



Foodservice
Carbon
Professional

Cooking & Warming Product Module

Course Scope

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Introduction

- **Aim:** to empower the confidence and knowledge to assess and address key energy, carbon and sustainability issues related to foodservice cooking and warming products
- The Foodservice Equipment Association has brought its strength to providing a unique and comprehensive resource for the industry
- Developed and delivered by Dr Sam Mudie, of Hospitality Energy Saving and former Sustainability and Head of Energy at University of Reading



Information Involvement Influence



University of
Reading



Course Delivery and Overview

- Learn-at-your-own-pace recorded slides
- Multiple choice questions throughout
- Must complete core module assessment before commencing cooking and warming



Section 1 – Scope and Application



Section 2 – How it Works



Section 3 – Legislation and Regulation



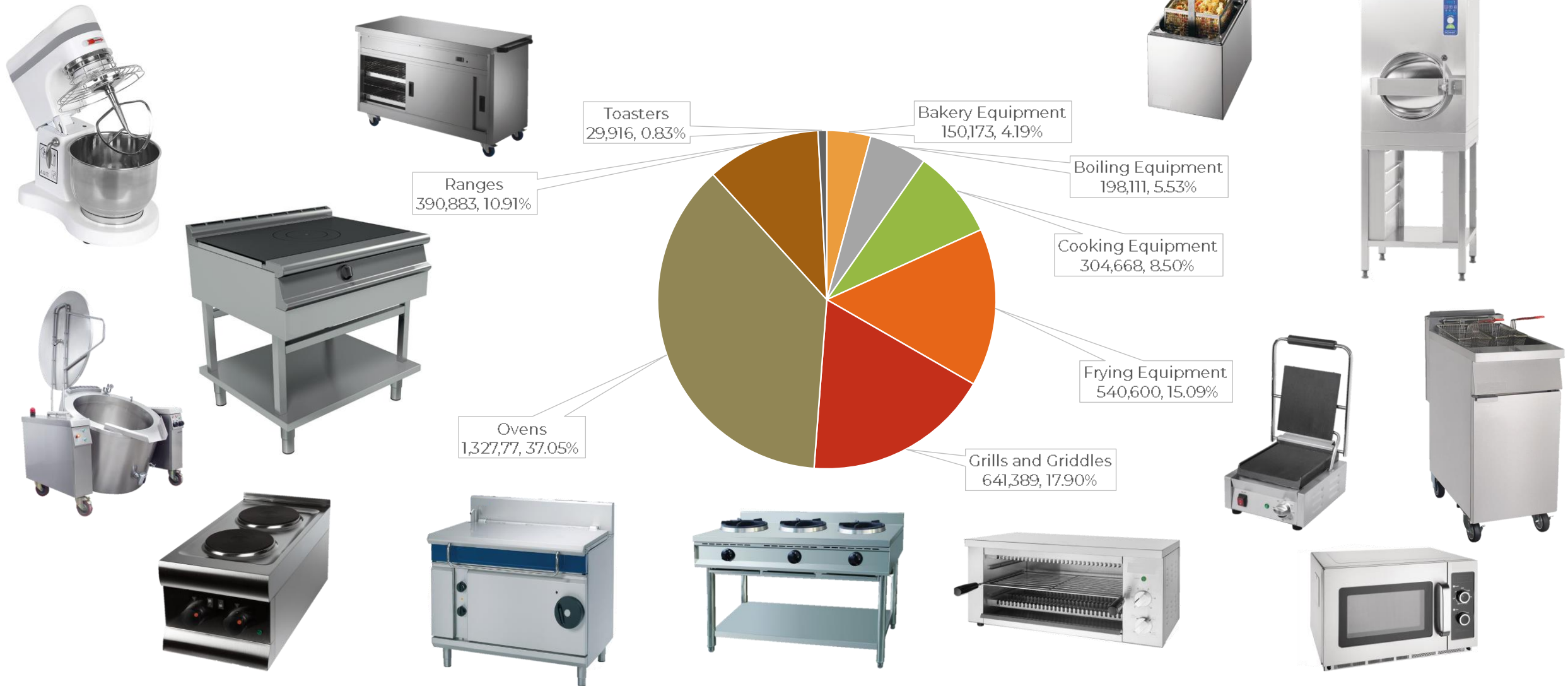
Section 4 – Lifecycle Emissions



Section 1 - Scope and Application

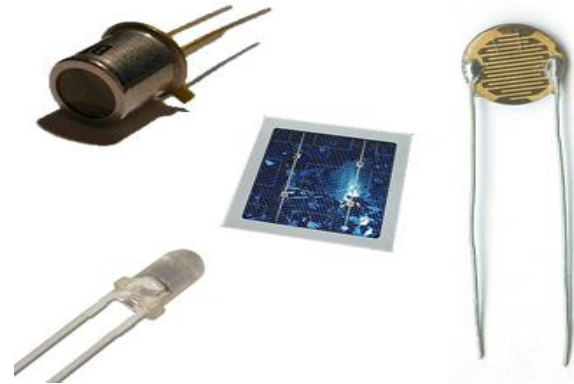
Scope	Learning outcome	Benefits	Slides
