

Final Programme



CONFERENCE ON:

# Thermofluidynamic processes in Diesel Engines



13-15, September 2000



UNIVERSIDAD  
POLITECNICA  
DE VALENCIA



Instituto de  
Transporte y de  
Material Móvil

ORGANISMO PÚBLICO  
VALENCIANO DE INVESTIGACIÓN



**asepa** ASOCIACIÓN ESPAÑOLA  
DE PROFESIONALES  
DE AUTOMOCIÓN

**GENERALITAT VALENCIANA**  
CONSELLERIA DE CULTURA I EDUCACIÓ



MINISTERIO DE EDUCACIÓN Y CULTURA

ORGANISED BY:

**CMT**  
DEPARTAMENTO MÁQUINAS Y  
MOTORES TÉRMICOS  
UNIVERSIDAD POLITÉCNICA DE VALENCIA. SPAIN



## Bienvenida

*En nombre propio y de la Universidad Politécnica de Valencia deseo expresarle el más sincero deseo de bienvenida. Estoy convencido de que su participación en estas jornadas constituye un valor añadido para las mismas. La puesta en común de todo lo más nuevo en la materia que nos ocupa, será técnica y humanamente enriquecedora, y socialmente importante. La automoción representa el corazón de la socioeconomía, de igual modo que el motor es el corazón de la automoción, y en contra de lo que habitualmente ocurre, que el tiempo juega en contra de la fortaleza de los corazones, el motor, ya de por sí centenario, se vigoriza, en una más difícil todavía huida hacia el límite de las posibilidades de la geometría, de la termofluidodinámica, de las propiedades de los materiales, de los lubricantes...*

*Nuestra Universidad tiene establecida una apuesta clara y permanente por la investigación aplicada. Estamos convencidos de que una de nuestras primeras obligaciones es dar respuesta a las necesidades de la sociedad en cada momento histórico. Sin embargo, no basta el convencimiento, sino que hay que implicarse de corazón en esa carrera para obtener esas respuestas. Esto lo saben muy bien los que investigan y desarrollan tecnología en este campo. Quizá se deba a ello la jovialidad de espíritu y la ilusión que ponen en sus trabajos los que a esto se dedican, que están desarrollando corazones con cero defecto.*

*Por ello nos resulta especialmente estimulante un congreso de tan alto nivel por lo que se refiere a los participantes, y tanto interés por el tema que aborda. Consideramos un verdadero honor ser sus anfitriones y, desde la convicción de que la ilusión también se contagia, agradecemos a los que hacen posible que Thiesel 2000 tenga lugar en la Universidad Politécnica de Valencia, a la par que le auguramos los mejores éxitos.*

## Welcome address

In my own name and on behalf of the Universidad Politécnica de Valencia, I wish to express you my warmest welcome. I am fully convinced that your participation in this Conference adds an extra value to the event. The discussion of the last advances in the topic under consideration will constitute a valuable experience, from both the technical and the human points of view. We should not forget, however, the social and economic importance of this activity. Automotive applications lie in the heart of society and economy, just in the same way as the engine is the heart of automotive applications and, whereas time usually erodes the strength of the hearts, the engine, having been active for more than a century, is still surprisingly vigorous, striving to reach the unexplored limits of geometry, of thermofluidynamics, of materials, of lubricants...

Our University has a clear and permanent vocation for applied research. We are convinced that one of our main duties is to give due answers to constantly evolving societal needs. However, conviction is necessary but not sufficient. We must take to heart these needs and get fully involved into their solution. This is well known by all those doing research and development in this field, and it is perhaps the reason for their spirits and their enthusiasm for their work: one would say that they are developing defect-free hearts.

These are some of the reasons why we find this Conference so exciting, not to mention the high level of the participants. We feel really honoured to be your hosts and, considering that enthusiasm is an infectious disease, we want to acknowledge the dedication of all those who have made possible the celebration of the THIESEL 2000 Conference at our University, and to express our best wishes for their success.

