

# 5<sup>th</sup> World Congress of MIRCE MECHANICS\*

Woodbury Park, Exeter, United Kingdom, 1 – 3 June, 2016

MIRCE Akademv Call for Papers 14<sup>th</sup> March on time

HARTFORD	DELTA	2318	4:15P	94	ON TIME
HOUSTON	CONTINENTAL	1505	3:15P	6	ON TIME
INDIANAPOLIS	DELTA	2403	4:35P	96	ON TIME
ISLIP NY	DELTA	2310	2:55P	96	ON TIME
KANSAS CITY MO	SOUTHWEST	109	4:35P	122	ON TIME
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
MEXICO CITY	AMERICAN	2115	2:55P	13	ON TIME

\* The science for Managing In-service Reliability, Cost & 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 civilisation needs for transporting, communicating, navigating and many others have been satisfied by transpiration, communication, navigation and other human created systems. The mechanics of the functioning of these systems are well-understood processes, which are predictable by the laws of natural sciences, such as: Newton’s laws of motion, Coulomb’s law of solid friction, Hook’s law of stress and strain, Maxwell’s law of electrodynamics, Boltzmann’s law of thermodynamics, to name a few, which are characterised by certainty, continuity, reversibility, separability and independence of time, location and humans.

Regarding the long-term satisfaction of human needs, the ability of a system to function beyond the delivery day is an essential property of its in-service performance. Due to complex interactions between consisting parts and impacts from environment and humans, disturbances of mechanical, electrical, chemical, thermal, radiant and other types are created, some of which cause occurrence of events that prevent systems from functioning. Thus, to provide the flow of functionality through time maintenance tasks like servicing, repairs, overhauls, replacements and similar are undertaken by humans, making them maintainable systems. Thus, from the point of view of the ability to function during the in-service life, known as **functionability**<sup>1</sup>, maintainable systems could be in a positive or a negative functionability state, at any instant of time.

Experience teaches us that unlike quantitative information regarding the design-in functionality performance of a system that is available on the delivery day, the in-service functionability performance is not. Instead, years later the statistics for various functionability measures become available. The reason for this is the fact that they are emerging properties of the complex interactions between system in-service processes, which are characterised by indeterminism, discontinuity, irreversibility, inseparability, and dependence on time, location and humans.

Consequently, to subject the motion of functionability through the life of maintainable systems to the laws of science and mathematics 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. Axioms, mathematical formulas, rules and computational methods formed Mirce Mechanics that 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 scientists, mathematicians, engineers, operators, maintainers, logisticians, programmers, economists and other experts to spend a few days together and learn the complexity and the consequences of their decisions on functionability of maintainable systems.

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

A handwritten signature in black ink, appearing to read 'J. Knezevic', written in a cursive style.

<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:

**Day 1: Science & Mathematics of functionability phenomena that cause transitions of systems to the Negative Functionability State. Some of the physical and human actions that belong to this category of phenomena are:**

- **Inherent Actions:**  
Incorrect Material, Incorrect Design, Incorrect Assembly, Incorrect Packaging, Handling, Storage or Transportation, Incorrect Maintenance, Incorrect Part and so forth.
- **Single Actions:**  
Lightening, Sand Storm, Solar radiation, Wind direction change, Foreign Object damage, No Fault Found, Puncture, Operator errors, Contamination, Volcanic Eruptions, Collisions, and similar.
- **Continuous Actions:**  
Wear, Corrosion, Delamination, Creep, Fatigue, Erosion, etc.

**Day 2: Science & Mathematics of functionability phenomena that cause transitions of systems to the Positive Functionability State. Some of the human actions that belong to this category of phenomena are:**

- **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 from service.

**Day 3: Computational methods for the applications of Mirce Functionability Equation\* to existing and future maintainable systems.**

**Contributions that cover the following topics are particularly welcome:**

- **Available Software Solutions,**
- **Simulation Languages and Methods**
- **In-service Data: Acquisition, Storage and Analysis**
- **New ways of dealing with Convolution Integral Equations**
- **Case Studies related to Reliability, Cost and Effectiveness**

\* [http://www.ijera.com/papers/Vol4\\_issue8/Version%207/N480793100.pdf](http://www.ijera.com/papers/Vol4_issue8/Version%207/N480793100.pdf)

**In summary, the challenge of Mirce Mechanics is to *predict the future state of maintainable systems, 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: 14<sup>th</sup> March 2016** 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 4<sup>th</sup> World Congress of Mirce Mechanics.

Service Available	Before 15th April 2016			After 15th April 2016		
All prices are in GB Pounds	Price	VAT	Total	Price	VAT	Total
<b>Participant for 3 Days</b>	595.00	119.00	<b>714.00</b>	645.00	129.00	<b>774.00</b>
<b>Participant per Day</b>	225.00	45.00	<b>270.00</b>	275.00	55.00	<b>330.00</b>
<b>Presenter on the day of presentation</b>	<b>Free</b>			<b>Free</b>		
<b>Presenter for 3 Days</b>	300.00	60.00	<b>360.00</b>	325.00	65.00	<b>390.00</b>
<b>Retired participants for 3 Days</b>	195.00	39.00	<b>234.00</b>	195.00	39.00	<b>234.00</b>
<b>University students for 3 Days</b>	395.00	79.00	<b>474.00</b>	495.00	99.00	<b>594.00</b>
<b>Congress Proceedings on CD</b>	175.00	35.00	<b>210.00</b>	175.00	35.00	<b>210.00</b>
<b>MIRCE Akademy Members</b>	550.00	110.00	<b>660.00</b>	575.00	115.00	<b>690.00</b>
<b>MIRCE Akademy Fellows</b>	575.00	115.00	<b>690.00</b>	595.00	119.00	<b>714.00</b>
<b>MIRCE Akademy Students</b>	495.00	99.00	<b>594.00</b>	525.00	105.00	<b>630.00</b>
<b>Partners Programme for 3 Days</b>	195.00	39.00	<b>234.00</b>	195.00	39.00	<b>234.00</b>
<b>Congress Dinner only</b>	62.50	12.50	<b>75.00</b>	62.50	12.50	<b>75.00</b>
Sherry, 3 course meal & wine						
<b>Exhibitors - Gold Package</b>	6000.00	1200.00	<b>7200.00</b>	6000.00	1200.00	<b>7200.00</b>
<b>Exhibitors - Silver Package</b>	3000.00	600.00	<b>3600.00</b>	3000.00	600.00	<b>3600.00</b>
<b>Exhibitors - Bronze Package</b>	1500.00	300.00	<b>1800.00</b>	1500.00	300.00	<b>1800.00</b>
<b>B&amp;B at Woodbury Park Hotel - single</b>	Rooms are guaranteed		<b>75.00</b>	Rooms are guaranteed		<b>75.00</b>
<b>B&amp;B at Woodbury Park Hotel - double</b>	guaranteed		<b>95.00</b>	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 5 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 Academy**