TECHNICAL TRAINING SOLUTIONS

ELECTRICAL COURSES | INSTRUMENTATION COURSES | MECHANICAL COURSES

LEARNING BY DOING

MACHINE MAINTENANCE for OPERATORS

COURSE 730: 3 DAYS: Max 4 Candidates

This course provides operators with the basic engineering skills necessary to perform routine product line changes and maintenance tasks, including the removal and replacement of components, cleaning, lubrication and inspection.

PARTICIPANTS

Line operators with little or no engineering skills who wish to take on the responsibility of primary asset care. Operator asset care is the key to reduced downtime and a decrease of emergency repair work by the maintenance team. The course was developed to provide technically competent operators with a real sense of ownership of their production assets. Importantly, the course also teaches the candidates how to isolate a machine so that is safe for them to work on it.

COURSE PRESENTATION

The course format is very much 'hands on' - the emphasis being on development of sound practical skills within the context of safe working practices.

COURSE OBJECTIVES

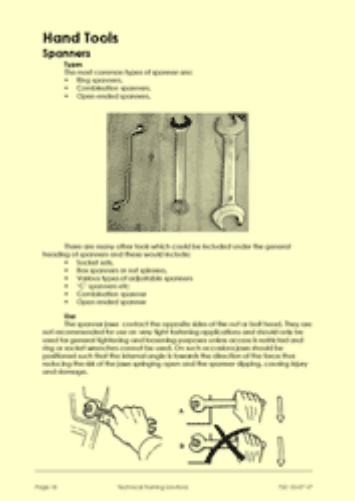
On completion of the course, participants will be able to

- apply the principles of safe working practices to routine maintenance
- select correct components for the alignment of motor shafts, pulleys, belts and chains
- discuss machine manufacturer's recommended routine maintenance tasks
- select appropriate hand tools and use them correctly and safely
- recognise faulty/worn components
- remove and replace components that require cleaning, lubrication and/or inspection
- identify basic faults
- adopt a logical approach to hands-on mechanical work and to fault finding
- perform safe mechanical isolations on a working rig.

Successful completion of the course leads to the award of the Technical Training Solutions Certificate of Competence 730: Machine Maintenance for Operators.

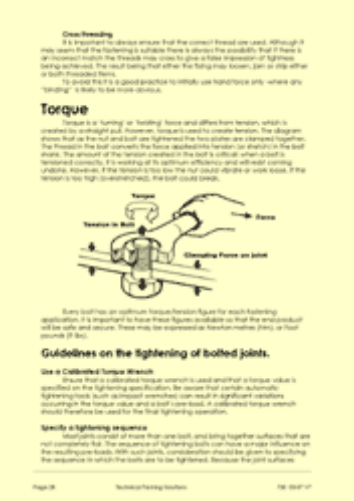
What do candidates on the Machine Maintenance for Operators course actually do?

We begin by ensuring that candidates are aware of the various tools available, and the correct ways in which they should be used, bearing in mind their personal safety and avoiding damage to machinery. Candidates have access to a wide range of hand tools on the course and are given clear and concise course notes to reinforce the training exercises.



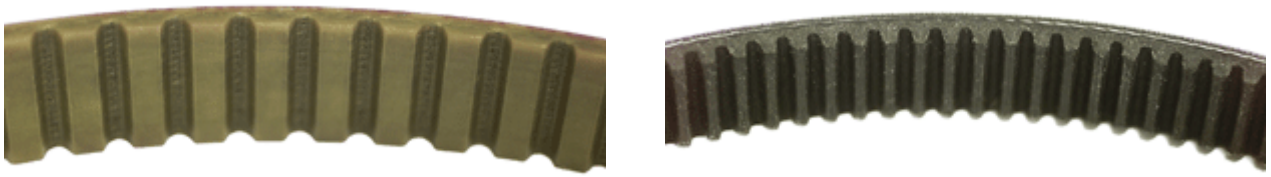
Page 18 of the course notes, where we teach the candidates about the commonly used tools that they need to be familiar with and how to use them

Page 26 of the course notes, depicting an exercise where candidates have to name and describe the commonly used tools



Page 28 of the course notes, describing the importance of the correct application of torque

Through the use of product handling components such as belts, chains and shafts, student get hands-on experience of alignment, tensioning and first-line maintenance. Students are encouraged to examine bearings and transmission components for signs of wear.