**JUSTO NIETO NIETO**

**RECTOR DE LA UNIVERSIDAD POLITÉCNICA DE VALENCIA**



**ORGANIZING COMMITTEE**

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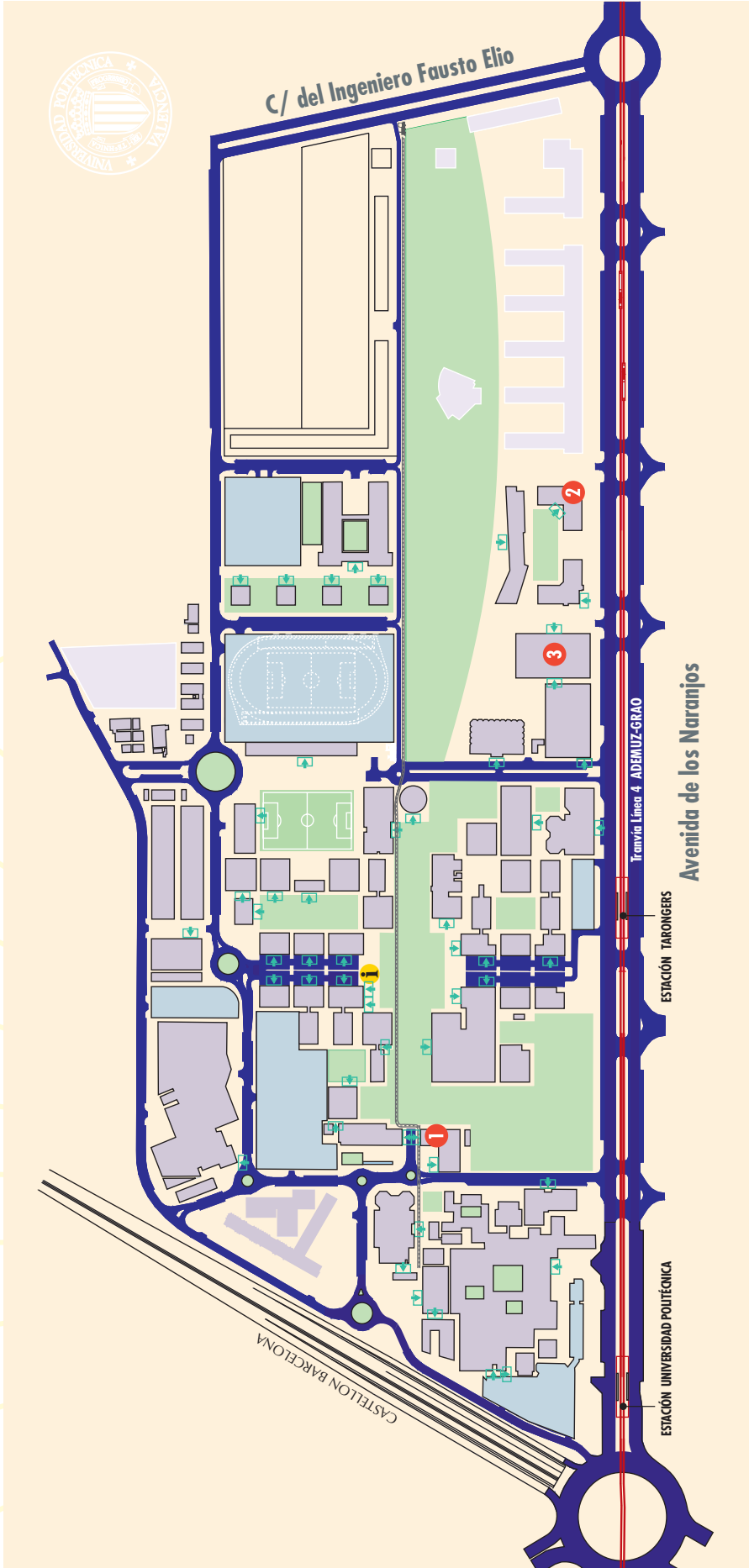
**CONFERENCE SECRETARY**

Dr. **R. PAYRI** / CMT. UP VALENCIA - SPAIN

**Objectives** Light Duty and Heavy Duty Diesel engines must comply with increasingly restrictive emission standards, while maintaining or even improving fuel consumption. This can only be achieved with new or advanced technologies in the field of fuel injection and combustion, air management and exhaust after-treatment. The conference will address all aspects related to thermofluidynamic processes in Diesel engines, from basic studies aiming to obtain a better understanding of the physical processes underlying Diesel engine operation, to the real day-to-day problems associated with engine development. This wide approach ranges from the use of advanced experimental diagnostic tools, complex analysis and simulation techniques used for basic combustion research, to design and diagnostic tools of current use in industrial practice. It is intended that the generality of the adopted scope will allow ideas and experiences from both the Industry and the University to come together, and facilitate the interchange of information through the discussion of recent advances and the identification of future research and development directions.

