

0961708
MILAN 1. 8

Rpt. 4c

Date of writing report 28th December, 1959

Received London

Port of Milan

No. 19

Survey held at Legnano

No. of visits 42

First date 16.6.58

Last date 2.12.59

FIRST ENTRY REPORT ON AUXILIARY STEAM TURBINE OR STEAM RECIPROCATING ENGINES

Name of Ship Yard 1849 - Cantieri Riuniti dell'Adriatico Owners -
 (Or Contract No. if name unknown) (Or Consignees)

Ship Built at San Marco, Trieste by Cantieri Riuniti dell'Adriatico when 1958 Yard No. 1849
 Auxiliary turbines or engines made at Legnano by Messrs. FRANCO TOSI S.P.A. when 1959 Eng. Nos. 3988 - 3989

Total No. of sets and description Two: Turbo Generator Sets, each consisting of a steam turbine driving a 750 KW alternating current generator - through a single reduction gearing 9000/1200 R.p.M.

STEAM TURBINES. No. of turbines per set One BHP per set 750 KW Steam pressure 58.7 Kg/sq. cm Steam temperature 454°C
 Type of turbines R.C.7390 Tosi-Westinghouse - Impulse type - 9 rows of bladings - horizontal shaft
 Particulars of gearing Double helic - single reducing gearing.
 RPM of turbine shaft(s) 9000/1' PCD of pinion(s) 4.73" PCD of wheel(s) 38.9" Material of pinion(s) Cr.Ni.Mo. Steel Material of wheel rim(s) S.M. Steel Has rotor been dynamically balanced? Yes Diameter of rotor shaft at bearings 90 mm. Does the set include a steam condenser? - Is an emergency governor fitted? Yes No. and purpose of attached pumps One - Lub.oil pump Has the set been tested in the shop? Yes If so, for how long at full power? 4 hours Was the governing tested and found satisfactory? Yes Was the set tested with driven machinery attached? Yes
 Identification marks See Rpt.9a attached Particulars of driven machinery for each set:

One alternating current generator, rated 750 Kw - 450 V - 1220 A - at 1200 R.p.m.
 Manufacturers: Cantieri Riuniti dell'Adriatico - Monfalcone - Serial No. 8003554 - 8003553
 Type G S N/1260-6

LD
29/1/60

STEAM RECIPROCATING ENGINES. BHP of each - at - RPM - Steam pressure -
 Dia. of cylinders - Stroke - Dia. of crankshaft journals - Pins - Material of crankshaft - Is crankcase enclosed? - If so, is the internal volume 20 cu. ft. or over? - No. and total area of crankcase explosion relief devices fitted? - Are the bearings forced lubricated? - No. and purpose of attached pumps -
 Is a Governor Fitted? - Identification Marks -

Particulars of Driven Machinery

ELECTRIC GENERATORS. Port and No. of Certificate for generators of 100 Kw. and over Trieste office
 For generators under 100 Kw., has Makers' Certificate been obtained? - Are Certificates attached? No.

The foregoing description is correct.

FRANCO TOSI S.P.A., Legnano
Manufacturer

Is this machinery duplicate of a previous case? Yes If so, which? Report No.18 of Milan, dd. 16th June, 1959 - Yard No.1841 Cantieri Riuniti dell'Adriatico.

GENERAL REMARKS. State if the machinery has been constructed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible. These sets have been constructed under Special Survey of tested material and in accordance with the approved plans, Secretary's letters and Rules Requirements. All parts subjected to internal pressure have been examined under hydraulic test to Rule Requirements, and found sound and satisfactory. The turbine rotor, blading and reduction gearing have been examined on completion and found, so far as could be seen, sound and free from defects. Rotors, pinions and gear wheels were statically and dynamically balanced with satisfactory results. The material and the workmanship are good. These sets have been examined under steam in shop running at full power. The governor and the emergency governor were tried in operation with satisfactory results. These sets have been despatched to Trieste, to be fitted on board the yard No.1849 of Messrs. CANTIERI RIUNITI DELL'ADRIATICO.

Survey Fee Lit. 199,800=
 Expenses " 64,750=
 Rev. Tax " 7,937=
 Date when a/c rendered 9/1/60

(D. CECCHI *Secchi*
 Engineer Surveyor to Lloyd's Register

Declaration to be signed by Surveyor at fitting-out Port:— The above described machinery has been fitted on board the "Esso DUBLIN" C.R.D.A. YARD NO. 1849
 at MONFALCONE in a proper manner and found satisfactory when tested on the (date) 21/4/60 under full working conditions.

