

MAGNETIZER CHINA RAILWAY REPORT SUMMARY

TEST DATE: 3-12-97

ORGANIZATION: Locomotive and Car Research Institute, China Academy of
Railway Science

MODEL: Tung Fong 4, Serial # 2502 Locomotive

FUEL: Diesel

The bar diagram (see figure #1 in the Appendix) relates the overall savings experienced by the locomotive in the test period from June 1996 to January 1997.

During the test period, from June 1996 to March 1997, the average savings were 4.88%, with the peak speed at 120 km/hr. In the month of April 1997 the peak speed rose to 160 km/hr with average fuel savings of 5.91%. The highest recorded savings with the Magnetizer was 9.11% in December 1996.

As related in the bar diagram, it took approximately 3 months (or 90 days) to see a meaningful reduction in fuel usage. Also, at the first maintenance inspection after Magnetizer units were utilized, it was found that the diesel injectors had less carbon and the residue that remained was soft.

The conversion of hard carbon deposits into a softer form is to be expected, since chemical producers of carbon black use magnetized fuel to produce a finer, softer form of carbon.

The conversion of hard carbon deposits to soft carbon residue is helpful in increasing useful engine life.

Test report to trace the effect of Magnetizer

installed on the locomotive, #2502 TUNG FONG 4

3-13-97

Under the supervision by the LOCOMOTIVE AND CAR RESEARCH INSTITUTE, CHINA ACADEMY OF RAILWAY SCIENCE, the Magnetizer for fuel saving offered from DLQ was installed on #2502, TUNG FONG 4 since June 14, 1996. The tracing result was summarized as the follows:

Magnetizer was introduced to save the fuel consumption and reduce emission. It was reported that it can change the physical properties of the fuel caused from its powerful and effective magnetic field. DLQ installed the necessary units of Magnetizers on the fuel lines, air line and coolant pipes of the whole diesel engine of the locomotive.

#2502, TUNG FONG 4, one of the major locomotives in our section, trailed the trains #48/49 to and fro between SU-CHIATSUAN and BEIJING.

During the first two months, no obvious improvement of the combustion in the diesel engine was found. consumption rate of the fuel did not drop so the foremen thought its effect was none. After early September, it was observed that the rate was steadily dropped. At the first maintenance in the works, it was found that the less and softer carbon built up around the nozzles of the fuel injectors. Even the foremen began to feel the effect of fuel saving. The progress and variation was basically coincident as what claimed by the supplier. There was a stabilization period before the whole fuel line was magnetized. No obvious fuel saving during the period but the effect was valid after the period.

#2502, Tung Fong 4 was built to run since March 95 and run 306,803 km till Jan 97. It was the timing to take secondary maintenance and there were 5 times of primary maintenance in their works. The low consumption rate at this age of the locomotive should explain and support the benefit to use Magnetizer. This confirmed the effect of the fuel saving with Magnetizers.

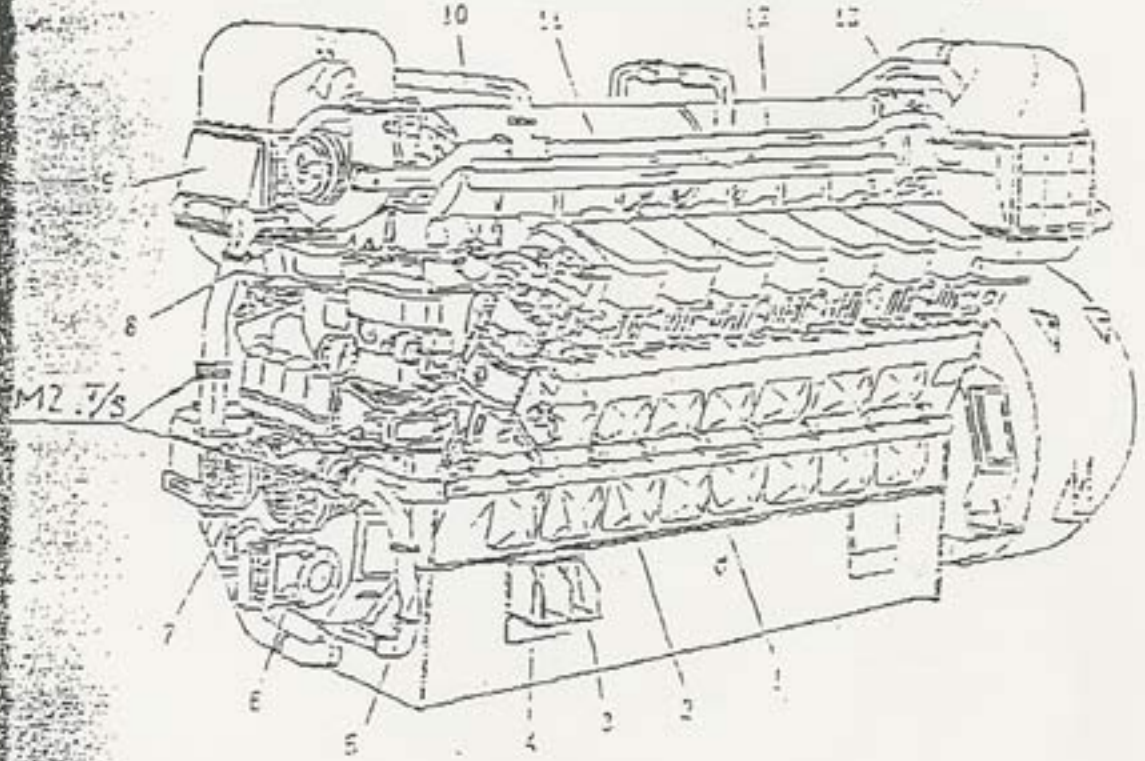
If based on the consumption rate before the installation (Jan - June, 96), compared to that after the installation (June 96 to Jan 97), It saved 0.83 kg of fuel saving. The saving rate was about 4.4%. Besides, the less carbon built up made the benefit for the operation, maintenance and inspection of the locomotives.