**Conference overview** THIESEL 2000 is the first Conference on Thermofluidynamic processes in Diesel Engines organised by CMT. Departamento de Máquinas y Motores Térmicos. The conference will be held over in three days. On the first day, Wednesday 13th of September, a welcome address will be given and registration will be open for attendants. On Thursday and Friday all the technical sessions will take place. Thirty minutes are scheduled for each speaker, comprising the presentation and discussion. Six keynote addresses will be given and more than thirty-five papers will be presented. Plenary sessions will be held during each morning, and two parallel sessions during the afternoon. The favourable response of the engine community to this first event seems to suggest a promising future for the THIESEL Conference, scheduled each two years.

**About UPV/CMT** The Universidad Politecnica de Valencia is one of the Technical Universities in Spain and was founded in 1971. The University has seven High Schools (5 annual courses) and eight Medium Schools (3 annual courses), with about 35.000 students and a teaching staff of 2.000. CMT. Departamento de Maquinas y Motores Termicos is composed of about 70 members, taking into account professors, researchers and laboratory technicians. Since Prof. Francisco Payri founded CMT in 1979, it has become a very active department involved in many R&D projects supported by private enterprises, as well as by public funds, including several European research programs. Research areas in the group include all things related to thermofluidynamic processes in internal combustion engines, such as engine air management, fuel injection and combustion, pollutant formation and control, noise generated by flow and combustion, etc. The group also works in the development and application of experimental techniques for engine research. The research philosophy of the group combines theoretical/modelling and experimental work to improve knowledge on the basic processes, while providing solutions to the European automotive industry requests.



UNIVERSIDAD POLITÉCNICA DE VALENCIA

- 1** Conference Building
- 2** Institute CMT
- 3** C.M. Galileo Galilei



# SESSION MATRIX

	Wednesday, September 13 <sup>th</sup>	Thursday, September 14 <sup>th</sup>	Friday, September 15 <sup>th</sup>
8:00/9:00		CONFERENCE REGISTRATION	
9:00/10:30		SESSION A.1. "DIESEL ENGINE & ENVIRONMENT" ROOM I	SESSION C.1. "FUELS & INJECTION SYSTEM" ROOM I
10:30/11:00		COFFEE BREAK	COFFEE BREAK
11:00/13:00		SESSION A.2. "DIESEL SPRAY I" ROOM I	SESSION C.2. "COMBUSTION & POLLUTANT FORMATION I" ROOM I
13:00/15:30		LUNCH	LUNCH
15:30/17:00		SESSION B.1.1. "DIESEL ENGINE MODELLING I" ROOM I	SESSION D.1.1. "EXPERIMENTAL TECHNIQUES I" ROOM I
		SESSION B.2.1. "DIESEL SPRAY II" ROOM II	SESSION D.2.1. "COMBUSTION & POLLUTANT FORMATION II" ROOM II
17:00/17:30		COFFEE BREAK	COFFEE BREAK
17:30/19:00	CONFERENCE REGISTRATION	SESSION B.1.2. "DIESEL ENGINE MODELLING II" ROOM I	SESSION D.1.2. "EXPERIMENTAL TECHNIQUES II" ROOM I
		SESSION B.2.2. "AIR MANAGEMENT" ROOM II	SESSION D.2.2. "COMBUSTION & POLLUTANT FORMATION III" ROOM II
19:00/19:30	CONFERENCE REGISTRATION		
19:30/21:00	WELCOME ADDRESS		CLOSURE ADDRESS
21:00/24:00	WELCOME COCKTAIL		
			GALA DINNER

**Thursday, September 14<sup>th</sup>**

**CONFERENCE REGISTRATION**

8:00/9:00

**SESSION A.1. DIESEL ENGINE & ENVIRONMENT**

ROOM I 9:00/10:30

**Chairman:** J. Whitelaw. IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY & MEDICINE (U.K.)

*Keynote address:*  
**K.P. SCHINDLER**

“DIESEL ENGINES AND THE ENVIRONMENT”  
**K.P. Schindler. VOLKSWAGEN A.G. (GERMANY)**

“CHEMICAL AND MORPHOLOGICAL ANALYSIS OF PARTICULATE MATTER FROM DIFFERENTLY FUELLED PASSENGER CAR DIESEL ENGINE”  
**M. Lapuerta, O. Armas, J.J. Hernández and R. Ballesteros. UNIVERSIDAD DE CASTILLA-LA MANCHA (SPAIN)**