Key professional food service cooking and warming equipment, their applications and selection criteria.	Understand the various key professional food service cooking and warming products, including their specifications, intended applications, and selection criteria, such as appropriate sizing, durability, energy efficiency and features.	Participants will be equipped with the foundations to make sustainable and energy-efficient choices, alongside the broad pressures applying to the selection and application of cooking and warming equipment, as well as gain context for the rest of the course.	4-19

Section 1 - Scope and Application



Section 1 - Scope and Application

- Correct sizing, layout, space and ergonomics
- Operation efficiency – professional vs domestic, heating and recovery times, multifunctional equipment, intuitive controls
- Menu complexity
- Durability, reliability and maintenance requirements
- Legislation and regulation – safety features, sensors, compliance with industry standards
- Budget and lifecycle costing
- Energy usage and carbon

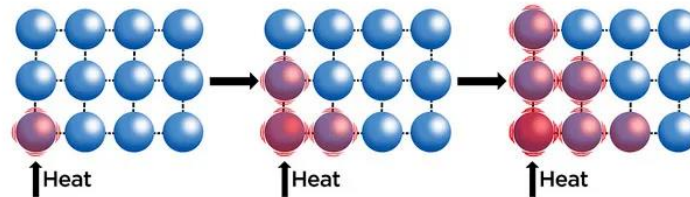
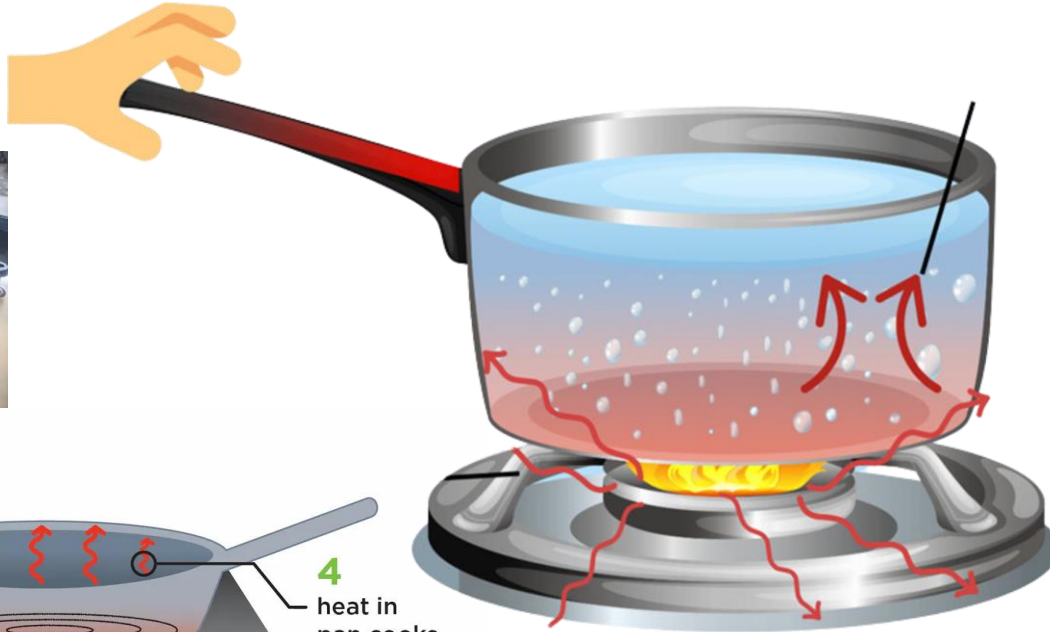
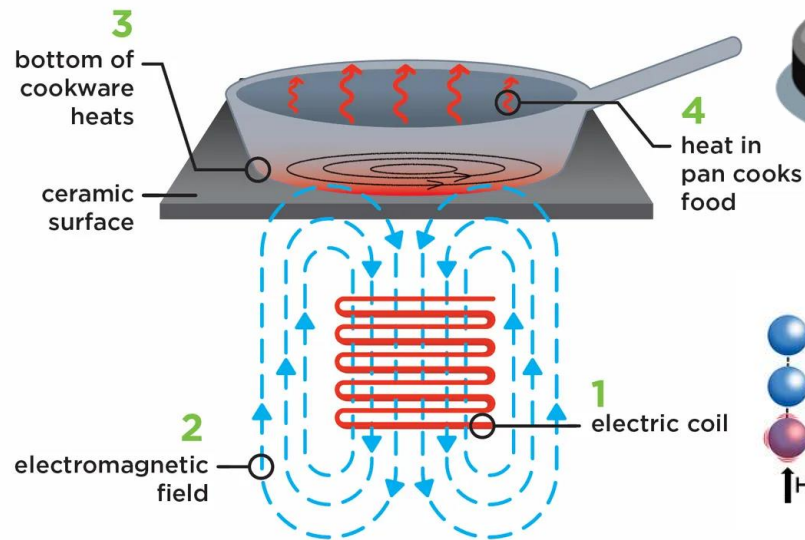


