



March is often the month the shipping comes to life in any new year. The MariFuture team has been very busy in February and this month formulating new project proposals and becoming involved with new initiatives and ventures. More details will be provided on the outcome of the new proposals in April 2018 News.

As reported in previous News announcements MariFuture has decided to continue the 'Year of Efficient Ship' in 2018 due to the importance making our members and partners aware of the impact of toxic pollutants from shipping and vast array of means available to us to reduce the level and amount of the emissions from ship to minimum. To this end, we will be continuing our publication of a development paper on the subject ship energy management in the coming months.

Presentation of MariEMS at the International Propellor Club





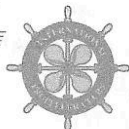
Figure 1 . Presentation of MariEMS at the International Propellor Club



Shipboard Energy Manager

The INTERNATIONAL PROPELLER CLUB

TO PROMOTE, FURTHER AND SUPPORT
MERCHANT MARINE TRANSPORTATIONS AND
COMMUNICATIONS TO PROMOTE COMMERCE,
PUBLIC RELATION AND CULTURAL, EXCHANGES



Port of Genoa

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Genova, 8 Marzo 2018

Sala Capitani, Palazzo San Giorgio

Shipboard Energy Manager

Ospiti Relatori:

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Capt. Zakirul Bhuiyan – Coordinator of mariEMS project - Warsash Maritime Academy, Southampton Solent University, United Kingdom

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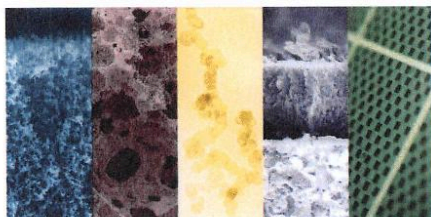
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Per informazioni: www.propellerclubs.it - <https://www.facebook.com/PropellerClubs/>



Particulate Matter Flows – Participants



UK Fluids Network
Special Interest Group on
Particulate Matter Filtration Flows in
Automotive and Marine Applications
www.coventry.ac.uk/SIG-PM-Filtration

Particulate Matter Flows: More applications

March 15th, 2018

Johnson Matthey Technology Centre (Reading)

List of participants

- | | |
|--|---|
| 1. MORI AHMADI
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Consiglio Nazionale delle Ricerche
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| 2. SILVIA ALCOVE CLAVE
Johnson Matthey | 13. PETROS EFTHYMIU
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| 3. THEO AKRITIDIS
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Caterpillar
Perkins Engines |
| 4. SVETLANA ALEKSANDROVA
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Coventry University | 15. NWABUEZE EMEKWURU
Senior Lecturer
Coventry University |
| 5. JON ANDERSSON
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and Chemical Analysis Department
Ricardo UK | 16. ROMAIN GILLOT
Powertrain Modelling Engineer
Claytex |
| 6. Stephen BENJAMIN
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| 7. CECILIA BERNARDINI
Johnson Matthey | 18. AGNIESZKA HUDOBA
Jaguar Land Rover |
| 8. CHRISTOPH BÖRENSEN
Technical expert
FORD Motor Company | 19. JOSE MARTIN HERREROS
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| 9. DJAMELA BOUNECHADA
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| 10. PETER CHIGADA
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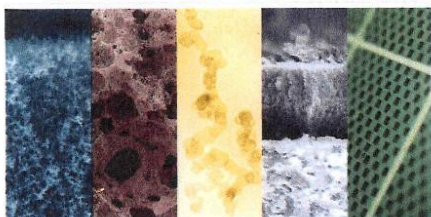


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Programme



UK Fluids Network
Special Interest Group on
Particulate Matter Filtration Flows in
Automotive and Marine Applications

Particulate Matter Flows: more applications

March 15th, 2018

Johnson Matthey Technology Centre (Reading)

Programme

- 10:00 - 10:20** Arrival and registration
- 10:20 - 10:30** Welcome address
- 10:30 - 11:00** **Dr Christoph Böresen (Ford)**
"Evaluation of particulate filters for internal combustion engines"
- 11:00 - 11:30** **Prof Reza Ziarati (Centre for Factories of the Future, UK)**
"An Investigation into Making Ships Cleaner and More Energy Efficient"
- 11:30 - 11:45** Coffee break
- 11:45 - 12:15** **Jon Andersson (Ricardo)**
"AECC/Concawe GPF & RDE Particle Number Emissions Test Programme: PN Measurement Above and Below 23nm"
- 12:15 - 12:45** **Dr Jose Martin Herreros (University of Birmingham)**
"Particle Characterisation from Diesel & GDI Engines"
- 12:45 - 14:00** Lunch
- 14:00 - 14:30** **Dr Pedro Piqueras (CMT - Motores Térmicos, Universitat Politècnica de València, Spain)**
"Application of fluid-dynamic and chemical modelling to the study of techniques for pressure drop limitation in wall-flow diesel particulate filters"
- 14:30 - 15:00** **Dr Valeria Di Sarli (Istituto di Ricerche sulla Combustione - Consiglio Nazionale delle Ricerche (CNR), Italy)**
"Critical Issues in the Regeneration of Catalytic Diesel Particulate Filters: Experiments and CFD Modeling"
- 15:00** Review and closing comments
- 15:15** Tours