“LOWER EMISSIONS BY ACTIVATION OF FUELS (LEAF): ON-BOARD REFORMING OF DIESEL/BIO-DIESEL FUEL MIXTURES FOR HIGH DILUTION COMPRESSED IGNITION ENGINES”  
**A. Megaritis and M.L. Wyszynski. THE UNIVERSITY OF BIRMINGHAM (U.K.)**

**COFFEE BREAK**

10:30/11:00

**SESSION A.2. DIESEL SPRAY I**

ROOM I 11:00/13:00

**Chairman:** P. Marez. PSA (FRANCE)

*Keynote address:*  
**N. JACKSON**

“THE HIGH SPEED DIRECT INJECTION DIESEL ENGINE – FUTURE POTENTIAL”  
**N. Jackson. RICARDO CONSULTING ENGINEERS (U.K.)**

“GAS ENTRAINMENT IN DIESEL SPRAYS”  
**A. Coghe. POLITECNICO DI MILANO, G.E. Cossali. UNIVERSITA DI BERGAMO and L. Araneo. POLITECNICO DI MILANO (ITALY)**

“DIESEL SPRAY CHARACTERISTICS OF A COMMON-RAIL VCO NOZZLE INJECTOR”  
**Ch. Bae and J. Kang. KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KOREA)**

“THE TIP EVOLUTION OF AN EVAPORATIVE INTERMITTENT FUEL SPRAY”  
**J.E. Jiménez, F. Castro, F. Tinaut and B. Giménez. UNIVERSIDAD DE VALLADOLID (SPAIN)**

**LUNCH**

13:00/15:30

**SESSION B.1.1. DIESEL ENGINE MODELLING I**

ROOM I 15:30/17:00

**Chairman:** M. Thelliez. UNIVERSITE PIERRE ET MARIE CURIE (FRANCE)

*Keynote address:*  
**M. TARABAD**

“HEAVY DUTY DIESEL ENGINES: PRESENT AND FUTURE”  
**M. Tarabad. PERKINS ENGINES COMPANY LTD (U.K.)**

“ADVANCED 3D FLUID DYNAMIC SIMULATION FOR DIESEL ENGINES”  
**R. Tatschl, B. Wiesler, A. Alajbegovic and Ch. v. Kuensberg Sarre. AVL LIST GMBH (AUSTRIA)**

“MODELLING DIESEL SPRAY INJECTION WITH A MULTI-BLOCK APPROACH”  
**T. Callitsis and G. Bergeles. NATIONAL TECHNICAL UNIVERSITY OF ATHENS (GREECE)**

**SESSION B.2.1.****DIESEL SPRAY II**

ROOM II 15:30/17:00

**Chairman:** A. Ahmed. RENAULT A. (FRANCE)

“THE INFLUENCE OF INTERACTION AIR FLOW WITH THE FUEL JET CHARACTERISTICS ON D.I. DIESEL ENGINE UPON ENERGETIC PARAMETERS AND EMISSIONS”

C. Cofaru, N. Ispas and S. Popescu. TRANSILVANIA UNIVERSITY OF BRASOV (ROMANIA)

“CHARACTERISATION OF A HIGH PRESSURE DIESEL FUEL SPRAY AT ELEVATED PRESSURES”

R.E. Morgan, RICARDO CONSULTING ENGINEERS, D. Kennaird, M.R. Heikal, UNIVERSITY OF BRIGHTON and F. Bar, RICARDO CONSULTING ENGINEERS (U.K.)