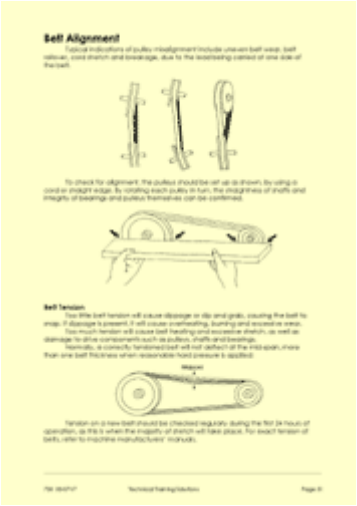
Timing belts analysed by candidates on the course

Shafts and bearings analysed by candidates

Chains analysed by candidates

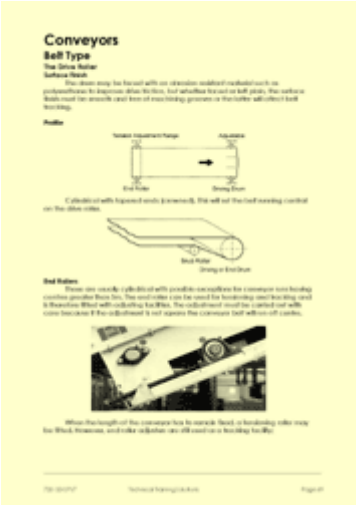
In addition to understanding the need for lubrication and general wellbeing of machinery, students are given a clear understanding of the health and safety issues connected to their role in the work place. For instance, the responsibility of a duty holder, the safe isolation of equipment and knowing at all times when it is safe (or not safe) to work. Throughout the three-day course a number of practical and written assessments are made in a stress-free manner. Candidates also practice writing clear task instructions, which they exchange with others members of the group. The purpose of these exercises is to illustrate the importance of producing clear and simple information in a logical sequence.

Candidates are also taught the importance of correct alignment and tensioning of drive train components. Examples of some pages from the course notes for this section of the course follow:



Page 51 of the course notes, describing the importance of correct belt and pulley alignment

Page 66 of the course notes, which discusses the importance of correct chain tension and alignment

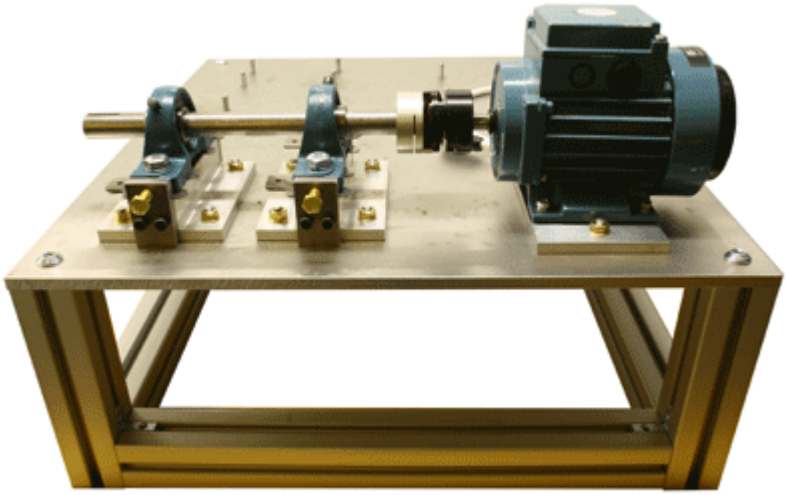


Page 69 of the course notes, describing how conveyor belts are tensioned and aligned

We then apply the knowledge learned in the earlier section of the course to a series of practical exercises using our custom-designed training rigs. Candidates practice assembling drive shafts, bearings, pulleys and vee belts. The rigs we used require safe isolation before working on them and this issue can therefore be explored before chain and belt change and tensioning exercises are performed.

The Motor Shaft Alignment Exercise on the machine maintenance training courses.

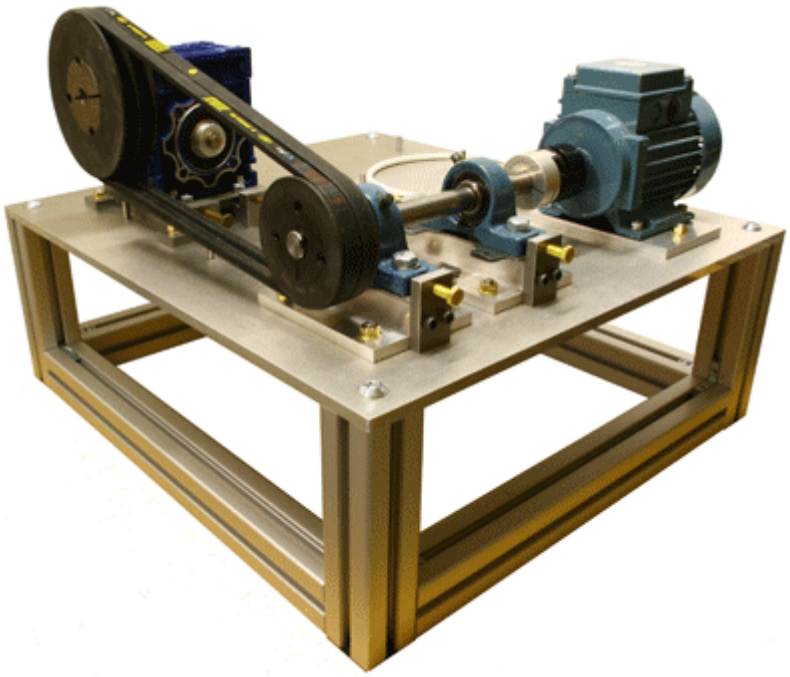
Candidates insert shims and make adjustments to the bearing positions so that the line shaft is perfectly straight.



