



◇ KOBELCO STEEL, LTD., TAKASAGO PLANT

2-3-1 SHINHAMARA ARAI-CHO
TAKASAGO-SHI HYOGO-KEN 676 JAPAN
TELEPHONE: TAKASAGO 07944 3 4111
CABLE: KOBELCO STEEL TAKASAGO
TELEX: 5655-293 KOBSTL J

17 February 1984



Mr. Gregory M. Beshouri
Research & Development Engineer
Engine and Compressor Division
Transamerica Delaval Inc.
550 85th Avenue
Oakland, California 94621
U.S.A.

Dear Mr. Beshouri

It was my great pleasure to have your letter of December 21, 1983 on our crankshafts with fillet cold rolling.

First of all, I would like to stress that our fillet cold rolling technology will be very promising way for the cost reduction of your R5-type crankshafts. However, I also have to confess that at this moment Kobe Steel does not produce solid crankshafts with fillet cold rolling.

The reason is that the fillet cold rolling technology for solid crankshafts was developed more than ten years ago simultaneously with that for shrink fitting crankshafts. As the latter was applied to cast steel crankshaft, the technology got many interests of engine builders from the first stage and we have already delivered numerous shrink fit cast steel crankshafts with fillet cold rolling. On the other hand, requirements to solid crankshafts were not so severe that the fillet cold rolling technology for solid crankshafts could not have any actual demand of engine builders and was not extended to actual production. Consequently, we have enough data to get approval of ship classification societies on the improvement of fatigue strength of forged solid crankshafts,

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but have not a fillet cold rolling machine for the actual production.

I recieved similar questions with yours from some of our clients last year and we have decided to restart the development of fillet cold rolling machine for solid crankshafts. It probably requires about one year for the development. However, if your demand for this technology is very high, the time schedule will be rearranged.

As for the fatigue strength, a carbon steel crankshaft with fillet cold rolling (base metal tensile strength $\sigma_B = 60 \text{ kg/mm}^2$) is higher than a heat treated low alloy steel crankshaft with the tensile strength of 70 kg/mm^2 . And the cost is estimated to be between those of non-treated carbon steel and low alloy steel crankshafts.)

I estimate that shot peening on this size of crankshafts is a waste of time. Because, the hardened depth by shot peening is estimated to be quite shallow comparing with the depth of highly stressed area at fillets.

The copies of Nippon Kaiji Kyokai Rule " Rules and Detailed Rules for Diesel Engine Crankshafts and Those Explanations" and the latest IACS's draft "Rules for the Calculation of Crankshafts for Diesel Engines" will be sent by a separate mail.

As we do not have NKK's rule book "Rules for the Survey and Construction of Steel Ships", I recommend you to contact with NKK's New York office. The address is:

Nippon Kaiji Kyokai
17 Battery Place, Room No.210, 212-425-3799
New York, N.Y. 10004

CRANKSHAFT BOOK

ENGINE BOOK... 4

PRICE:

IF WE HAVE QUESTIONS...

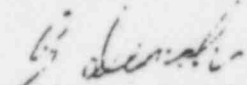
T. OKAYAMA.

Please note that the IACS's draft mentioned above was edited basing on CIMAC proposal "Rules on Calculation of

Crankshafts for Diesel Engines (4.Draft)" and is still under discussion among IACS members and between CIMAC and IACS. If you are interested in the detailed discussions on this matter, I recommend you to contact with Dr. Günter Donath who is the chairman of CIMAC Sub Group "Crankshaft Dimentions". His address is

MASHINENFABRIC AUGSBURG-NUERNBERG AG
Abt. MEM
D-8900 Augsburg 1
Stadtbachstr. 1 Postfach 10 00 80
West Germany
Tel. (0821)322-3711
Telex 537960-533154 TCV

Cordially,



Shinpei Denoh
Senior Researcher
Technical Department
Steel Casting and Forging Division