



ELECTRICAL COURSES

INSTRUMENTATION COURSES

MECHANICAL COURSES

## MECHANICAL ISOLATION

COURSE 620: 1 DAY: Max 8 Candidates

All employees working in and around moving machinery will at some time switch it off to perform cleaning, re-alignment or adjustments, changes to parts of the machinery, etc. In order to be confident that they are safely isolating the machine (in a mechanical context) this valuable course can be used to highlight the dangers, the issues they should be thinking about and also remind them of the best practices that should be applied when performing a mechanical isolation. It can also incorporate company-specific isolation procedures.

### PARTICIPANTS

Aimed at process operators, supervisors, technicians, maintenance engineers and all employees who switch machinery off to carry out work.

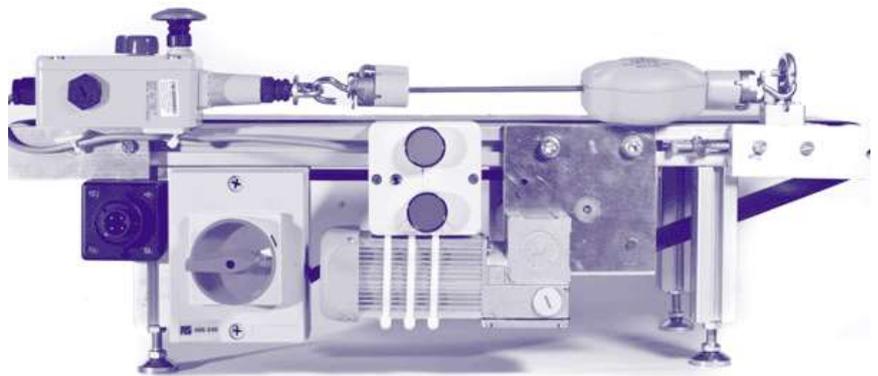
### COURSE PRESENTATION

Various training rigs are used to show how a mechanical isolation can be effected safely. The candidates practice writing down the procedure that they would follow and then apply it to the training rigs. Any deficiencies in their procedure are pointed out and they are reminded of the associated dangers. This process is repeated until they are able to perform the isolations correctly. The course is supported by comprehensive course notes.

### COURSE OBJECTIVES

On completion of the course, participants will be able to:

- understand the legal issues associated with performing mechanical isolations
- identify the dangers of moving machinery (electrical, mechanical, stored energy etc)
- explain the difference between switching off, isolating and locking off
- describe how a mechanical isolation should be performed
- successfully produce a written SOP (Safe Operating Procedure)
- demonstrate an ability to apply best practice / company-specific procedures
- correctly perform mechanical isolations in a range of industrial scenarios.

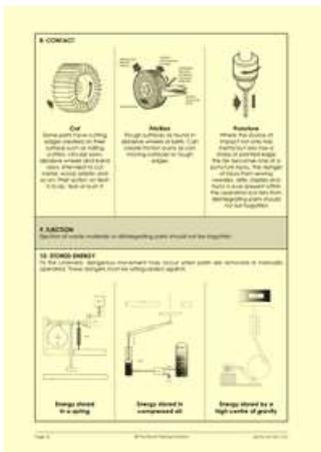


**Successful completion of the course leads to the award of the Technical Training Solutions Certificate of Competence 620: Mechanical Isolation.**

# What do candidates on the Mechanical Isolation course do?

The course consists of three distinct parts: the dangers of working on machinery that isn't properly isolated; how companies mitigate these dangers by ensuring work follows approved procedures and is safe; and how to apply the procedures in a range of scenarios. The course incorporates an on-going practical assessment process, in combination with a knowledge assessment to ensure that the candidates have understood the key teaching points of the course.