Section 2 – How it Works

Scope	Learning outcome	Benefits	Slides
Key principles of cooking and warming	Understand the essential principles of heating	Participants will understand how commercial cooking and warming equipment works in order to design, apply, use and maintain equipment effectively, thereby keeping its energy consumption and emissions to a minimum.	4-36
Key components in cooking and warming systems	Identify and describe the functions of the major components in cooking and warming equipment.	Participants will be able to discuss the importance of each component in maintaining the efficiency and performance of the system, while reducing carbon emissions.	4-36



Section 2 – How it Works

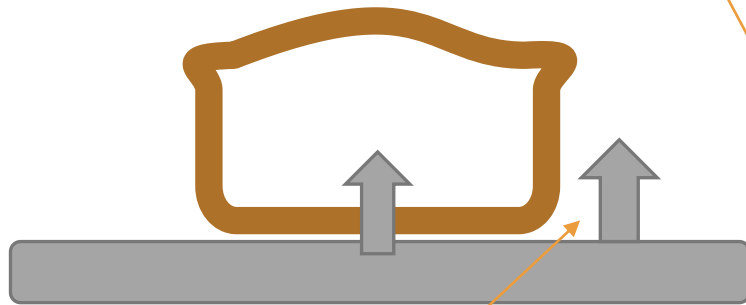


Boiling Food is cooked in deep boiling liquid [water, stock, wine etc.] in an open or covered saucepan.	Simmering Like boiling, but the liquid is kept just below boiling point in an uncovered pot.	Steaming Food is placed on a container and cooked in the steam from boiling water in a covered pan or steamer.	Stewing Cooking food in its own juices with a little additional liquid, in a covered pan, at simmering point.
Braising Pieces of food are first browned in a little fat, then cooked with some liquid in a closed pan.	Deep-frying Frying pieces of food in a deep pot or fryer with plenty of hot oil or fat.	Sautéing Cooking small or thin pieces of food in a little very hot oil or fat. The frying pan is shaken constantly to stop the food from burning.	Flambéing After frying, alcohol is added to the food in the frying pan and set on fire. This gives added flavour to the food.
Pan-frying Frying food in a little oil or butter using a frying pan over moderate heat.	Broiling/grilling Cooking food like steak or fish, over or under open heat, e.g. under the oven grill, or on a barbecue or hot plate.	Roasting Cooking food like meat or poultry with some fat in a hot oven [between 200-240 degrees centigrade].	Baking Cooking food like cakes, pies, bread etc. in a closed oven at a temperature of between 120-240°C.