Lloyd's Register
 Engineer Surveyor to Lloyd's Register
 Foundation

Rpt. 4c

Date of writing report Received London Port No. Survey held at No. of visits First date Last date

FIRST ENTRY REPORT ON AUXILIARY INTERNAL COMBUSTION ENGINES

Name of Ship (Or Contract No. if name unknown) Owners (Or Consignees) Ship Built at by when Yard No. Auxiliary Engines or Gas Turbines made at by when Eng. Nos. Total No. of sets and description (including type name)

INTERNAL COMBUSTION RECIPROCATING ENGINES. No. of cylinders per engine. Dia. of cylinders. Stroke. 2 or 4 stroke cycle. Maximum approved BHP. at RPM Corresponding MIP. Maximum pressure. Fuel. Are cylinders arranged in Vee or other special formation? If so, No. of crankshafts per engine. Is engine of opposed piston type? No. and type of mechanically driven scavenge pumps or blowers per engine. No. of exhaust gas driven blowers or superchargers per engine. Is welded construction used for: Bedplate? Entablature? Total internal volume of crankcase (if 20 cu. ft. or over). No. and total area of crankcase explosion relief devices. Are flame guards or traps fitted? Cooling medium for: Cylinders. Pistons. No. of attached pumps: F.W. cooling. S.W. cooling. Lubricating oil. How is engine started?

SHAFTING. Is a damper or detuner fitted? No. of main bearings. Are bearings of ball or roller type? Distance between inner edges of bearings in way of cranks. Crankshaft: Built, semi-built, solid. Material of crankshaft. Approved minimum tensile strength. Dia. of pins. Journals. Breadth of webs at mid throw. Axial thickness. If shrink, radial thickness around eyeholes. Dia. of flywheel. Weight. Are balance weights fitted? Total weight. Rad. of gyration. Dia. of flywheel shaft. Has each engine been tested in shop? How long at full power? Was it tested with driven machinery attached? Was the governing tested and found satisfactory? Date of approval of torsional vibration characteristics (for engines of 150 BHP and over). Date of approval of shafting. Identification marks on shafting. Particulars of driven machinery.

Port and No. of Certificate for Starting Air Receivers

AUXILIARY GAS TURBINES. BHP per set. At RPM of output shaft. Open or closed cycle? Arrangement of turbines. HP drives. at RPM HP gas inlet temp. pressure. (A small diagram should be attached showing gas cycle) IP. at IP. LP. at LP. No. of air compressors per set. Centrifugal or axial flow type? Material of turbine blades. Material of compressor blades. No. of air coolers per set. No. of heat exchangers per set. How are turbines started? Are the turbines operated in conjunction with free piston gas generators? Total No. of free piston gas generators. Dia. of working pistons. Dia. of compressor pistons. No. of double strokes per minute at full power. Gas delivery pressure. Gas delivery temperature. Have the turbines and attached equipment been tested in shop? How long at full power? Were they tested with driven machinery attached? Particulars of gearing. Date of approval of plans. Identification marks. Particulars of driven machinery.

ELECTRIC GENERATORS. Port and No. of Certificate for generators of 100 Kw. and over. For generators under 100 Kw., has Makers' Certificate been obtained? Are Certificates attached?

The foregoing description is correct and the particulars are as approved for torsional vibration characteristics (strike out words not applicable)

Manufacturer

Is this machinery duplicate of a previous case? If so, which?

GENERAL REMARKS. State if the machinery has been constructed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

Survey Fee. Expenses. Date when a/c rendered. Engineer Surveyor to Lloyd's Register

Declaration to be signed by Surveyor at fitting-out Port:— The above described machinery has been fitted on board the at in a proper manner and found satisfactory when tested on the (date) under full working conditions.

Engineer Surveyor to Lloyd's Register

Rpt. 9a

Port of MILAN Continuation of Report No. 19 dated 28th December, 1959 on the

TWO: TURBO-ALTERNATORS SETS - KW 750.

Manufacturers! Franco Tosi Spa of Legnano (Italy) - Works order 52615 intended for the yard No.1849 being built by Messrs. Cantieri Riuniti dell'Adriatico, San Marco, Trieste. - order No. 6608/C.1849 dd. 1.3.57

DESCRIPTION & FINAL STAMPING ON MATERIALS.

First set: Turbine No. 3988 - (Alternator 8003554)

Table with columns: FORGINGS, Sample No., Drawing No., Final Stamping. Rows include Turbine Rotor, Slow Gear Wheel Shaft, Slow Gear Wheel Rim, Pinion.

CASTINGS

Table with columns: Upper Half Discharge, Lower Half Dis. Casing, Upper Half Casing, Lower Half Casing, Steam Nozzles Chest. Includes Sample No., Drawing No., Final Stamping.

Second Set: Turbine 3989 (Alternator 8003553)

Table with columns: FORGINGS, Sample No., Drawing No., Final Stamping. Rows include Turbine Rotor, Slow Gear Wheel Shaft, Slow Gear Wheel Rim, Pinion.

CASTINGS

Table with columns: Upper Half Discharge, Lower Half Dis. Casing, Upper Half Casing, Lower Half Casing, Steam Nozzles Chest. Includes Sample No., Drawing No., Final Stamping.

FINAL STAMPING ON SETS.

Table with columns: LLOYD'S N° 3988, 750 KW SET NO.1, EXAMINED, MI. 19.10.59 DC. and LLOYD'S N° 3989, 750 KW SET NO.2, EXAMINED, MI. 2.12.59 DC.

(D. CECCHI) Engineer Surveyor to Lloyd's Register.

MILAN 1960 B JUL 1960

