

**MIRCE Academy Call for Papers 26<sup>th</sup> March on time**

DALLAS/FT WORTH	AMERICAN	1281	6:32A	17	ON TIME
HARTFORD	US AIRWAYS	2712	3:35P	52	ON TIME
HARTFORD	DELTA	2318	4:15P	94	ON TIME

# **3<sup>rd</sup> World Congress of MIRCE MECHANICS\***

**Woodbury Park, Exeter, United Kingdom, 3 – 5 June 2014**

LONDON HEATHROW	UNITED	918	2:19P	42	BOARDING
LOS ANGELES	DELTA	333	3:25P	73	ON TIME
LOS ANGELES	SOUTHWEST	143	3:40P	126	ON TIME
LOS ANGELES	UNITED	231	4:25P	40	ON TIME
LOUISVILLE	DELTA	2409	2:20P	94	ON TIME
MEMPHIS	NORTHWEST	961	2:40P	36	CHECK IN

**\* MIRCE Mechanics is a scientific theory for the prediction of Machine In-service Reliability, Cost and Effectiveness**



# A personal invitation from Dr Jezdimir Knezevic, Founder & President of the MIRCE Akademy

According to Einstein “*Everything that the human race has done and thought is concerned with the satisfaction of felt needs*”. During the history of the human civilisation an endless number of machines have been created to satisfy endless human needs. Hence, humans have created ships, airplanes, tractors, computers, refrigerators and other machines. The designed-in capability of any machine to satisfy felt needs by delivering the required function, with a physically measurable performance like speed, acceleration, power, fuel consumption, breaking distance and many others, is known as **functionality**. The functionality performance of any machine is predictable by the laws of science. The essential features of these laws are determinism, reversibility and independence of time, location and human impacts.

However, experience teaches us that the essential features of the in-service life of machines are indeterminism, irreversibility and dependence of time, space and human impacts, in respect to their ability to deliver functionality, known as **functionability**<sup>1</sup>. The motion of functionability is shaped by occurrences of observable functionability phenomena like failures, accidents, services, inspections, repairs, modification, replacements, cannibalisation, lack of spare parts, necessary training, transportation delays, storage damage, and so forth,. Hence, emerging functionability performance, like reliability, cost and effectiveness, are not predictable by the laws of science used for the predictions of the functionality.

Consequently, to scientifically observe, analyse and understand the trajectory and mechanisms of the motion of observable functionability phenomena through the in-service life of machines, I established the MIRCE Akademy at Woodbury Park, in 1999. We studied these phenomena and captured their complex relationships to describe them through the mathematical scheme that has given birth to **Mirce Mechanics, a scientific theory of the motion of functionability through the life of a machine**. Its axioms, mathematical formulas, rules and computational methods enable accurate predictions of a measurable functionability performance, like in-service reliability, cost and effectiveness, to be made with a probabilistic regularity.

The main objective of the Congress is to bring together machine’s design-in decision makers, like scientists, mathematicians and engineers and machine’s in-service decision makers, like operators, maintainers, and logisticians to spend a few days together and learn from each other the complexity and the consequences of their interactions. The quantification of these interactions is essential if the successful trade-off between functionality and functionability performance of machines is to be achieved, as the human “satisfaction of felt needs” by machines, depends on it.

I am looking forward to welcoming you to the MIRCE Akademy, during this important global event, as a paper presenter, master class presenter, exhibitor, sponsor or participant.

A handwritten signature in black ink that reads "Knezevic". The signature is stylized, with a large, looped 'K' and a distinct 'é' at the end.

<sup>1</sup> Knezevic, J., Reliability, Maintainability and Supportability – A probabilistic Approach, Text and Software package, pp. 291, McGraw Hill, London 1993. ISBN 0-07-707691-5

Papers, Presentations, Workshops, Exhibits, Software and similar contributions are expected to be broadly confined within the following topics:

**Mechanics of the physical processes that cause transition of a machine to failed states, of following and similar types:**

- Thermal aging
- Thermal buckling
- Photo-chemical degradation
- Reduction in dielectric strength
- Metal fatigue
- Actinic degradation
- Photo oxidation
- Swelling/ shrinking
- Photochemical decomposition
- Blistering
- Warping
- Thermal stress
- Breakdown of lubrication film
- Increased structural loads,
- Shift in the centre of gravity
- Creep
- attenuation of energy
- Clutter echoes
- Blocking of air intakes
- Decreased lift and increased drag
- Unequal loading
- Removal of coating protection,
- Pitting
- Roughening of the surface
- Acid reactions
- Leakage currents
- Promotion of mould growth
- Reduction of heat transfer
- Caking and drying
- Premature cracking
- Hot spots creation
- Erosion
- Bleaching preservatives
- Abrasive wear
- Corrosion
- Alkaline reactions
- Others .....

**Mechanics of the physical processes that are performed by humans, to retain or restore a machine in functional state, of the following and similar types:**

- **Servicing:** replenishment of consumable fluids, cleaning, washing, painting, etc.,
- **Lubrication:** installing or replenishing lubricant
- **Inspection:** Examination of an item against a defined physical standard
- **Visual Inspection** performed to detect obvious unsatisfactory conditions.
- **Detailed Visual Inspection** consists of intensive visual search for evidence of any irregularity.
- **Check:** a qualitative or quantitative assessment of function
- **Operational:** a qualitative assessment to determine if an item is fulfilling its intended function
- **Restoration:** perform to return an item to a specific standard. (cleaning, repair, replacement or overhaul.)
- **Discard:** removal of an item from service.