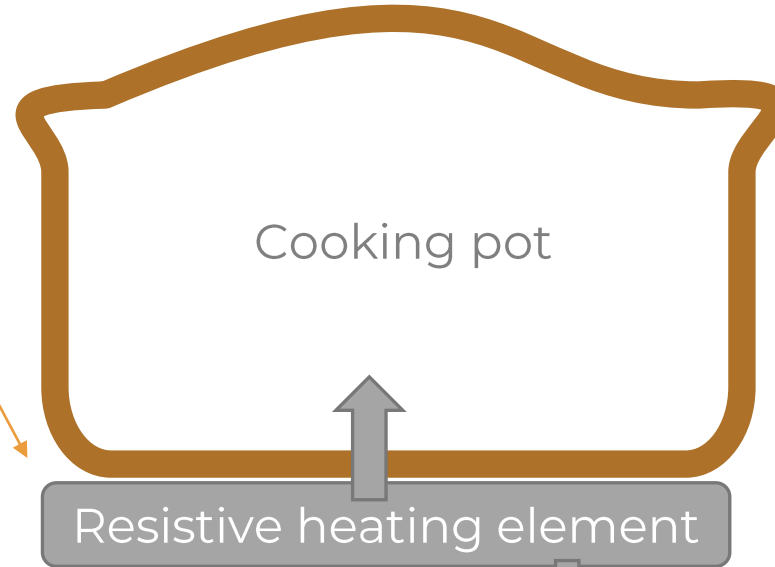


Section 2 – How it Works

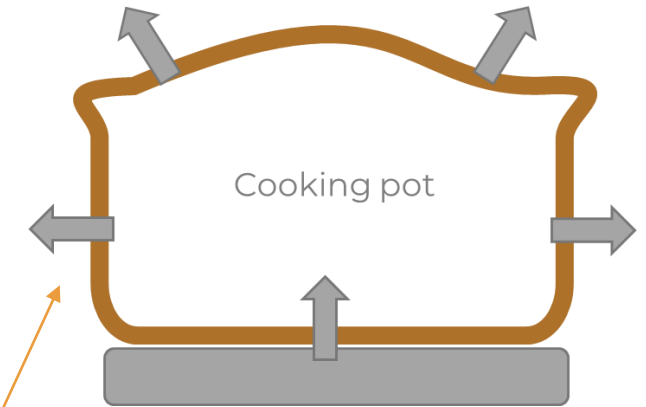
Heat transfer to pot dependent on fit of pot to top of heating element.



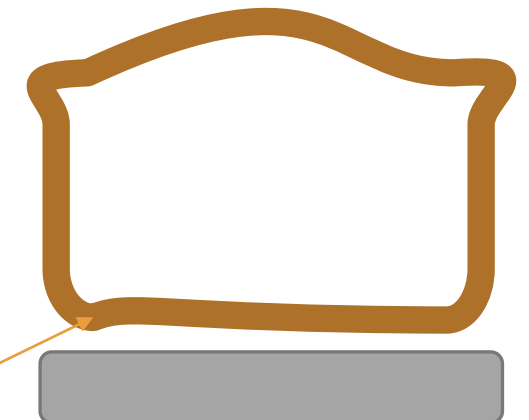
If pot significantly smaller than heating element then there are losses at the edges



Badly made heating elements lose heat downwards as the base is open.



