

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: 293

Title: Dynamics and Control of Rotating Machinery

Chairmen: Prof.Dr. H. Ulbrich and Prof.Dr. E. Brommundt

Place and country: Braunschweig (Technical University), Germany

Dates: 7. - 9. October, 1992

### Finance

The conference fee DM 90,-- included conference booklet, coffee during breakes and social events

Funding: German Research Council (DFG), German Academic Exchange Service (DAAD)

Accommodation (type and cost): Hotel, range of costs from DM 55,-- to DM 120,--

Meals: was left to participants (see program booklet)

### Participation

Total number of participants: 50

Distribution of participants by country:

Code	Country	Number	Code	Country	Number
A	Austria	<u>1</u>	I	Italy	<u>1</u>
B	Belgium	<u>---</u>	IRL	Ireland	<u>--</u>
BG	Bulgaria	<u>1</u>	N	Norway	<u>--</u>
CH	Switzerland	<u>2</u>	NL	Netherlands	<u>3</u>
CS	Czechoslovakia	<u>4</u>	P	Portugal	<u>--</u>
D	Germany	<u>20</u>	PL	Poland	<u>6</u>
DK	Denmark	<u>--</u>	R	Rumania	<u>--</u>
E	Spain	<u>--</u>	S	Sweden	<u>--</u>
F	France	<u>--</u>	SF	Finland	<u>2</u>
GB	Great Britain	<u>3</u>	YU	Yugoslavia	<u>--</u>
GR	Greece	<u>--</u>	SU	Soviet Union	<u>4</u>
H	Hungary	<u>--</u>	-	Others	<u>3</u>

Is there need of another colloquium on the same subject? Which year? Yes in deed; 1994/95

EUROMECH 293

Dynamics and Control of Rotating Machinery

EUROMECH 293 has been drawing considerable interest from scientists and from industry. Only 30 contributions of a larger number of submitted abstracts could be considered for presentation. The aims of the colloquium were, to produce knowledge, to stimulate new ideas, and to broaden and deepen the scientific and technical communications between the 50 participants who were selected for the Colloquium. The 30 papers which were presented, can be splitted into the following main topics:

Modelling Techniques, Sources of Excitations, Interactions between Bearings, Seals and Fluids, Stability Problems, Identification of Bearing and Rotor Parameters, Balancing, Actuators like Magnetic Bearings, Hydraulic Actuators or Piezo Actuators, Control Techniques and Applications.

The lectures were presented by leading experts in their special fields related to the topics above, reaching from theoretical problems to technical applications. The lectures were extensively discussed, and it is expected that the Colloquium will have a stimulating effect for further research in this fast moving area. It could be recognized that applying active bearings to control and/or monitoring of the dynamics of rotating machinery is becoming more and more of interest for industrial applications. One need for carrying out such control concepts are appropriate actuators. They are the key element to perform the required energy transfer.

Although at the present level of modelling of multibody systems including elastic parts is very advanced, there still exist problems in linking them with bearing systems, which contain nonlinearities, or fluid components, which are rotating with the roter. It could also be realized, that there is a lack in realistic control design. This means some of the control design, which has been presented, was only theoretical and without taking into account typical effects of mechanical systems, and to tackle the real problems. One of the reasons for this may be, that the researchers are often institutionally divided, and thus the communication in this interdisciplinary field of mechatronics will not be as intensive as needed.

One help for this communication problem could be, to held such Colloquia on a regular basis and always to focus on the actual topics which will change in this fast growing field. In the future, Colloquia regarding this interdisciplinary subject on dynamics and control of rotating machinery should be given much emphasis to bring together experts, working in different fields to promote communication and the exchange of knowledge.

Braunschweig, Nov. 12, 1992



Prof. Dr.-Ing. H. Ulbrich

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