**THE DANGERS:** The first part of the course reminds candidates about the dangers of moving machinery, compressed air, mineral oil, burns, scalding, spills and leaks of fluids. We also look at the importance of pipework colour coding, the dangers of common industrial fluids and the various levels of pipework isolation (proved vs non-proven, single / double block and bleed etc) that can be applied and the various situations in which higher and lower levels of security are advised. We also present a generic procedure for mechanical isolation so that the candidates can relate the aforementioned dangers to the need for applying a rigorous procedure that achieves a properly secure isolation. The importance of not exposing electrical terminals is also highlighted. The following are some pages from the course notes for this part of the course:



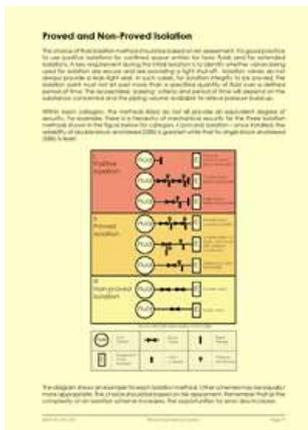
Page 10 of the course notes, discussing the dangers of moving machinery



Page 10 of the course notes, discussing the dangers of working with mineral oils



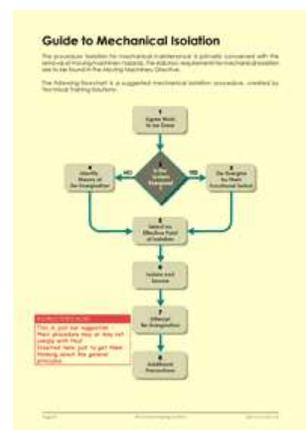
Page 17 of the course notes, discussing the key stages necessary in pipework isolations



Page 19 of the course notes, comparing the various methods by which pipework can be isolated



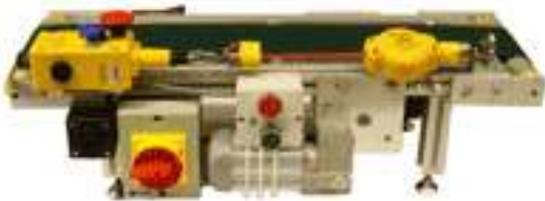
Page 23 of the course notes, discussing the dangers of working with machine-driven conveyors



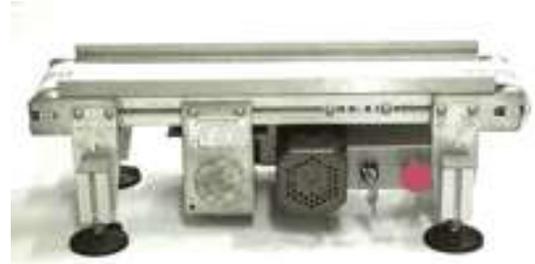
Page 30 of the course notes, which presents a generic procedure for performing mechanical isolation



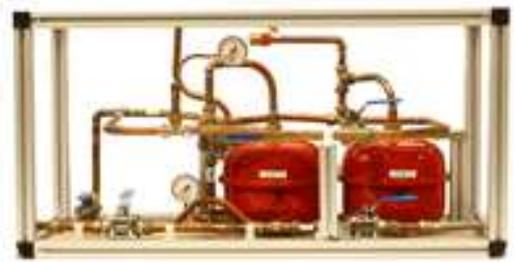
**APPLYING THE PROCEDURES:** We then get the candidates to apply the procedures to our simulation rigs. We use three types of rigs; electrical control panel rigs, pipework isolation rigs, and moving machinery rigs. We have two variants of each rig to simulate different scenarios so that there are in fact six different isolation scenarios for the candidates to explore. The following shows the simulation rigs that we use:



**The moving machinery rigs**



**The pipework isolation rigs**



**The electrical control panels**



**COURSE ASSESSMENT:** Our instructors assess the candidates throughout the course, but our focus is emphatically on the practical exercises shown above. We do also check that the candidates have understood the key teaching points of the day and to this end we also set them several additional exercises where they have to write their own SOPs, find answers to questions about key features of their own company procedures and also suggest what additional safety measures could be applied to mechanical isolations in order to make them safer. The following are pages extracted from the course notes, depicting some of these assessment exercises:



Page 97 of the course notes, showing Practical Exercise No 6 - Mechanical Isolation of Moving Machinery



Page 100 of the course notes, showing Practical Exercise No 9 - Finding Answers to Questions about the Candidates' own Company Procedures



Page 101 of the course notes, showing Practical Exercise No 10 - exploring the advantages of applying additional precautions to mechanical isolations

The pages shown above are extracted from the instructor's version of the course notes, so it has our instructor's suggested answers - the candidates would have to provide their own!

**If you would like to see some of the equipment used on the Mechanical Isolation course for yourself, then please call us to arrange a visit to our offices in Kent. Alternatively, we can visit you anywhere in the British Isles.**

**CONTACT US**

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