“INFLUENCE OF THE GAS AMBIENT ON DIESEL SPRAY PROPERTIES AT HIGH INJECTION PRESSURE: EXPERIMENTAL RESULTS”

S. di Stasio and L. Allocca. ISTITUTO MOTORI C.N.R. (ITALY)

**COFFEE BREAK**

17:00/17:30

**SESSION B.1.2.****DIESEL ENGINE MODELLING II**

ROOM I 17:30/19:00

**Chairman:** F. González. IRISBUS HOLDING (SPAIN)

“DEVELOPMENT OF AN INTEGRATED SPRAY AND COMBUSTION MODEL FOR DIESEL SIMULATIONS”

S-Ch. Kong, C.J. Rutland and R.D. Reitz.  
UNIVERSITY OF WISCONSIN-MADISON (USA)

“SIMULATION OF SPRAY IMPINGEMENT AND FUEL FILM FORMATION IN A DIRECT INJECTION DIESEL ENGINE”

M. Kim, K. Min. SEOUL NATIONAL UNIVERSITY  
and J-H. Lee. AJOU UNIVERSITY (KOREA)

“USE OF ILDM REDUCED CHEMISTRY IN DIRECT INJECTION DIESEL ENGINES”

C. Correa, H. Niemann, B. Schramm and J. Warnatz.  
IWR. UNIVERSITÄT HEIDELBERG (GERMANY)

**SESSION B.2.2.****AIR MANAGEMENT**

ROOM II 17:30/19:00

**Chairman:** G. Hunter. CUMMINS ENGINE CO. (USA)

“VARIABLE GEOMETRY TURBINE MODELLING AND CONTROL FOR TURBOCHARGED DIESEL ENGINES TRANSIENT OPERATION”

F. Payri, J. Galindo and J.R. Serrano. CMT. UNIVERSIDAD POLITÉCNICA DE VALENCIA (SPAIN)

“MIXED-FLOW TURBINES: STEADY AND UNSTEADY PERFORMANCE WITH DETAILED FLOW MEASUREMENTS”

R. F. Martínez-Botas. IMPERIAL COLLEGE OF SCIENCE,  
TECHNOLOGY & MEDICINE (U.K.)

“TOOLS FOR ENGINE INTAKE AND EXHAUST SYSTEMS DESIGNER: THE INVERSE PROBLEM”

R. Chacartegui, F. Jiménez, A. Muñoz. GMTS. UNIVERSIDAD DE SEVILLA, L. Conde. UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA and T. Sánchez. GMTS. UNIVERSIDAD DE SEVILLA (SPAIN)

**Friday, September 15<sup>th</sup>**

**SESSION C.1. FUELS & INJECTION SYSTEM**

ROOM I 8:30/10:30

**Chairman:** P. Pinchon. INSTITUT FRANCAIS DU PETROLE (FRANCE)

*Keynote address:*  
**T. RYAN**

“FUELS FOR COMPRESSION IGNITION ENGINES”

**T. Ryan. SOUTHWEST RESEARCH INSTITUTE (USA)**

“DIESEL NOZZLE - THE DETERMINING INTERFACE BETWEEN INJECTION SYSTEM AND COMBUSTION CHAMBER”

**D. Potz, W. Christ and B. Dittus. ROBERT BOSCH GMBH (GERMANY)**

“IS CAVITATION IMPORTANT IN DIESEL ENGINE INJECTORS?”

**C. Arcoumanis and J. Whitelaw. IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY & MEDICINE (U.K.)**

“EFFECT OF THE PROPERTIES OF SEVERAL FUELS ON THE INJECTION AND COMBUSTION PROCESS IN HSDI DIESEL ENGINES”

**J.M. Desantes, J. Benajes, J. Arregle. CMT, UNIVERSIDAD POLITÉCNICA DE VALENCIA (SPAIN) and A. Delage. PSA (FRANCE)**

**COFFEE BREAK**

10:30/11:00

**SESSION C.2. COMBUSTION & POLLUTANT FORMATION I**

ROOM I 11:00/13:00

**Chairman:** Y. Aoyagi. NEW ADVANCED COMBUSTION ENGINEERING INSTITUTE CO. (JAPAN)

*Keynote address:*  
**W. KNECHT**

“EUROPEAN EMISSION LEGISLATION OF HEAVY DUTY DIESEL ENGINES AND STRATEGIES FOR COMPLIANCE”

**W. Knecht. IVECO MOTORENFORSCHUNG A.G. (SWITZERLAND)**

“EFFECTS OF INJECTOR CONDITIONS ON THE FLAME LIFT-OFF LENGTH OF DI DIESEL SPRAYS”

**D.L. Siebers and B.S. Higgins. SANDIA NATIONAL LABORATORIES (USA)**

“A TWO-ZONE MODEL ANALYSIS OF HEAT RELEASE RATE IN DIESEL ENGINES”

