# Mirce Mechanics Foundation School
## on
# Time To Repair
**The science based method for accurate predictions of the Time To Repair**

The MIRCE Akademy, Woodbury Park, Exeter, United Kingdom

At the MIRCE Akademy we have observed the motion of a large number of machines through the maintenance processes. We have analysed the sequence of the flow of comprising maintenance activities in order to understand their physical mechanisms and the dynamics of the motion of those tasks through the life of large number of machines. Finally, their physical relationships have been captured and described through mathematical formulas that enable accurate predictions of their future trajectories to be made. This has given birth to the *Mirce Science, the scientific theory of the motion of functionability through the life of maintainable systems.*

The main objective of this Foundation School is to present the concept, main principles and equations of the Mirce Mechanics that are directly related to the prediction of the Maintenance Process Measures, which included the Mean Time To Repair (MTTR), related to the execution of the maintenance tasks such as: overhauls, tests, inspections, visual checks, scheduled maintenance tasks, repairs as-bad-as-old, not fault found, non destructive tests, replacements, overhauls, and many more, in different geographical locations, environmental conditions and the experience of mechanics associated.



No human error or environmental impacts
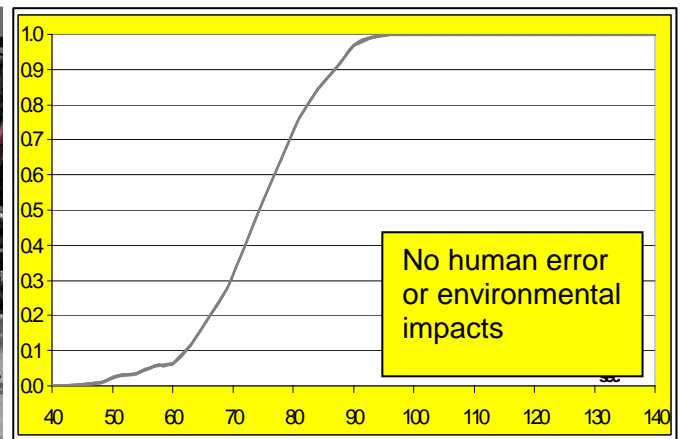
# Both maintenance mechanisms are probable and redictable



With human error or environmental impacts
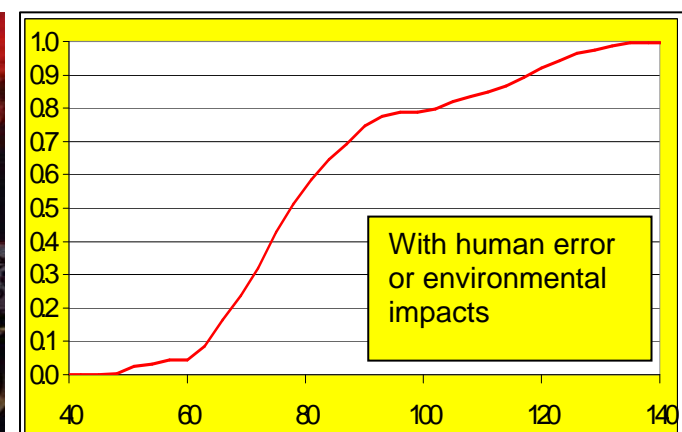
# Programme:  Day 1

## 08.00 - 09.00 Registration

| | |
|---|---|
| 09.00 10.30 | Machine In-service Life and Maintenance Process<br>Maintenance Task:<br>Concept, Types, Resources, Constraints, Frequencies, Cost & Effectiveness |

## 10.30 - 11.00 - Tea/Coffee

| | |
|---|---|
| 11.00 13.00 | Maintenance Task Performance Measures:<br>Maintainability Function, Expected Duration of Task, Percentual Duration of Task, Maximum and Minimum Duration, Direct and Indirect Cost and Effectiveness |

## 13.00 - 14.00 Lunch

| | |
|---|---|
| 14.00 15.30 | Experimental Determination of Maintenance Task  Measures<br>Statistical and Probabilistic Evaluation of maintenance test or field data |

## 15.30 - 16.00 Afternoon Tea

| | |
|---|---|
| 16.00-18/00 | **Case Study: Formula 1: Pit Stop Statistics**<br>Presentation in F1 Reliability & Effectiveness Centre of the MIRCE Akademy, followed by a guided tour of the Auto Racing Championship  entre of the MIRCE Akademy |

# Programme  – Day 2

| | |
|---|---|
| 09.00 10.30 | Mechanics of Sequential Maintenance Tasks<br>Concept, Definition, Maintainability Function, Performance Measures, Case Study |

## 10.30 - 11.00 - Tea/Coffee

| | |
|---|---|
| 11.00 13.00 | Mechanics of Simultaneous Maintenance **Tasks**<br>Concept, Definition, Maintainability Function, Performance Measures, Case Study |

## 13.00 - 14.00 Lunch

| | |
|---|---|
| 14.00-15.30 | Mechanics  of Complex Maintenance Tasks<br>Concept, Definition, Maintainability Function, Performance Measures, Case Study |