**Mechanics of the building an interactive scheme for prediction of a in-service life of machine as a physical entity whose consisting components are continuously and simultaneously exposed to variety of physical mechanisms that cause transition to failed states in on hand, and large number of maintenance processes planned and performed by humans, to return or keep a machine in a functional state as long as possible, within a given environmental and budgetary conditions, on the other.**

*In summary, the challenge of Mirce Mechanics is to predict the future state of a machine, which results from very complex processes, driven by rich interactions between internal components, on one hand, and environmental and human impacts of their operation and maintenance. Mirce Mechanics is still a young science and not everything regarding in-service life of a machine is fully understood. Today, it is still part artistry, but the results of inaccurate predictions could have significant impact on human lives, habitat and business.*

**Attention: 26<sup>th</sup> March 2014** is the deadline for the submission of all presentation and exhibition intentions.

For the planning purpose, of the participants, exhibitors and presenters, the following Price structure will be applied regarding all services related to the 3<sup>rd</sup> World Congress of Mirce Mechanics.

All prices are in GB Pounds Service	Before 1 <sup>st</sup> May 2014			After 1 <sup>st</sup> May 2014		
	Price	VAT	Total	Price	VAT	Total
Participant for 3 Days	695.00	139.00	<b>834.00</b>	795.00	159.00	<b>954.00</b>
Participant per Day	275.00	55.00	<b>330.00</b>	325.00	65.00	<b>390.00</b>
Presenter on the day of presentation	Free			Free		
Presenter for 3 Days	325.00	65.00	<b>390.00</b>	395.00	79.00	<b>474.00</b>
Retired participants for 3 Days	195.00	39.00	<b>234.00</b>	195.00	39.00	<b>234.00</b>
University students for 3 Days	495.00	99.00	<b>594.00</b>	495.00	99.00	<b>594.00</b>
Congress Proceedings on CD	175.00	35.00	<b>210.00</b>	225.00	45.00	<b>270.00</b>
MIRCE Akademy Members	645.00	129.00	<b>774.00</b>	745.00	149.00	<b>894.00</b>
MIRCE Akademy Fellows	625.00	125.00	<b>750.00</b>	725.00	145.00	<b>870.00</b>
MIRCE Akademy Students	595.00	119.00	<b>714.00</b>	695.00	139.00	<b>834.00</b>
Partners Programme for 3 Days	195.00	39.00	<b>234.00</b>	245.00	49.00	<b>294.00</b>
Congress Dinner only	75.00	15.00	<b>90.00</b>	85.00	17.00	<b>102.00</b>
Exhibitors - Gold Package	6000.00	1200.00	<b>7200.00</b>	7500.00	1500.00	<b>9000.00</b>
Exhibitors - Silver Package	3000.00	600.00	<b>3600.00</b>	4500.00	900.00	<b>5400.00</b>
Exhibitors - Bronze Package	1500.00	300.00	<b>1800.00</b>	2500.00	500.00	<b>3000.00</b>
B&B at Woodbury Park Hotel - single	Rooms are		<b>75.00</b>	Rooms are		<b>75.00</b>
B&B at Woodbury Park Hotel - double	Guaranteed		<b>95.00</b>	Not guaranteed		<b>95.00</b>

#### VALUE ADDED TAX (VAT):

Unless special exemption exists, under UK Customs and Excise regulations delegates from all countries are required to pay UK VAT @ 20% on all courses taking place in the UK. Non-UK delegates may be able to recover VAT incurred via the relevant tax authority in the country of origin of the delegate.

#### Terms and Conditions

Substitution of participants may be made at any time. If you intend to do this, please advise the MIRCE Akademy ('the organiser') as soon as possible. Cancellation of a booking must be received in writing by the organiser at least 14 days before the commencement of the Congress. The MIRCE Akademy regrets that no refunds or credits will be made after the deadline unless the organiser cancels the Congress. The organiser reserves the right to alter the programme or cancel the Congress at its discretion. All places offered are subject to availability.

**For any other information please contact us:**

**+ 44 (0)1395 233 856, [quest@mirceakademy.com](mailto:quest@mirceakademy.com) [www.mirceakademy.com](http://www.mirceakademy.com)**

## About the Venue

Woodbury Park is a magnificent 500 acre complex set among rolling hills above the South West English coastline, only a few miles from Exeter.

Communication between Exeter and other parts of the United Kingdom are excellent. **By road**, the M5 motorway links Exeter to London, the Midlands, Scotland and Wales. Regular rapid coaches run services to and from London and Heathrow Airport. **By rail**, a regular fast service is available to and from Exeter (St David's Station) and London (Paddington Station). **By air**, Exeter Airport offers regular flights to many British and Continental destinations and is situated near to Woodbury Park.

Travel between Exeter and Woodbury normally requires a car or taxi.

Among the outstanding leisure facilities at Woodbury Park are two golf courses including the magnificent **Oaks Championship course**, tennis courts, a swimming pool, spa, sauna and fully equipped gymnasium and well appointed lounge areas and bars.

**Woodbury Park, Exeter, EX5 1JJ, UK**

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**Exeter** is the most southwesterly Roman fortified settlement in Britain. Exeter Cathedral was founded in the early 12th century and has several notable features, including an early set of misericord, an astronomical clock and the longest uninterrupted vaulted ceiling in England. **Today**, Exeter is identified as one of the top ten most profitable locations for a business to be based.



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**Woodbury Park Hotel & Golf Club, Exeter, EX5 1JJ, UK – home of the MIRCE Akademy**