Presentation abstracts

Dr Christoph Börensen (Ford, Germany)

Evaluation of particulate filters for internal combustion engines

Wall flow filters are used since more than 10 years in passenger car vehicles with compression ignition and will become increasingly popular in gasoline-powered cars as well. This lecture compares the different requirements for these applications and describes the evaluation and material testing methods that have been developed to assess the filtration function and the robustness of filters, focussing on pressure drop and filtration efficiency for GPFs

Prof Reza Ziarati (Centre for Factories of the Future, UK)

An Investigation into Making Ships Cleaner and More Energy Efficient

This lecture focuses on the recent research findings including the EU funded MariEMS project initiated to make ships more energy efficient. The projects have contributed to regulate the engine performance parameters and the navigational equipment for minimum fuel consumption and exhaust emissions by also taking advantage of the wind and sea conditions ensuring compliance with EEIO and EEDI without the risk of intentional reduction of speed. The primary experiments on the propulsion system and the ship navigation system have shown substantial fuel saving potential. Recent experiments allowed the study of key operating factors affecting the efficiency of ship propulsion and ship operational factors to be investigated and methodologies concerning engine control and navigation systems, for safe operations and efficient performance, to be optimised. In the experiments a digital twin of the engine was developed; the overall system included also a set of high fidelity tools and processes for the accurate and efficient analysis of air and sea conditions. These experiments included limited hydrodynamic analysis for ships' operational performance in normal running condition as well as slow speed behaviour. The experimental work concerned the adaptation of multi-objective optimisation and integrated design environments for holistic operational performance and minimum powering requirement predictions; this is expected to ensure safe application of the design rules guaranteeing, at the same time, the right balance between economic efficiency, environmental performance and safety. The reason for the experiments was a decision support system to regulate engine running conditions and to provide navigation knowledge to for minimum fuel consumption and lowest feasible CO2 emission. The experiments are ongoing and the overall system comprised a standalone platform composed of all hardware and software systems. The intention of MariEMS project is to take advantage of the outcome of a recently concluded projects such as IdealShip, this latter project proved that it is possible to make considerable fuel saving when sailing the ship through the path of least resistance (sea and air) in its journey from one location to another. The lecture will also make special references to the efforts to develop the digital twin of the engine and to make the marine diesel engines more efficient and the recent work in reducing their exhaust emissions.



Valeria Di Sarli (Istituto di Ricerche sulla Combustione - Consiglio Nazionale delle Ricerche (CNR), Italy)

Critical Issues in the Regeneration of Catalytic Diesel Particulate Filters: Experiments and CFD Modeling

In this presentation, the main critical issues in the regeneration of catalytic Diesel Particulate Filters (DPFs) will be discussed, with a particular emphasis on the issue of soot-catalyst contact. Conditions that optimize this contact, thus allowing for an effective and safe regeneration of catalytic DPFs, will be illustrated in the light of both experimental evidence and simulation results.

Pedro Piqueras (CMT - Motores Térmicos, Universitat Politècnica de València, Spain)

Application of fluid-dynamic and chemical modelling to the study of techniques for pressure drop limitation in wall-flow diesel particulate filters

Wall-flow particulate filters are the most effective system for particulate matter abatement in reciprocating internal combustion engines, being required for current and future emission standards fulfillment. Firstly, this lecture focuses on the description of a set of computational tools developed to model the main physical and chemical phenomena taking place in wall-flow diesel particulate filters (DPF). The presented model is based on the 1D solution of the conservation equations in wall-flow monoliths to assess the filter performance. The computation of the pressure drop and the filtration efficiency is directly dependent on the description of the porous media properties as a function of the soot load, which are in turn dependent on the soot penetration thickness into the porous wall. The soot oxidation rate is modelled taking into account the impact of the reactants adsorption on the carbon surface as well as the limitations related their diffusion efficiency into the soot internal pores. The final part of the lecture is devoted to exemplify how the use of the DPF modelling helps to analyse the potential of techniques driven to limit and control the DPF pressure drop. In particular, pre-turbine DPF location, which provides a trade-off between fuel consumption benefits and DPF volume downsizing, and the effect of pre-DPF water injection on soot mass distribution, which impacts pressure drop and soot oxidation dynamics, are considered.