## 15.30 - 16.00 Afternoon Tea

| | |
|---|---|
| 16.00-17.30 | "Hands-On" practical exercise<br>Quantitative assessment of the impact of the engineering alternatives on maintenance task performance measures, reviewed at the conceptual stage of a machine design |

# Programme  – Day 3

| | |
|---|---|
| 09.00 10.30 | Human Impact on Mechanics of Maintenance Process<br>Human Characteristics and Limitation<br>Human Errors: types, frequencies, consequences |

## 10.30 - 11.00 - Tea/Coffee

| | |
|---|---|
| 11.00 13.00 | Environmental Impact on Mechanics of Maintenance Process<br>Climatic: Latitude, Longitude, Altitude, Seasons<br>Weather: Temperature, Humidity, Wind,<br>Location: On-Board, On-Site, Mobile Work Shop, Depot, Original Manufacturer |

## 13.00 - 14.00 Lunch

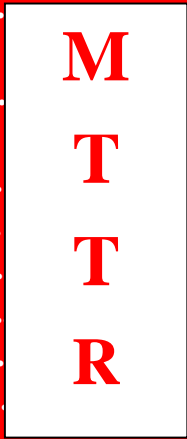| | |
|---|---|
| 14.00-16.00 | Quantitative Assessment of the Human and Environmental Impact on Mechanics of Maintenance Process<br>Analytical and Simulation Methods for the Quantitative Evaluation of Maintainability Function |

## 16.00 - 16.30 Afternoon Tea

## 16.30-17.00
### Closing Remarks
### Award of Certificates

## Departure

Topics to be covered, explained, clarified and illustrated with numerical examples and case studies

- **The physical meaning of** …………………………………………………
- **The mathematical meaning of** ……………..…………………………
- **The engineering meaning of** ……………………..……………………
- **The management meaning of** …………………………………………..
- **The customers understanding of** …………………..………………….
- **The accuracy of cost predictions based on** …………………………
- **The accuracy of spares predictions based on** …………..……………
- **The accuracy of maintenance planning based on** …………………..
- **The accuracy of facilities planning based on** ………………………
- **The accuracy of cost predictions based on** …………………………

All of the above and other MTTR driven issues with be addressed in respect to:

- o **Component**
- o **Module**
- o **Subsystem**
- o **System**
- o **Platform**
- o **Fleet**

**M**
**T**
**T**
**R**

**?**





The International School will be held at **Woodbury Park Hotel, Golf and Country Club**, 8 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 or Waterloo Station - connection to Euro Star).

**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.

Delegates are responsible for the arrangement and payment of their own travel and accommodation. Delegates wishing to take advantage of preferential room rates should contact Woodbury Park Hotel Reservations quoting 'MIRCE'.

Woodbury Park Hotel, Golf and Country Club, Woodbury, Exeter, EX5 1JJ, United Kingdom



**Dr Jezdimir Knezevic**, the host of the School is the "father" of the Mirce Mechanics and the Founder and President of the MIRCE Akademy. He has been experiencing the complexity of the mechanics of maintenance tasks since the age of 13, as a teenager who loved motor sport. His multi disciplinary theoretical knowledge, huge industrial experience and an endless passion for the subject have attracted over 5000 engineers, managers, analysist and students to his courses and educational programmes in over 40 countries in Europe, North and South America, Australia, Asia and Africa, at universities, professional institutions, industry and government.

# Mirce Mechanics Foundation School

## Registration Form
**Phone** +44 (0) 1395 232 653
**Mail** MIRCE Akademy, Woodbury Park, Woodbury,
Exeter, EX5 1JJ, United Kingdom
**Email:** quest@mirceakademy.com

**THIS FORM MAY BE PHOTOCOPIED**

**Web site:** www.mirceakademy.com

### Foundation School Prices (in GB Pounds £)

|  | Fee | VAT | Payable |
|---|---|---|---|
| • **Participants** | 950.00 | 190.00 | **1140.00** |
| • **Fellow of MAk** | 900.00 | 180.00 | **1080.00** |
| • **Members of MAk** | 850.00 | 170.00 | **1020.00** |
| • **Students of MAk** | 750.00 | 150.00 | **900.00** |

## The Price includes:

- Tuition
- Supporting Materials
- Lunches
- Light Refreshments

### 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.

## PAYMENT DETAILS

Please invoice my organisation
**(Note: UK MOD personnel can pay by BACS through the DBA – Contractor Number will be supplied with invoice)**

For the attention of _____

Purchase Order No. _____

Please find enclosed a cheque for £ _____
**(Made payable to MIRCE Akademy)**

Please charge credit card

Visa          MasterCard          Amex

Cardholder _____

Card No. _____

Expiry Date _____

Signature _____

## PERSONAL DETAILS (Please print clearly)

Surname          _____

First name          _____

Organisation          _____

Department          _____

Position          _____

Address          _____

_____

_____

Postcode _____          Country _____

Tel _____

Email _____

Special requirements          Yes          No

Please specify

------------------------------------------------------------------------
I understand and accept the registration terms and conditions as shown

Signature _____ Date _____

### 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 International School. MIRCE Akademy regrets that no refunds or credits will be made after the deadline unless the organiser cancels the Event.

The organiser reserves the right to alter the programme or cancel the International School at its discretion. All places offered are subject to availability.