

Translation.

Extract of letter from Messrs. Escher Wyss No.21/49840 dated 15th October 1935, addressed to Messrs. Cantieri Riuniti dell'Adriatico.

Installation for "CONTE ROSSO".

(1) Torsional transmission shaft. (Your letter UT/11823/4 of 9/10/35)

We have noted the objections made by Registro Italiano and Lloyd's Register, who desire that the diameter of our torsional shaft be increased.

The dimensions of a torsional shaft are not only depending on the quality of the material and on a given factor of safety, but are also based on the results of many years experience. For this reason we have considered the scantlings shown on our plan 264.542 as suitable. The material for our shaft is High Tensile Chrome-Nickel Steel having an elastic limit of not less than 55 kg/sq.mm a tensile strength of 75-85 kg/sq.mm and an elongation (minimum) of 18%.

<sup>47.7
tons</sup>
The torsional stress for a shaft of 55 mm diameter amounts to about 800 kg/sq.cm, which corresponds to a factor of safety of $6\frac{1}{2}$, as requested by the R.I.- In our opinion this safety factor may be considered as abundant. The critical speed of the shaft is about 5300 revs. per minute, i.e. well above the working number of revs. The critical speed has been calculated on the basis of a shaft freely ~~supported at~~ supported at its ends; and an experience of many years has proved this hypothesis to be correct. A slight wear of the bearings does not involve logically and practically any change in the number of critical revolutions and therefore the hypothesis taken as basis for the calculation has proved always reliable.



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As we undertake full guarantee for the normal working of the turbines, we hope that, in view of the above, the Classification Societies will agree to the shaft in question remaining as proposed by us. According to our experience with the dimensions suggested by us the angle of twist of this shaft and its critical speed have the correct practical values; owing to its length, it also offers the advantage that any slight wear of the bearings will not influence the normal working of the turbine.

(2) Number of revs. for Racing Test. The governors are set to function at 10% above the working No. of revs., without however letting the turbines work for too long at the higher speed.

Of course the rotors are already bladed and dynamically balanced.

(6) Turbines driving feed pumps. (Your letter UT/11957/4 of 12/10/1935). In view of the characteristics of steam supply to these turbines, viz: 12.5 atmospheres and 300°C., we have made the casings of both turbines of perlitic fine grained cast iron. This material has a flexural resistance of 50 kg/sq.mm (on round test bars cast vertically upwards, 30 mm. diameter, 650 mm length and gauge length 600 mm). Deflection 10 mm, minimum tensile strength 30 kg/sq.mm.

We hope that, in view of the good tensile quality of this material, the Classification Societies will have no objection to accepting it, as otherwise this would seriously influence the date of delivery of the whole installation.

The valves, as well as the internal diaphragms are of cast steel.



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We hope that on the basis of the above it will be
possible to obtain approval for the parts of the installation
which are still under discussion.

We remain &c.

Escher Wyss Maschinenfabriken.



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