



Australian Government

FBPFST5003 Construct a process control chart for a food processing operation

Release: 1

FBPFST5003 Construct a process control chart for a food processing operation

Modification History

Release	Comments
Release 1	This version released with the FBP Food, Beverage and Pharmaceutical Training Package Version 2.0.

Application

This unit of competency describes the skills and knowledge required to construct a process control chart for a food processing operation in general food production, meat and seafood industries. The unit does not cover applying statistics to analyse mechanical, electrical, electronic or fluid power systems. However, it includes applying statistics to food processing equipment to determine process capability and to construct a process control chart for the food processing operation.

This unit applies to individuals who are responsible for establishing and maintaining product safety, quality and efficiency in food processing and who undertake roles in product design or quality and production management.

No occupational licensing or certification requirements apply to this unit at the time of publication. However, legislative and regulatory requirements for food processing exist, so local requirements must be checked. All work must comply with Australian food safety standards and relevant codes of practice.

Pre-requisite Unit

Nil

Unit Sector

Food science and technology (FST)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Apply tools and techniques to collect and	1.1 Identify the key characteristics and uses of attribute and variable

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<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
present data	data 1.2 Determine the concepts of frequency and distribution 1.3 Determine the frequency and distribution of supplied data for various measurement levels 1.4 Identify and apply data collection tools, including check sheets, surveys and logs 1.5 Construct appropriate charts and graphs using available data
2. Interpret charting tools and techniques in process control	2.1 Interpret and analyse the concept of process capability and its implications 2.2 Apply probability distributions in analysing process capability 2.3 Interpret control charts used to monitor processes 2.4 Identify the application of charting methods to establishing process capability, evaluating process changes and interpreting simple experiments
3. Determine the process capability of a piece of equipment on a production line	3.1 Identify the scope and purpose of the process 3.2 Determine a representative data sample 3.3 Select appropriate data collection techniques 3.4 Collect data to meet sampling requirements 3.5 Select and apply appropriate statistical analysis techniques 3.6 Calculate all relevant parameters for the determination of process capability statistically 3.7 Incorporate the process capability value for each piece of equipment into process control for the whole operation
4. Construct a process flow chart	4.1 Identify scope and purpose of average and range charts in the food industry 4.2 Calculate all relevant parameters for use in preparing both average and range charts statistically 4.3 Prepare average and range charts, showing all pre-calculated parameters 4.4 Interpret trends and cyclic patterns of average and range charts 4.5 Design an action plan based on the results of average and range

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	Interpret industry standards
Writing	Document recommendations regarding the outcomes of the process capability
Interact with others	- Clarify the purpose and possible actions to be taken as a result of work-related communications - Use industry standard terminology
Get the work done	- Monitor outcomes of decisions and identify key product quality system concepts and principles that may be adaptable to future situations - Use digital tools to monitor processes and access and organise complex data

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPFST5003 Construct a process control chart for a food processing operation	FDFST5003A Construct a process control chart for a food processing operation	Updated to meet Standards for Training Packages Minor changes to Performance Criteria to clarify intent	Equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

Assessment Requirements for FBPFST5003 Construct a process control chart for a food processing operation

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Performance Evidence

An individual demonstrating competency in this unit must satisfy all of the elements and performance criteria of this unit.

There must be evidence that the individual has effectively constructed a process control chart for at least one food processing operation, including:

- applying Poisson and binomial distributions to supplied attribute data
- calculating and interpreting indices of variability
- identifying skewed distributions
- calculating and interpreting indices of significance and variance
- calculating and interpreting indices of probability
- analysing control charts to monitor processes
- applying control tools and data collection techniques to determine process capability
- applying the uses of average and range charts in the food industry
- calculating statistically all relevant parameters for use in preparing both average and range chart
- preparing average and range charts showing all pre-calculated parameters
- interpreting trends and cyclic patterns of average and range charts
- preparing an action plan based on the results of average and range
- describing and calculating measure of central tendency
- identifying the principles of process capability
- calculating all relevant parameters for the determination of process capability statistically
- interpreting process capability value in relation to the overall process
- representing data in graphs, tables, averages and percentagespreparing a report with recommendations regarding the outcomes of the process capability.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- the terms statistic and parameter
- the concept of statistical inference
- principles of variability and variance
- types and causes of variation
- probability principles
- Poisson and binomial distributions
- characteristics of the normal distribution
- the role of statistical quality control
- concepts of process capability, acceptance levels and process improvement
- the relationship between probability and statistical inference
- the concept of variation within processes and recognition of its implications for process design and management
- the scope and purpose of average and range charts in the food industry
- all relevant parameters for use in preparing both average and range chart
- pre-calculations of parameters of average and range charts
- trends and cyclic patterns of average and range charts
- the preparation of an action plan based on the results of average and range
- the definition of process capability
- process capability values.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a workplace setting or an environment that accurately represents a real workplace
- resources, equipment and materials:
 - production process and related equipment, manufacturers' advice and operating procedures
 - methods and related software systems for collecting data and calculating yields, efficiencies and material variances appropriate to production environment
- specifications:
 - tests used to report relevant product/process information and recorded results.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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