**T. Kamimoto. TOKAI UNIVERSITY and T. Minagawa. TOKYO INSTITUTE OF TECHNOLOGY (JAPAN)**

“ANALYSIS METHODS FOR THE EFFECTS OF INJECTION RATE CONTROL IN DIRECT INJECTION DIESEL ENGINES”

**F. Chmela, G. Werlberger, R. Tatschk and P. Werlberger. AVL LIST GMBH (AUSTRIA)**

**LUNCH**

13:00/15:30

**SESSION D.1.1. EXPERIMENTAL TECHNIQUES I**

ROOM I 15:30/17:00

**Chairman:** C. Arcoumanis. IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY & MEDICINE (U.K.)

*Keynote address:*  
**T. KAMIMOTO**

“LASER DIAGNOSTICS OF DIESEL ENGINES”

**T. Kamimoto. TOKAI UNIVERSITY and H. Kosaka. TOKYO INSTITUTE OF TECHNOLOGY (JAPAN)**

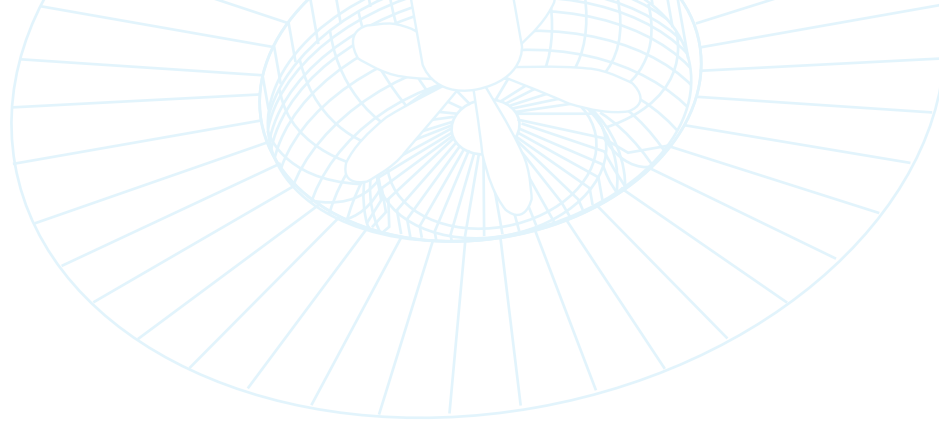
“OBSERVATION OF THE DIESEL COMBUSTION PROCESS IN MULTIPLE STAGE INJECTION”

**A. Morita. JAPAN AUTOMOBILE RESEARCH INSTITUTE, T Hashizume. MITSUBISHI MOTORS, Y. Iwashiro and Y. Aoyagi. NEW ADVANCED COMBUSTION ENGINEERING INSTITUTE CO. (JAPAN)**

“COMBUSTION OF AN ETHANOL/DIESEL FUEL BLEND IN AN HSDI DIESEL ENGINE”

**P.C. Miles. SANDIA NATIONAL LABORATORIES (USA)**



**SESSION D.2.1.****COMBUSTION & POLLUTANT FORMATION II**

ROOM II 15:30/17:00

Chairman: B. Leduc. UNIVERSITE LIBRE DE BRUXELLES (BELGIUM)

"COMBUSTION PROCESS OPTIMIZATION FOR EURO 3"

M. Lejeune, S. Michon and M. Hedna. RENAULT V.I. (FRANCE)

"A ZERO DIMENSIONAL SIMULATION MODEL FOR HSDI DIESEL ENGINES FOR PREDICTING NO<sub>x</sub>, SPRAY AND SWIRL FORMATION"

F.J. Wallace, S.A. Khalil, J.G. Hawley and D. Dang. UNIVERSITY OF BATH (U.K.)

