**NZQA**

**Approved**

Achievement standard: 91366 Version 3

Standard title: Undertake development and implementation of an effective manufacturing process

Level: 2

Credits: 6

Resource title: Billions of burgers served?

Resource reference: Generic Technology VP-2.13 v2

Vocational pathway: Manufacturing and Technology

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| Quality assurance status | These materials have been quality assured by NZQA.  NZQA Approved number A-A-02-2015-91366-02-8269 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.  Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

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Learner instructions

# Introduction

This assessment activity requires you to undertake development and implementation of an effective manufacturing process to produce a batch of gourmet burger patties.

You are going to be assessed on how comprehensively you develop and implement an effective manufacturing process to produce a batch of gourmet burger patties.

The following instructions provide you with a way to structure your work to demonstrate what you have learnt to allow you to achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions and modify them if necessary to suit their learners.

# Task

## Part 1: Prepare for the task

You will submit a report or presentation that documents the planning, development and implementation of your manufacturing process and confirms that the majority of your final batch of burger patties meets established specifications.

Confirm, with your assessor/educator, the format for your report or presentation. You could submit a portfolio, a slide presentation, an audio-visual presentation or a written report, for example.

In any case, you must document the planning, development and implementation of your manufacturing process as you work through this assessment activity. Record the decisions that you make and include evidence of what you do and how you do it. You might compile a portfolio, for example, or keep a notebook or online record.

Your assessor/educator will advise you on what evidence you might gather. This might include flow diagrams, annotated photographs, results of quality control checks, and details of modifications made.

## Part 2: Undertake development

Choose an existing burger patty recipe and design, such as one you have made in another project, and determine its suitability for manufacturing. Decide if you will need to change the recipe to suit the tastes of your intended consumers.

Establish specifications for your patties, including the accepted tolerances.

Decide, with your assessor/educator, the number of patties you will produce in your final batch.

Make changes as necessary to allow you to manufacture this number of patties in your learning environment to meet the specifications while still maintaining the quality and unique characteristics of your burger pattie.

Select a suitable manufacturing process, such as batch or continuous manufacturing.

Select quality control procedures that allow for ongoing monitoring. These should help you review and refine your manufacturing process to better suit your intended outcome (that is, your batch of gourmet burger patties, made to specification) and where you are working.

Confirm the relevant codes of practice and select and organise resources and techniques so that you can follow these relevant codes. You may want to consider:

* what equipment, facilities and materials you require and how these will be organised
* how your materials will be safely stored
* whether you need other people to help you make the patties (although you must develop the manufacturing process independently)
* when the facilities and staff will be available.

Create a detailed manufacturing plan that enables you to produce patties to meet the established specifications and tolerances.

## Part 3: Implement and refine your process

Following your manufacturing plan, manufacture the patties. Work independently and accurately, in keeping with relevant codes of practice. Use feedback to ensure the majority of the patties meet your specifications and tolerances.

As you develop your plan and manufacture initial test batches, collect evidence to show how you have:

* modified the selected techniques and made decisions about the use of resources to better suit your intended outcome (that is, your batch of gourmet burger patties) and where you are working
* modified the quality control procedures to improve the quality of the feedback and allow you to refine the manufacturing process to better suit your intended outcome and manufacturing location.

Produce a final batch of patties. The majority of these patties must meet your specifications and tolerances. Collect evidence to confirm this.

## Part 4: Produce a report or presentation

Produce a report or presentation that documents how comprehensively you developed and implemented your manufacturing process and confirms that the majority of your final batch of burger patties meets established specifications.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to undertake comprehensive development and implementation of an effective manufacturing process in the production of gourmet burger patties.

# Conditions

This is an individual assessment activity.

While learners must individually organise the manufacturing process, they could use other people to carry out parts of the actual manufacturing process.

# Resource requirements

Learners will need access to:

* a preparation area that is suitable for safely manufacturing meat products
* all necessary ingredients and materials (such as meat, onions, sauces, breadcrumbs, herbs and spices, eggs, oil, baking paper)
* all necessary tools and equipment (such as trays, mixing spoons, knives, bowls, pans, oven, fridge)
* a camera with which to take photographs to use as evidence.

Useful websites related to patties include:

<http://www.beeflambnz.co.nz/index.pl?page=resource_material&cat=4&m=41>

<http://www.beeflambnz.co.nz/index.pl?page=news&m=544>

<http://www.tv3.co.nz/Season-13-Ep-1---Burger-Patties/tabid/1747/articleID/68694/Default.aspx>

<http://www.beeflambnz.co.nz/>

<http://www.healthyfood.co.nz/search/site/burgers>

# Additional information

Learners will need to determine (in negotiation with the assessor/educator) how many units they will need to produce. The intention of the standard is for learners to develop and implement a manufacturing process that goes beyond one unit to a larger run that ensures consistency of the product. In this case, for example, the learner may want to show that if they made 100 patties using the specified process, all of the patties would be uniform enough to meet the specifications. In some instances it will be possible to make a smaller number of units to test the specified manufacturing process and then modify as necessary. For example, a system could be set up to produce ten patties and this could provide sufficient information to refine the manufacturing process to ensure future consistency in the product.

