



**Interoffice
Memorandum**

To: J. A. Henderson - 91072

City: Columbus

Date: April 8, 1980

J.A. HENDERSON

From: M. Thommen - 50231

Copies:

APR 10 1980

Subject: Engine Load Factors
U.S.A. vs. Europe

Jim, when I attended both your presentation for new hires in November, 1979, and the shareholders meeting last week, you said that truck engine load factors are much higher here in the U.S.A. than in Europe. Since I have been involved in European trucking for a long time and am now working in Cummins' Vehicle Test Department, I would like now to discuss the real situation briefly.

Probably your information originates from the U.K. Switzerland and the U.K. are the only two countries with gross weights below all other Central European countries (CH = 61,700 lbs., GB = 70,500 lbs., all others = 83,700 lbs.) The Netherlands, Italy and all Scandinavian countries have 97,000 lbs. or more. U.S.A. gross weights are between 78,000 and 80,000 lbs., with a few exceptions. Also, the U.K. is today the only Class 8 truck market where the sold power per engine averages below 250 HP. All other countries are between 300 and 375 HP.

Average vehicle speed is higher here in the U.S. (55 MPH) compared to Europe (50 MPH). Vehicle dimensions are about the same. Normally, there are many more grades to climb in Europe. Overall, I suppose the European load factors to be slightly higher in Class 8 trucks compared to the U.S.

European truck manufacturers don't use as much aluminum as they do here in the U.S. The result is that curb weights are higher over in Europe. This fact forced engine manufacturers to develop lightweight engines with good fuel economy, performance and low noise levels. Since I know that Cummins is interested in getting more European engine business and since European noise and emission regulations are getting tougher in the near future, I feel that Cummins' knowledge should be based on Continental Europe rather than on the U.K. We should pay more attention to our competitors in Europe and have an engine ready when the small European engine manufacturers are unable to produce their own engines. Our NTE engines are too heavy and I think that is at least one reason Ford is going to offer the Transcontinentals with aircooled Deutz engines.

I will be pleased to provide you with any additional information, whenever needed.

M. Thommen

M. Thommen/at
#6249

Engineer - Vehicle Test



**Interoffice
Memorandum**

To: M. Thommen - 50231

City: Columbus

Date: April 15, 1980

From: J. A. Henderson - 91072

Copies: H. B. Schacht - 91075

R. S. Campbell - CMC-039

M. C. Dietrich - 40803

G. D. Nelson - 40217

S. Saarinen - 50194

6639

Subject:

Thanks very much for your memo of April 8 which I read with great interest. I would like to have Gary Nelson discuss it with you further. I appreciate your willingness to help us clarify our planning. S. Saarinen sent me a similar memo as you may know so I will suggest to Gary that he consider a joint session.

President

J.A.Henderson/sh

X5561

Attachment

Meeting with Jim Henderson - July-09 1981:

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Personnel: Treatment of foreign people

- keep uniform policy for everybody or negotiate separate contracts
- come up with policy for: visa, vacation, home leave, social security payments and moving expenses
- try to employ people to get best benefit for company and use their specific knowledge

Promotions:

- too many cross-moves from department to department to get promotion, therefore all the knowledge gets lost again. This is a very important issue for engine development groups within R&E.
- godfathers needed for promotions and not technical skills
- never criticize your supervisor, always tell him he is right !

Company in general:

- we should introduce participated management
- regular meetings management-engineers
- lack of communications: information from lower level only gets up to higher level with extensive filtration (many bad examples)
- too many top management people with non-engineering or non-technical education (You can't run a hospital with historians or lawyers !)
- top management people with non-engineering background need assistants with strong engineering background as a counterweight. They may come up with critical questions about solutions presented to the management from engineering groups. (BSFC Case-Cummins)
- our company needs more engineers with master degrees
- too much travel in general (other companies wonder about that)
- how can a VP drive a Japanese car - we need American buyers for our engines (bad example for our customers)

Marketing:

- publish wrong information on purpose (European trucking!!!)
- compare our 10Liter engine to Volvo engine in spring planning conference without telling about source of Volvo data and without mentioning which Volvo model is concerned.
- we keep non updated or old-fashioned data from competitor's engines in file
- european marketing strategy needs a new approach from people who understand the european trucking business thru and thru.

Future for our company:

- we only can survive the next decade of years with a strong and outstanding technology and reliability.
- tradition and strong distributorship are not the only keys to survive (many good european companies have died already)
- Caterpillar is a good example for high technology
- why do we have to try crazy designs on new engines which haven't been very successful within other engine companies. That is only a waste of money. (Mid-stop liner, ladder frame, e.g.)

Engine data:

NTC-475	252	PSI BMEP	17.4 bar	1430 ft.lb	1940 N.m
NTC-400	202		13.9	1150	1560
NTC-350	198		13.6	1120	1520

European truckers are used to about 1300 - 1400 N.m maximum torque, which is about 960 - 1050 ft.lb. (237 PSI - 259 PSI BMEP)
This torque is probably over the design objectif for the 10Liter engine.

The 14Liter is too heavy for european trucks.

Same is deal of R.S. Campbell!

Gomol Research - scam's

Salary - cheating

*Apple Deal
Ludy - Dealer's*



**Interoffice
Memorandum**

To: J. A. Henderson - 91072

City: Columbus

Date: April 8, 1980

LA 1117

Copies:

APR 10 1980

From: S. Saarinen - 50194

Subject: Trucking in U.S.A.
Versus Europe

Jim, you gave a presentation about Cummins to new hires in November of last year, and mentioned there that the load factor in U.S. trucks is higher than in Europe and that high power engines are mainly needed in the U.S. market. I disagreed then, but we did not have time to discuss the subject more thoroughly.

At the Shareholders' Meeting you gave the same impression again, and as I know that it is not totally true, I'd like to take this opportunity to start a discussion.

According to both analytical and experimental results, the average U.S. load factor is equal to Central European, excluding U.K. U.K. is a story of its own and although it is a well known and strong Cummins area, it does not represent any major part in European operations. Load factor is higher both in Southern and Northern Europe and especially in TIR traffic to Near East. Weight limits in Europe allow trucks to operate through the continent with a minimum of 38 tons (GCW (83,780 lbs.)), which is 14% more than the respective weight in U.S. Vehicle sizes are almost equal, especially the features that affect wind resistance. Speed is 15-20% lower in Central Europe, but the difference is again smaller when going south or north.

Outside of U.K. Cummins is mainly competing with an engine that automatically places it in the heaviest types only and thus into high load factor operations, which either are equal or harder than in U.S. Two good examples: Ford offers their Transcontinental with Deutz engine to the customers who need a lighter truck to lighter operations; Sisu chose Cummins for its potential capacity to deliver high power at a high load factor in an environment where all the smaller engines have been more or less outstrained.

Fuel consumption figures published in magazines cannot tell the whole story and convince everybody about average or common European load factor. The subject needs more thorough work and many customer calls before a back-to-back comparison can be made.

Cummins NH engine is going to be among competitors in Europe, which can offer economy, low noise, durability, power and performance, and it would be a pity if Cummins were not aware of the competitors' good and bad points or the needs of the operating environment.

I will be glad to bring up the details, both technical and statistical, if needed.

Senior Engineer -
Big Cam II/III Engines

S. Saarinen/lid
X5968

S. Saarinen - 50194

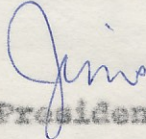
Columbus
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