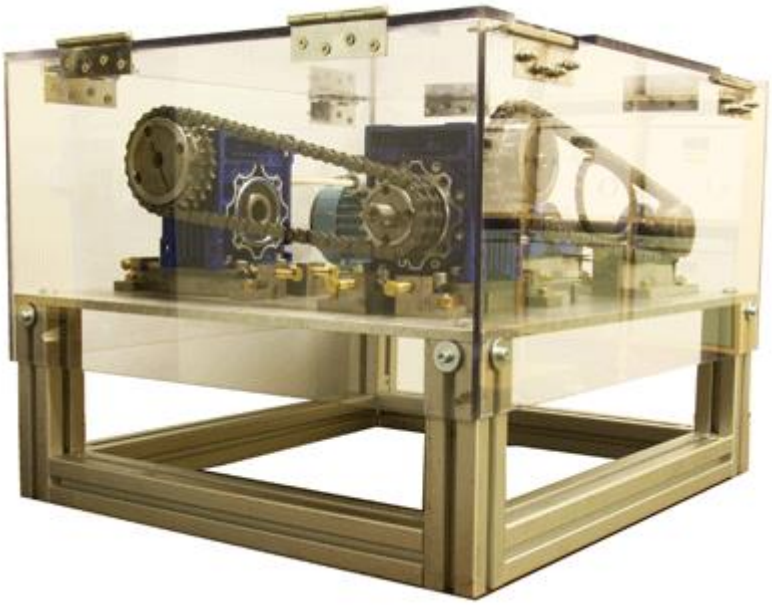
The Vee Belt Tension and Alignment Exercise on the machine maintenance training courses.

The candidates need to select the appropriate pulleys and fit them correctly to the drive shafts. Candidates use straight edges to test for alignment, straight edges and belt tension gauges to check for tension.

This exercise is completed for single belt drives, dual belt drives and timing belts.



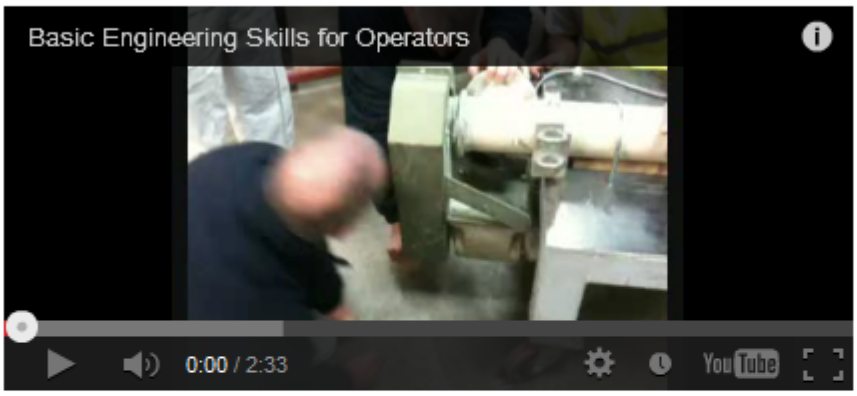
Candidates install the machine guard prior to energising the machine for safety reasons.



The candidates utilise industry standard lock out tag out (LOTO) procedures to ensure safe isolation of the machine.

During these exercises the alignment and tensioning of the various components can be explored and candidates see how this affects the performance of the machine, whilst also bringing home to them how this affects the long-term wear and reliability of a machine.

We have made an **Example Video** of candidates on the Machine Maintenance for Operators Training Course performing chain alignment and tensioning. To view it please visit our internet page for this course or the address below.



http://www.youtube.com/watch?feature=player_embedded&v=No7cRsuxwmA

If you would like to see some of the equipment used on the Machine Maintenance for Operators course for yourself, then please call us to arrange a visit to our offices in Kent.

CONTACT US

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