# Assessment schedule: Generic Technology 91366 – Billions of burgers served?

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner undertakes development and implementation of an effective manufacturing process by:   * analysing a technological outcome to determine suitability for manufacture and making design changes as required   For example:  The learner adjusted a patty recipe they had previously used so that the seasoning would be more appealing to a particular taste and a more standard size and thickness could be achieved.   * establishing specifications, including tolerances, required of the outcome that is to be manufactured   For example:  The learner established, through research, that each patty must weigh 125 ± 1 g and be 10 ± 0.2 cm in diameter and 1.50 ± 0.05 cm thick.   * selecting a manufacturing process and quality control procedures that enable units to meet the established specifications and tolerances   For example:  The learner considered their outcome and the available resources and chose batch processing as a suitable manufacturing process. They developed a flow diagram of processes that included when particular quality control procedures, such as weight and size checks, would be carried out.   * organising and using selected resources and carrying out techniques independently and accurately in keeping with relevant codes of practice   For example:  The learner selected and organised equipment, facilities, staff and materials, including safe storage of these materials. They followed their manufacturing plan and adhered to relevant codes of practice.   * implementing the manufacturing process using feedback from quality control to ensure the majority of the units meet the established specifications and tolerances   For example:  The learner produced the predetermined number of patties. Quality control checks showed that some patties were too big. The shaping and sizing procedure was adjusted to ensure consistency in the end result. In the final batch, the majority of patties were within the accepted tolerances.  *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner undertakes in-depth development and implementation of an effective manufacturing process by:   * analysing a technological outcome to determine suitability for manufacture and making design changes as required   For example:  The learner adjusted a patty recipe they had previously used so that the seasoning would be more appealing to a particular taste and a more standard size and thickness could be achieved.   * establishing specifications, including tolerances, required of the outcome that is to be manufactured   For example:  The learner established, through research, that each patty must weigh 125 ± 1 g and be 10 ± 0.2 cm cm in diameter and 1.50 ± 0.05 cm thick.   * selecting a manufacturing process and quality control procedures that enable units to meet the established specifications and tolerances   For example:  The learner considered their outcome and the available resources and chose batch processing as a suitable manufacturing process. They developed a flow diagram of processes that included when particular quality control procedures, such as weight and size checks, would be carried out.   * organising and using selected resources and carrying out techniques independently and accurately in keeping with relevant codes of practice   For example:  The learner selected and organised equipment, facilities, staff and materials, including safe storage of these materials. They followed their manufacturing plan and adhered to relevant codes of practice.   * modifying the techniques and the use of resources to tailor the manufacturing process to the nature of the outcome and the constraints and/or opportunities of the manufacturing location   For example:  The learner worked out that, with the space and equipment limitations (particularly refrigeration space) they could only make batches using 3 kg of mixture. They therefore scheduled their manufacturing on days when the space and equipment was available. Learners from another programme were used as labour, enabling more efficient techniques to be adopted.   * modifying the quality control procedures to improve the quality of the feedback within the manufacturing process   For example:  The learner checked the patties on a more regular basis than originally planned to ensure their size and shape was within acceptable tolerances. Irregular patties were reshaped.   * implementing the manufacturing process using feedback from quality control to ensure the majority of the units meet the established specifications and tolerances   For example:  The learner produced the predetermined number of patties. Quality control checks showed that some patties were too big. The shaping and sizing procedure was adjusted to ensure consistency in the end result. In the final batch, the majority of patties were within the accepted tolerances.  *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner undertakes comprehensive development and implementation of an effective manufacturing process by:   * analysing a technological outcome to determine suitability for manufacture and making design changes as required   For example:  The learner adjusted a patty recipe they had previously used so that the seasoning would be more appealing to a particular taste and a more standard size and thickness could be achieved.   * establishing specifications, including tolerances, required of the outcome that is to be manufactured   For example:  The learner established, through research, that each patty must weigh 125 ± .1 g and be 10 ± 0.2 cm in diameter and 1.50 ± 0.05 cm thick.   * selecting a manufacturing process and quality control procedures that enable units to meet the established specifications and tolerances   For example:  The learner considered their outcome and the available resources and chose batch processing as a suitable manufacturing process. They developed a flow diagram of processes that included when particular quality control procedures, such as weight and size checks, would be carried out.   * organising and using selected resources and carrying out techniques independently and accurately in keeping with relevant codes of practice   For example:  The learner selected and organised equipment, facilities, staff and materials, including safe storage of these materials. They followed their manufacturing plan and adhered to relevant codes of practice.   * modifying the techniques and the use of resources to tailor the manufacturing process to the nature of the outcome and the constraints and/or opportunities of the manufacturing location   For example:  The learner worked out that, with the space and equipment limitations (particularly refrigeration space) they could only make batches using 3 kg of mixture. They therefore scheduled their manufacturing on days when the space and equipment was available. Learners from another programme were used as labour, enabling more efficient techniques to be adopted.   * establishing quality control procedures that allow for ongoing monitoring to enhance the review and refinement of the manufacturing process to better suit the nature of the outcome and the constraints and/or opportunities of the manufacturing location   For example:  The learner set up systems to keep detailed records of each control point. They reviewed these throughout the manufacturing of each batch of patties. The learner also cross-referenced their control point records with the testing of one sample from each finished batch. They reviewed the process after each batch and considered changes that would improve the quality of the patty and these were implemented where possible  For example, they decided to implement more size checks in the process to catch and reshape irregular patties.  Comparisons were made between batches and there was successive improvement in consistency as a result of implementation of improved quality control procedures. For example, taste tests of the first batches revealed seasonings were too strong. These were adjusted.   * implementing the manufacturing process using feedback from quality control to ensure the majority of the units meet the established specifications and tolerances   For example:  The learner produced the predetermined number of patties. Quality control checks showed that some patties were too big. The shaping and sizing procedure was adjusted to ensure consistency in the end result. In the final batch, the majority of patties were within the accepted tolerances.  *The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.