Manufacturing Soft Drinks Today

SYLLABUS

1. Introduction to the Industry

1.1 History of soft drinks
Origins, early manufacture of artificially carbonated waters, fruit and juice based drinks, distribution, World War II and the SDI scheme, Post War developments *(incorporated into pre-course reading)*

1.2 The industry today
UK soft drinks market overview. The principal companies and brands. New innovations. International comparisons *(incorporated into pre-course reading)*

2. Basic Microbiology


3. Ingredients, Additives and Flavourings

3.1 Ingredients and additives of soft drinks
The main ingredients of soft drinks – sweeteners, acids, preservatives and colours. Legislation pertaining to ingredients and additives

3.2 Flavourings
How we taste. Flavouring raw materials and substances. Developing and processing a flavour. How flavours are handled and the importance of this. Examples of formulations

4. Functional Drinks

Types of drinks on the market; specific drinks (probiotics/prebiotics, sports and energy drinks); health and nutritional claims; nutraceuticals, vitamins and minerals; herbs and botanicals; anti-oxidants; legislation pertaining to these types of beverages/drinks.
5. Water Treatment


Overview of materials and services used in production. Use of carbon dioxide; de-aeration, proportioning, carbonation and pasteurisation. Basics of production line operations. Bottle rinsing/washing. Principles of filling. Types of fillers – gravity, counterpressure and can. Typical factory/production line layouts and plant use on lines (depalletisers, palletisers, labellers etc)

7. Bottled Water

7.1 Why is water special?  
Factors on why water is special.

7.2 UK bottled water market
Factors affecting the growth of the bottled water market in the UK.

7.3 Classification
Categories and characteristics of different types of bottled water.

7.4 Hydrogeology
Sources, the natural water cycle and groundwater. Minerals in groundwater and natural mineral water. Pollution risks.

7.5 Protection and treatments
Source protection zones, types of water treatments

7.6 Quality management
Good hygiene practice for bottled waters including factory layout and process flow; plant and filling equipment; disinfection and cleaning; management systems (eg HACCP). Considerations for water integrity (materials used for bottled water).

7.7 Regulations and legislation
Regulations and Legislation, including analytical requirements and labelling of bottled waters.

8. Fruit Juice Materials in Soft Drinks Production

8.1 Definitions and terminology
What is a fruit juice, juice drink and a dilutable drink? Basic terminology used in juice production. Legislation governing fruit juice.

8.2 Raw materials
Fruit handling; extraction, processing, concentration (evaporation), essence recovery, refining and blending. By-products of the fruit juice industry. Packaging, storage and transportation of fruit products.
8.3 Handling and storage
How juice materials should be handled and stored on receipt by the juice/drinks manufacturer.

8.4 Juice processing
The processes for blending fruit juice, fruit nectars and drinks and dilutables

8.5 Filling and pasteurisation
Process, packaging and shelf life interdependence of product; principles of the manufacture of juices/drinks according to packaging requirements; the commercial implication of packaging and raw material options. What is pasteurisation? The effects of pasteurisation. Typical pasteurisation temperatures and times for fruit juices in industrial processing.

9. Primary Packaging

9.1 Why package?
The objectives of primary packaging

9.2 Design and manufacture of soft drinks containers
Glass, PET, PVC, OPVC, HDPE, cans, cartons (tetra brik and combibloc systems), cups and pouches. Advantages and disadvantages of different types of packaging.

9.3 Closures and seals
Basic principles in producing a good seal. Application of roll on aluminium/plastic closures and crowns. Push-pull closures (sports caps). Can sealing. Advantages and disadvantages of different types of closures

9.4 Recycling of packaging

10. Secondary Packaging

10.1 Function of secondary packaging
The objectives of secondary packaging

10.2 Requirements of the supply chain
The requirements of the manufacturer, brand owner, distributor, retailer and consumer.

10.3 Supply chains
The three main supply chains and their requirements

10.4 Pack styles and materials
Shrinkwrap, cases, trade ready display units, returnable crates - properties, advantages and disadvantages.

10.5 Pallet wrapping, stacking and labelling
Best practice, how to resolve problems, getting it to the customer.

11. Syndicate Work

All presentations are teaching sessions where discussion is promoted and lively interaction takes place. To reinforce the information conveyed by each lecturer, syndicate work takes place during many presentations.