The effect of insulation (lids)



If pot has dents, some bits don't touch

Section 3 – Legislation and Regulation

Scope	Learning outcome	Benefits	Slides
Ventilation for cooking and warming equipment	Understand how the HSE SR27, CAIS10, DW172 and TR19 Grease apply to cooking and warming equipment.	Gain the ability to ensure compliance with ventilation standards, leading to reduced operational costs and enhanced environmental responsibility.	4-13
Regulation relating to gas consumption	Develop a solid background in gas regulation such as IGEM UP19/A, gas safety, unsafe situations and the gas safe register relating to cooking and warming equipment usage.	Stay ahead in the industry by understanding gas regulation, ensuring compliance for your organisation.	14-25
Water regulations compliance	Understand various water regulations such as the water supply regulations 1999 and legionella control, and the practical actions that need to be taken to comply.	Acquire knowledge of critical compliance measures to avoid legal penalties.	26-30
Understanding electrical regulations for cooking and warming equipment	Understand the electricity at work regulations, electromagnetic compatibility regulations and designated standards for low voltage appliances.	Develop the expertise to accurately interpret and utilise electrical regulation, enabling informed decision-making and improved compliance.	31-35
Other environmental legislation affecting cooking and warming equipment	Understand other broad environmental regulation such as RoHS, SCIP, UKREACH, COSHH, the measurement and disclosure of energy consumption and other sustainability reporting requirements	Enhance your ability to navigate complex regulatory landscapes, ensuring comprehensive compliance and supporting your company's commitment to sustainability and corporate social responsibility. Provide authoritative advice to clients, partners and colleagues about the broad regulatory landscape of energy and carbon related regulations for cooking and warming equipment.	36-45



Section 3 – Legislation and Regulation



JRC TECHNICAL REPORTS

Review study of Ecodesign and Energy Labelling for Cooking appliances

March 2021

Rodriguez Quintana, R., Bernat D., Donatelli, S., Villarueva, A., Parashar, D., Rouven, A., Steinhilber, R., Schmitz, A.



ENERGY

BRAND

MODEL

A

A

A

B

C

D

E

F

G

400 kWh/annum

400 L

5°C

≤ 25°C

Preparatory study for the Ecodesign and Energy Labelling Working Plan 2020-2024

Assistance to the European Commission

TASK 3 PRELIMINARY ANALYSIS OF PRODUCT GROUPS AND HORIZONTAL INITIATIVES

PROFESSIONAL COOKING APPLIANCES

DRAFT

Prepared by:

Viegand Muegler A/S

Deloitte Institut s.r.l.

Van Holsbeek en Kemna BV

for the European Commission, DG GROW

February 2021.

The information and views set out in this study are those of the author(s) and do not necessarily reflect the official opinion of the European Commission.





GAS safe REGISTER



RSC Authority

RC68: Recommendations for fire safety in catering establishments



IGEM

Design and application of interlock devices and associated systems used with gas appliance installations in commercial catering establishments

IGEM/UP/18 Edition 2

Communication 2018



Building Engineering Services Association

Specification for:

KITCHEN VENTILATION SYSTEMS

DW/172

Second Edition 2018

www.theBESA.com



IGEM

Gas industry unsafe situations procedure

IGEM/UP/13 Edition 2 with amendments July 2022

Communication 2018



HSE

Control of Substances Hazardous to Health (COSHH)

Guidance

Control of Substances Hazardous to Health (COSHH)

Guidance

Preventing exposure to carbon monoxide from use of solid fuel appliances in commercial kitchens

Hot and cold water systems

Ventilation of kitchens in catering establishments



HSE

Electromagnetic Compatibility Regulations 2016: Great Britain

Guidance on the regulations as they apply to products to be supplied to or in the Great Britain

Introduction

This guidance has not yet been amended to reflect the amendments set out in the 2016 Regulations. It is therefore a draft document. It is intended to provide guidance on the requirements of the Regulations as they apply to products to be supplied to or in the Great Britain. It is not intended to provide guidance on the requirements of the Regulations as they apply to products to be supplied to or in the Great Britain.

