

Unit R115 – Engineering applications of computers

Features of computer controlled automation

Instructions and answers for teachers

These instructions should accompany the OCR resource ‘Features of computer controlled automation’ activity which supports OCR Cambridge Nationals in Engineering.

OCR Engineering Level 1/2 **Cambridge NATIONALS**

Unit R115 – Engineering applications of computers

Features of computer controlled automation

Task 1

Computers are now routinely used to automate processes such as: temperature control, weight control, position sensing, size sensing, workflow, warehousing, product movement, safety systems and machine ergonomics.

The photographs below show examples of where each type of computerised automation might be used.

Discuss each of these with your partner and note down why you think computers might be used in this application. Give other applications where each type of computerised automation might be used.

Automation Type	Notes about why used and other examples	Where might be used...
Temperature Control		
Weight Control		

The Activity:

This resource comprises of 1 task.



This activity offers an opportunity for English skills development.

Associated materials:

‘Features of computer controlled automation’ activity sheet

The task is best completed individually by learners.

Suggested timings:

Task 1: 1 hour

Task 1

For this activity learners are required to look at and discuss a range of different applications of computers in automated process control, discuss why computers might be used in this application and suggest other areas of automation where this type of control might be used.

The teacher may need to introduce the concept of automated process control, although learners may already be familiar with this.





The activity could be undertaken in pairs, or as part of a wider class discussion.




A common set of responses as to why computers are used in process control tasks may include:

- Increased output or productivity
- Improved quality or increased predictability of quality
- Improved consistency and accuracy of processes
- Increased consistency of output (products)
- Reduced direct human labour (time and cost)
- Improves safety (automatic safety control/monitoring, control of hazardous activities)

At the end of the activity the teacher might wish to summarise the reasons for using automatic process control highlighting the commonalities across the different types of control.

Teachers might extend the activity by tasking learners to investigate in greater detail how each different type of process control automation is achieved (which might include technical detail such as weight sensors, position sensors, type of computer used etc).

Automation Type	Notes about why used and other examples	Where might be used...
Temperature Control	Temperature control of furnace (hazardous environment)	
Weight Control	Weight control of food items during production – for quality control, accuracy and high output	
Position Control	Position control of robot arm – for accuracy and speed. Might also be used in hazardous environment	
Size Control	Size control of boxes and letters (eg in sorting office)	
Workflow/production line	Tracking of product movement and parts control (eg car production line)	

Automation Type	Notes about why used and other examples	Where might be used...
Warehousing	Tracking of item location, stock level and for automatic picking (warehouse)	
Product Movement	Conveyor belt used for product movement	
Safety Systems/Machine Interlocks	Safety guards and interlocks used on machinery for safety	

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