EUROMECH

Final Report

Date: November 26th, 19

Please send this report to the Secretary of the European Mechanics Council, Professor Bengt Lundberg, Dept of Mechanical Engineering, Luleå University of Technology, S-951 87 Luleå, Sweden, one month after the Colloquium

General

Euromech Colloquium No: 297

Title: "FATIGUE ANALYSIS IN THE CONTEXT OF MECHANICAL DESIGN"

Chairmen: K. DANG VAN

Place and country: LOZARI (CORSICA) FRANCE

Dates: 1 - 4th/9/1992

Finance

The conference fee 2 500FF included

Funding: 700 FF (proceedings, etc...)

Accomodation (type and cost): (full board) 1.800 F.F.

Meals:

Participation

Total number of participants: 59 Distribution of participants by country:

Code	Country	Number	Code	Country	Number
				Iceland	1
A	Austria		I	Italy	2
B	Belgium		IRL	Ireland	2
BG	Bulgaria		N	Norway	
CH	Switzerland	1	NL	Netherlands	2
CS	Czechoslovakia	2	P	Portugal	1
D	Germany	1	PL	Poland	3
DK	Denmark		R	Rumania	
E	Spain	1	S	Sweden	1
F	France	29	SF	Finland	2
GB	Great Britain	8	YU	Yugoslavia	
GR	Greece		SU	Soviet Union	1
H	Hungary		-	Others	2 (Israel)

Is there need of another colloquium on the same subject? Which year? Yes, in 1996 for example

Please turn

Scientific Report

See attached pages.

Please use additional pages if needed and sign at the end.

English Report on EUROMECH COLLOQUIUM 297
'FATIGUE ANALYSIS IN THE CONTEXT OF MECHANICAL DESIGN'

The EUROMECH 297 Colloquium devoted to

"Fatigue Analysis in the Context of Mechanical Design"

took place in the holiday Village of Lozari from the 1st to 4th of September 1992. 64 Engineers and Scientists coming from a dozen of different countries (France, Finland, Ireland, Island, Netherland, Poland, Sweden, Switzerland, Tchecoslovaquia) participated in this meeting : 29 from France, 35 from abroad. Two registred scientists (a Russian and a Spaniard) were not able to come.

Because of the theme of the conference the audience was quite diversified, professors, researchers as well as engineers from industries. This broadened the scope of the discussion.
43 communications were given. The sessions were opened by a review of specific industrial fatigue problems followed by more basic presentations. Among the topics dealt with :

- Fatigue problems of automotive industries: high cycle fatigue under multiaxial loadings;
- Fatigue problems of nuclear industries: low cycle fatigue and its interaction with creep. The state of the art in this field was summarized by Framatome's engineers and their British colleagues;
- A. Blom, President of I.C.A.F. presented fatigue issues specific to aeronautical airframes.

A great number of studies were presented by engineers working in the domains of :

- Energy (E.D.F., G.D.F., I.S.P.R.A.);
- Mechanical Industries (S.K.F...);
- automotive industries (Renault, P.S.A., Austin Rover).

The correspondence between academic results and their applicability to fatigue analysis was one of the main objective of the discussions. Invited material scientists insisted on modelling based on microscopic observations.

Fatigue softwares were presented by structural specialists. Some of these are based on relatively classical theories. One has to note a demonstration of a recent computing program for fatigue based on a "macro-micro" approach.

The problem of contact fatigue was also discussed.

Concerning problems related to crack propagation, the separate influence of environmental, mechanical and material effects has been investigated by some contributors. In addition, review presentations concerning spectrum loadings in offshore industry were made.

In conclusion to the colloquium, the participants decided to publish some of the presented works, because until now, very few studies in fatigue have been done in such a global way, which include material as well as structural aspects.

Professor K. Miller, Member of the Scientific Committee and Editor of International Journal of Fatigue and Fracture proposed to publish a special issue.

Finally, we recommend a new Euromech Colloquium in the next future to check upon progress on that field. As it was suggested by Professor Z. Mroz, participant of this colloquium and Chairman of the Euromech Colloquium 299 devoted to cyclic loading in structures, these two meetings could be combined.