Section 4 – Lifetime Emissions of Cooking Equipment



Lifetime emissions of cooking and warming equipment



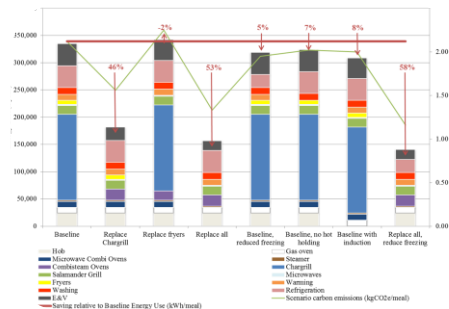
Embodied carbon of cooking and warming equipment



Design for low carbon



Transport and distribution



Design and Installation



Reduction of energy and carbon in the use phase



Food safety and waste reduction

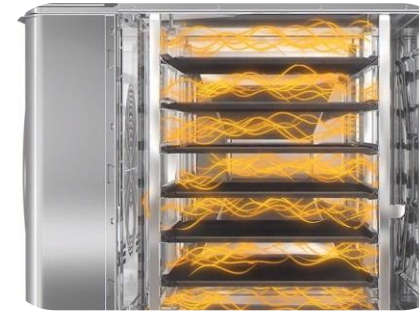
Section 4 – Lifetime Emissions of Cooking Equipment



The importance of staff training



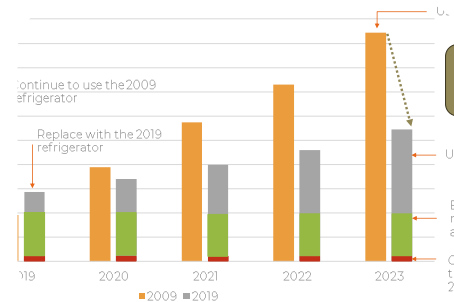
Appropriate maintenance of cooking and warming equipment



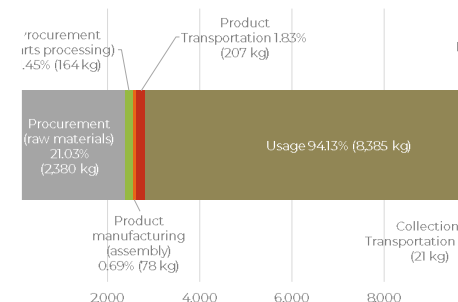
Innovation and development in refrigeration technology