"TURBULENCE GENERATION MECHANISMS IN IC-ENGINE FLOWS: A NUMERICAL STUDY"

I. Yavuz and I. Celik. CEMR. WEST VIRGINIA UNIVERSITY (USA)

**COFFEE BREAK**

17:00/17:30

**SESSION D.1.2.****EXPERIMENTAL TECHNIQUES II**

ROOM I 17:30/19:00

Chairman: J. Benajes. CMT. UNIVERSIDAD POLITÉCNICA DE VALENCIA (SPAIN)

"COMPARISON OF DIFFERENT EXPERIMENTAL METHODS FOR DROPLET SIZING OFF DIESEL SPRAY AXIS"

S. di Stasio, G. Valentino and F.E. Corcione. ISTITUTO MOTORI C.N.R. (ITALY)

"SWIRLING FLOW MOTION ANALYSIS. INTEGRATION NUMBERS AND SCALES"

P. Guibert. UNIVERSITE DE VERSAILLES SAINT QUENTIN, M. Truscelli, L. Lemoyne and M. Murat. UNIVERSITE PIERRE ET MARIE CURIE (FRANCE)

"LESSONS LEARNED FROM DIRECT VISUALIZATION OF HIGH-PRESSURE SPRAY AND COMBUSTION"

M-Ch. Lai. WAYNE STATE UNIVERSITY (USA)

**SESSION D.2.2.****COMBUSTION & POLLUTANT FORMATION III**

ROOM II 17:30/19:00

Chairman: M. Lapuerta. UNIVERSIDAD DE CASTILLA-LA MANCHA (SPAIN)

"PROCESSING ANALYSIS OF THE INJECTION SYSTEM OF THE DIESEL ENGINE AND ITS MATHEMATICAL MODELLING"

A. Lamani Londo. POLYTECHNIC UNIVERSITY OF TIRANA (ALBANIA)

"ANALYSIS OF THE EFFECT OF COMBUSTION BOWL GEOMETRY OF A DI DIESEL ENGINE ON EFFICIENCY AND EMISSIONS"

M.G. Lisbona, L. Olmo and G. Rindone. CENTRO RICERCHE FIAT (ITALY)

"A THREE-ZONE HEAT RELEASE MODEL FOR DIRECT INJECTION DIESEL ENGINES"

D.J. Timoney. UNIVERSITY COLLEGE DUBLIN (IRELAND). C.P. McNally. MASSACHUSETTS INSTITUTE OF TECHNOLOGY (USA) and C.T. Doyle. HEWLETT PACKARD LTD. (IRELAND)

**CLOSURE ADDRESS**

19:00/19:30

**GALA DINNER**

21:00/24:00

## Practical Information

### LOCATION AND DAYS

- The THIESEL '2000 Conference, will take place on the 13<sup>th</sup>, 14<sup>th</sup> and 15<sup>th</sup> September 2000 at the Universidad Politécnica de Valencia, at the "Paraninfo" (Conference Building).

### CONFERENCE SECRETARIAT

#### ■ CMT. DEPARTAMENTO DE MÁQUINAS Y MOTORES TÉRMICOS.

II EDIFICIO DE INVESTIGACIÓN. CAMPUS DE VERA.  
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**e-mail: [secrecon@mot.upv.es](mailto:secrecon@mot.upv.es)**

For updated information on the organisation of the Conference please visit the web page:

**[http:// www.cmt.upv.es](http://www.cmt.upv.es)**

### TRAVEL & HOUSING

#### ■ ULTRAMAR EXPRESS - CONFERENCE OFFICE

Gran Vía Marques del Turia, 49, 7º, 3ª  
46005 Valencia. Spain  
Tel.: +34 96 352 81 61 • Fax: +34 96 394 11 58  
**e-mail: [uexpevlc@uex.es](mailto:uexpevlc@uex.es)**



Enclosed with this programme you will find a brochure with details about accommodation and travel arrangements.

Iberia and Renfe are acknowledged to be the official transport companies for the Thiesel'2000 Conference offering discounts, respectively, of 25% off Business and Tourist class (National, European and Transcontinental), and 30% off prices of high speed, main line, regional and commuter trains.