圖 3

16V240ZJB 型柴油機冷卻水系統佈置示意圖

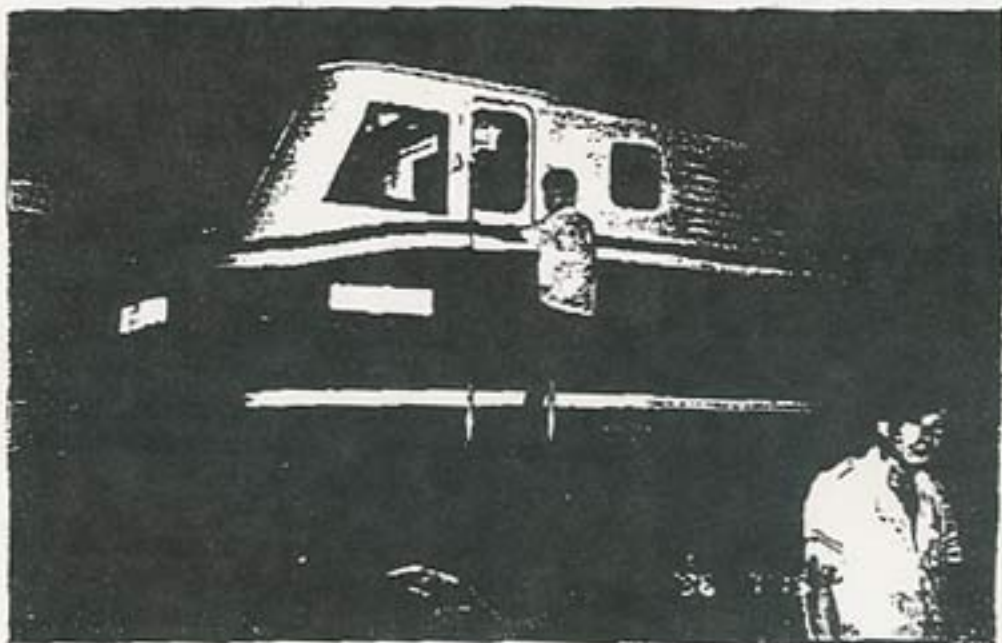


16V240ZJB 型柴油機冷卻水系統佈置示意圖



此圖說明全機冷卻水系統之佈置，其特點如下：
 1. 淡水水濾器及磁器：用於過濾淡水並磁化，防止水垢生成。
 2. 汽缸水濾器：用於過濾汽缸內之雜質，保護汽缸壁。
 3. 缸底水濾器：用於過濾缸底之雜質，保護曲軸。
 4. 高溫軟水器：用於軟化高壓水，防止水垢生成。
 5. 截止閥：用於控制水流，方便維護。

TONG FONG #11, NEW LOCOMOTIVE IN CHINA



AIR HOSE
INSTALLED WITH MAE JOCS
(EXTRA UNITS TO BE INSTALLED)