Contacts

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Project OPTIMUM

The first face-to-face meeting of this EUREKA ITEA multi-million EUR project took place in Germany on 12-13 March 2018. The proposed project aims to support innovative concepts for engineering, commissioning, control and supervision of smart manufacturing and material handling. It will be in line with European, National and international initiatives towards digital manufacturing, closely related to on-going activities in working groups around the German initiative Industry 4.0. Taking the results from ongoing architectural, component and ontology discussions, OPTIMUM's major goals are: improvement of the aspects of distributed control, adaptation of (I)IoT technologies to real industrial needs, enhancement of control and applications by context and location awareness as well as application design and common-model based 3D engineering and supervision.

There over 20 major industrial partners supporting this project. The more in-depth report on the project will be published in MariFuture after the kick-off meeting on 12-13 March 2018.



Figure 2. OPTIMUM Project kick-off meeting in Germany



UniBus

The project is progressing well. The project started in September 2017 and had its first partner meeting in Istanbul, Turkey in November 2017. The project intends to improve the quality and relevance of higher education through the creation of opportunities for the two worlds of academia and business to come together particularly regionally. The HEIs and VET providers should be centres of excellence in what they teach and to do this they must develop all staff and prepare their students for the world of work. They must work with and support businesses, for which they are preparing the young people as future employees and customers of the businesses' products and services. It has to be realised that the interests which business has in wishing to establish or improve links with academia are different from those of the academia, and may not always be compatible. The educationalists can aspire to be altruistic; business people can only afford to be altruistic when they have made more than enough money for the maintenance and development of their businesses. This is not a moral judgement – it is a pragmatic one. Academia needs the industry to support it in the development of its programmes so that they can identify and respond to the needs of industry and commerce. It needs industry to seek funds to progressively develop its laboratories, and it needs industry to develop its staff members. Industry needs academia to improve the quality of its employees, present and future; it needs academia for technological progress useful to business, and to better the management of its business; it needs academia for the formation of its future customers, and so of demands for its products and services (Ziarati, 2016).

With regard to the horizontal priorities the projects aims to promote open and innovative education, mainly for adult and young people, embedded in the digital era in the cloud environment. The intention is to develop basic and transversal skills such as entrepreneurship and digital skills so that students could support industry in the challenges it is facing, looking at what is already being done well and should therefore be further developed or supported; and what is being done not well enough, or badly, and therefore needs to be changed, stopped, or replaced by something new. It is also to create new things. A depository of student projects and industry's suggestions for projects could help both industry and academia and this is one area which they can build their future collaborations.

The second PM is scheduled in London, UK on 26-27 April 2018. The project is expected to be concluded in August 2020.



Figure 3. First UniBus partner meeting – 27th November 2017



Career Comeback Support Program for Women (CCSP-W)

In the Career Comeback Support program for Women (CCSP-W) project, the aim is to increase the awareness of contemporary business environment for unemployed women who had work experience previously, and also encouraging them to get back into the workforce by providing an Online and mobile platforms as well as its relevant curriculum. In this project, there are three objectives: 1) All types of job opportunities that would allow women to have flexibility and ease them return to work life will be allocated in a single platform. This part of study will assist with the career-planning phase of women to see available options for them in detail so that they can allocate types of jobs based on their interests and skills; 2) Those potential entrepreneur women who would like to run their own business will be assisted by networking and knowledge base tools that are going to be provided. Correspondingly, this study aims to introduce funding opportunities that are available to entrepreneurs in general and also specific to women to re-enter the workforce; 3) An Online platform February 2018 marifuture.org News in their own languages with a mobile platform will be provided to woman returnees to adapt them to the social business era considering possible opportunities and necessities in the new business world. The project started in September 2016. There have happened 3 PMs in Istanbul, Kenilworth and Paris and the Partners are preparing for the 4th PM in Poland in May. Everything is progressing smoothly as specified in the project proposal.

DayTime

MariFuture is supporting the multi-million EUREKA ITEA DayTime proposal. The intention is to develop digital twins of a ship to support maintenance planning and implementation using sophisticated IA techniques. C4FF's Maritime Division is in the process of developing a ship engine digital twin and an engine rig and the outcome will help developing a twin of a ship which will include the propulsion system.