The hotels booked by the Conference Secretariat are:

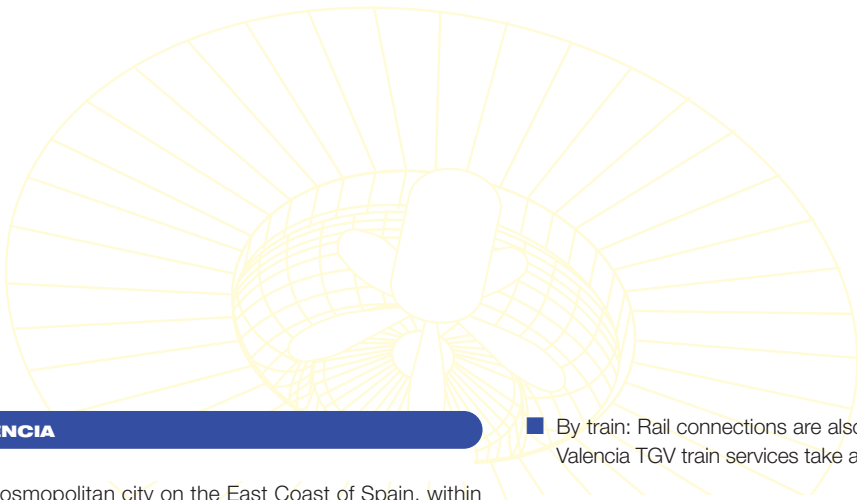
- **HOTEL MELIÁ REY D. JAIME\*\*\*\***  
Avenida Baleares, 2  
Single room 17.120 Ptas / 103 Eu.  
Double room 20.330 Ptas / 122 Eu.
- **HOTEL NH CIUDAD DE VALENCIA\*\*\***  
Avda. del Puerto, 214  
Single room 11.556 Ptas / 70 Eu.  
Double room 12.947 Ptas / 78 Eu.
- **C.M. GALILEO GALILEI**  
Hall of Residence  
Avda. Los Naranjos s/n  
Single room 5.896 Ptas. / 36 Eu.  
Double room 8.600 Ptas / 52 Eu.

Please indicate your preference in the brochure. Prices are per room and night including breakfast and taxes. Early booking is recommended to get your preference served, so please reserve your room through the Conference accommodation service (Ultramar Express) as soon as possible. Due to accommodation problems in the city of Valencia over these dates, mainly because of the Motorcycle World Championship Race in Cheste and other events, no room will be guaranteed after July 14<sup>th</sup> 2000.

If you wish to bring a guest, please inform the Conference Office (Ultramar Express), so that they can let you know about their complementary activities programme.

### REGISTRATION FEES

- The registration fees, including social events, are 300 Euro (Payments in national currencies will also be accepted). The fees will include:
  - Attendance to the Conference Sessions.
  - Book with full Conference Proceedings.
  - Coffee breaks and lunches during the Conference.
  - Welcome reception and gala dinner.
  - Transfer by bus from hotel to Conference Building and vice versa.



**ABOUT VALENCIA**

■ Valencia is a cosmopolitan city on the East Coast of Spain, within easy access to some splendid holiday resorts such as those on the Costa Blanca and Costa del Azahar, and not far from the Balearic Islands. Valencia itself is a fascinating place, which has a characteristic blend of historical tradition –with interesting examples of Middle Age and Renaissance architecture-, exciting nightlife, excellent weather and world-renowned festivals and regional cuisine.

**HOW TO REACH VALENCIA**

- By plane: Valencia International Airport at Manises, is located approximately 4 km from the city centre, with regular scheduled national and international flights.
- By road: The city also offers excellent communications with many other European cities. The A-7 Mediterranean Motorway runs north to south providing easy connections to Catalonia and France in the north, and Murcia and Andalucia in the south. There are also good road connections to the rest of Spain: such as the N-III dual motorway to Madrid.

■ By train: Rail connections are also extensive. The fastest Barcelona-Valencia TGV train services take approximately 2 hours and a half.

**SOCIAL PROGRAMME**

■ A social programme for participants will be arranged including an informal welcome cocktail reception on the evening of Wednesday 13th and a gala dinner with a traditional Spanish entertainment on Friday night. The gala dinner will be hosted in the Albufera Natural Park located 20 km south of Valencia. In addition, the organisers have prepared a visit to the CMT experimental facilities on Wednesday afternoon and on Saturday morning for interested participants. There is also the possibility to attend the Motorcycle World Championship Race taking place on Sunday 17th at the “Ricardo Tormo Circuit” at Cheste (Valencia). We would therefore ask participants to get in contact with the Conference Secretariat if interested in taking part in these events.





13-15, September 2000



COLLABORATION:

**CMT. DEPARTAMENTO DE MÁQUINAS Y MOTORES TÉRMICOS.**

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For updated information on the organisation of the Conference please visit the web page:

**[http:// www.cmt.upv.es](http://www.cmt.upv.es)**