End of (first) life of equipment



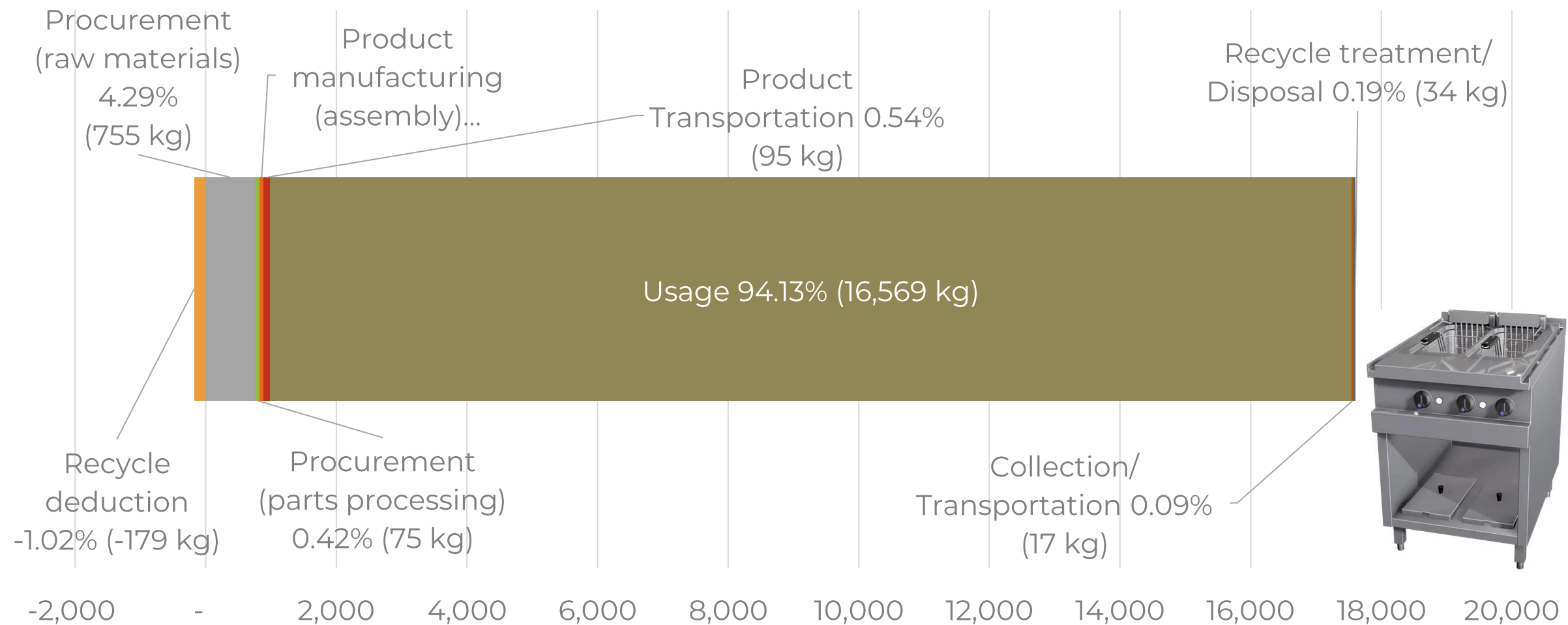
Lifecycle costs



Case studies of whole lifetime emissions



Lifetime Emissions – Twin Fryer 17,602 kgCO₂e



Assessment

- This module should take you 10-16 hours of study
- You should be aiming to be prepared to take the assessment in 2-3 months' time
- Assessing your knowledge
 - In-lecture interactive questions
 - End of course quiz questions
 - End of course long-answer questions
- Feedback is gratefully received!

Drag and drop the area of consideration to the impact.

1. User-friendly interfaces and intuitive controls can assist operators in selecting the correct modes for energy saving when required.
2. Reliable and hard-wearing equipment over the long term will reduce embodied carbon emissions by avoiding frequent replacement.
3. Critical differences in size, quality, components and features can lead to overconsumption of energy and early failure for domestic units in professional environments.
4. Higher purchase prices can often mean higher quality components and less energy consumption in use. Lifecycle assessment and examining ur
5. Both underutilisation and overloading can lead to energy waste, be avoided.

COOKING AND WARMING

Controls
Sizing
Total lifetime cost
Professional verses Domestic
Durability

Which safety feature is commonly found in professional fryers?

- ☐ High-limit switches.
- ☐ Tube heating systems.
- ☐ A cool zone.
- ☐ Filtration systems.


☒ Check

Which guidance document outlines advice on minimising carbon monoxide poisoning from solid fuel appliances?

- ☐ CAIS26
- ☐ CAIS 12
- ☐ CAIS23
- ☐ CAIS10

☒ Check

Common Symptoms of Carbon Monoxide Poisoning



Headache, dizziness, and fatigue

Blurry or double vision

Shortness of breath

Confusion

Chest pain

Nausea and vomiting



Cooking and Warming Product Module Overview



Section 1 – Scope and Application

- Types of equipment, specification and intended use
- Boiling
- Frying
- Ovens
- Grills
- Considerations for the specification and application of cooking and warming equipment



Section 2 – How it Works

- How a cooking and warming equipment works
- The principles of heat transfer
- The main components of professional foodservice cooking and warming equipment
- Foundations of making environmentally conscious decisions regarding reduced energy consumption and emissions



Section 3 – Legislation and Regulation

- Legislation and regulation relating to energy and carbon in foodservice cooking and warming equipment
- Gas interlocks, gas safety and gas appliance regulation,
- Maintenance and ventilation
- Water supply and fittings regulations
- Other sustainability reporting and compliance



Section 4 – Lifecycle Emissions

- 4a (Part 1)
 - Manufacturing
 - Design and selection
 - Specification of energy saving features
 - Use phase and practical action
- 4b (Part 2)
 - Maintenance
 - Research and Innovation
 - End of Life
 - Reduction of carbon equivalent emissions from foodservice cooking and warming equipment





Thank you, and enjoy

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