IMLA 2017

A new paper on MariEMS is being prepared for presentation at the next IMLA Conference in Philippines. MariFuture presented two papers at the IAMU 2017. The first paper related to Avoiding Collision at Sea – Pareto Analysis and was presented early in the opening day of the conference on 11 October 2017. The second paper, Maritime Ship Efficiency Energy Management was presented on 13th conference early in the morning. Both papers were well received. Several participants expressed interest to work with MariFuture partner initiating new proposals. More information on these developments will be given in February 2018 news.

Professor Ziarati, C4FF, with support from MariEMS partners has prepared a lecture which is planned for presentation at the Johnson Matthey Technology Centre on 15th February 2018. The lecture will highlight the importance of digital twinning in product development and maintenance. The lecture summary is presented as the February 2018 Article on MariFuture.



ACTS Plus

The first partner meeting for this newly approved project took place on 17-19 November 2016 in Istanbul. The second meeting took place on 30-31 March 2017 in Croatia. The third meeting took place in Varna, Bulgaria on 11-12 October 2017 at the same time as the IAMU conference. The ACTS Plus paper prepared by Professor Ziarati and partners was presented at IAMU by Professor Ziarati, Capt. Mohavic (UoR) and Capt. King (SSU) after the keynote speech by the Rector of NVNA.

The new ACTS project, ACTS Plus is based on the Pareto analysis carried out as a part of the recently concluded ACTs project. The Pareto analysis showed that some of the COLREGs rules are more complicated than others and that there are situations where a number of rules apply. The paper argues the importance of continuing the ACTs project both according to the plans for its post-funding period and also by preparing a new proposal for EU funding (ACTS Plus). It is worth pointing out that as a result of the new paper a proposal was prepared by some of the partners and submitted to the UK national agency.

This new ACTS project is led by Southampton Solent University (SSU) and coordinated by C4FF. The project started officially on 1st October 2016 and is expected to be concluded in March 2019.

The next partner meeting of the project is planned to take place in Mallorca is scheduled for 18th and 19th April 2018.

MariEMS

MariEMS partners have held several presentations to date and intend to participate in the EU Maritime Day and the IMO Congress in the near future. The final conference and partner meeting is scheduled in Istanbul on 22-23 March 2018.

MariEMS Final Conference and Partner Meeting

An event supporting the development of training in Ship Energy Efficiency

Conference Programme

22nd March 2018

Istanbul, Turkey

10:00 - 10:15

Welcome Address by Dr Basak Akdemir introducing, Capt. Zakirul Bhuiyan and Professor Reza Ziarati
MariEMS Project Manager and Project Joint Originator and Technical Coordinator

10:15 – 10:35

Keynote Presentations:
Professor Reza Ziarati, Chairman, C4FF and Founder, MariFuture
"Efficient Ship"



10:35 – 10:55	Mr Markku Mylly; President of EMSA, EU
10:55 – 11:15	Dr Sualp Urkmez, President of TUDEV, TR "TUDEV transformation into Piri Reis University – Role of EU projects"
11:15 – 11:45	Tea & Coffee Break
11:45 - 12:00	Capt. Zakirul Bhuiyan introducing also the partners in the project "MariEMS Achievements"
11:45 - 12:00	Presentation by Partners
12:15 – 13:15	Tomaz Gregorie "The MariEMS Online Platform"
13:15 – 14:15	Lunch
14:15 - 15:15	Partner Meeting "Learning from the Final Conference and Sustaining Of MariEMS: future opportunities and joint ventures"
16:00	Close of Day 1
09:15 - 17:00 Day 2 – Partner Meeting	

MariLANG Project

The fifth partner meeting of MariLANG took place in Kenilworth the UK on 5-6 March 2018.

The fourth partner meeting of MariLANG was held in Slovenia on 23-24 June, 2017.

The MariLANG project intends to develop a Maritime English training programme based on the EU funded SeaTALK learning materials and the EU funded MarTEL assessments, both of which are compliant with the IMO Maritime English Model (3.17). It is worth mentioning that partners from both SeaTALK and MarTEL were involved in the 2015 revision of the IMO Maritime English Model Course through the International Maritime Lecturers Association (IMLA). The funding of MariLANG is very good news as it will complete the process started with MarTEL establishing a Maritime English assessment system, followed by SeaTALK seeking material for it, in conclusion MariLANG will develop an actual training programme for Maritime English which will include the three new categories defined in the revised model course: Electro-Technical Officers, GMDSS radio operators, and Personnel providing direct service to passengers in passenger spaces on passenger ships.

The 4th training session is scheduled for June 2018 at SSU, Southampton, UK and the 1st PM along with the MariLANG Final Conference will be in Elsfleth, Germany in 7-9 July 2018.



A summary of all the projects can be found in www.marifuture.org. For further information about MariFuture please refer to the MariFuture website.

Miss Maria Veligrantaki