-59
Evaporators 121063 17-9-59
Condensers 121830-121894-121895-896-897, 5-1-60.
Air coolers
Other pressure parts

104652-53
102663-64 gen.app.8-7-54
Crankcases
Separators
Strainers
Driers
Cylinders general app. 8-7-54.
Liquid receivers 121070 - 17-9-59.
Float regulators
Brine heaters

General remarks (state quality of workmanship, opinions as to class, etc.)

The refrigerating machinery and appliances have been constructed under Special Survey in accordance with the requirements of the Rules, the approved plans and specification and the Secretary's letters. The material used has been tested as required by the Rules, the workmanship being good.

The welding of pressure vessels has been carried out in accordance with the Rules for Welded Pressure Vessels, Class 2.

This installation is in my opinion fit for the notation + Lloyds RMC with date to maintain 10° F in all chambers with sea temp. 86° F max. when the remaining requirements for refrigerated cargo installations have been complied with.

PARTICULARS OF MACHINERY FOR REGISTER BOOK
No. of units 4
Total B.H.P. of all compressor prime movers 220
Makers A/S Thomas Ths. Sabroe & Co.

Prime Movers electric AC motors
Refrigerant Ammonia
Date of construction 1959

MACHINERY PARTICULARS:
Four 6 cyl. S.A.S.S. comp. 100 x 80 x 975 R.P.M.
Four shell & tube condensers.
Two shell & tube evaporators each in two sections.

SURVEY FEE (Based on measured cubic capacity on completion of installation.)

22.3.61

£Kr. : 970,00
Travelling expenses £ 117 : 85,00

Fee applied for, 19 60
Received by me, 19

Date of Committee MONDAY 13 JUN 1960
Minute Referred for completion.

Surveyor to Lloyd's Register
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Foundation

Entered in Aalborg Rough Fee Book 23-3-60.