



Meal Distribution System

 **Electrolux**

Meal Distribution System:



Electrolux offers a **complete system** able to produce and distribute **large quantities** of **personalised meals**: the **Meal Distribution System**.

MDS meets the requests from:

- public and private hospitals
- catering professionals
- rest homes
- schools
- firms

for the service provider

Hygiene

- Tray completed during assembling phase. No food re-handling during distribution in the ward

Flexibility

- Different and personalised meals stored in the same trolley

A complete solution

- From Cooking to Washing, including the pre- and after-sales services

A clever transport

- Temperature limits guaranteed on a single plate

HACCP

- For the whole production process: from tray assembling to delivery

Money saving

- Plate stock reduction due to the unique plate
- Low power consumption transport trolley (only 1.55 kW on model for 16 trays)

Time saving

- Improved logistics thanks to unique plate management
- Faster cleaning thanks to IPX5 water protection level on all the products



The perfect solution:



The meal, the final result of this process, is ready to be served from the kitchen, without food re-handling during the distribution phase.

The **unique plate** allows faster tray assembling operations, easier handling and lower stocks.

The **highest food quality and safety** are guaranteed thanks to this new transport concept.

for the consumer

Personalised meals

- Customised meal for every single consumer based on dishes decided by him, chosen from a diet menu

Food quality

- A gentle heating or cooling system preserves the original food tastes and properties, dish after dish, as if just cooked

Not "too hot" not "too cold"

- A clever **temperature control** by single dish depending on the food quantity and type is the best solution to guarantee the food taste, quality and quantity

The last as the first

- The last **patient** is served **with the same care** as the first one. It does not matter if the trolley doors are open or not, dish temperatures are regulated independently on each tray

Safe tray handling

- No re-handling in the ward to reduce labour costs and any mistakes

Non traditional menus

- Possibility to offer non traditional meals thanks to the **innovative transport trolley** that guarantees food safety



The integrated solution...



Our specialists will follow the customer throughout the whole process to find out the efficient and integrated solution... up to the after-sales support



...for better efficiency



- Better logistics due to the possibility to stack up all the items (plates and lids). The same rectangular dish for all kinds of meals optimises logistics operations and reduces stock investments

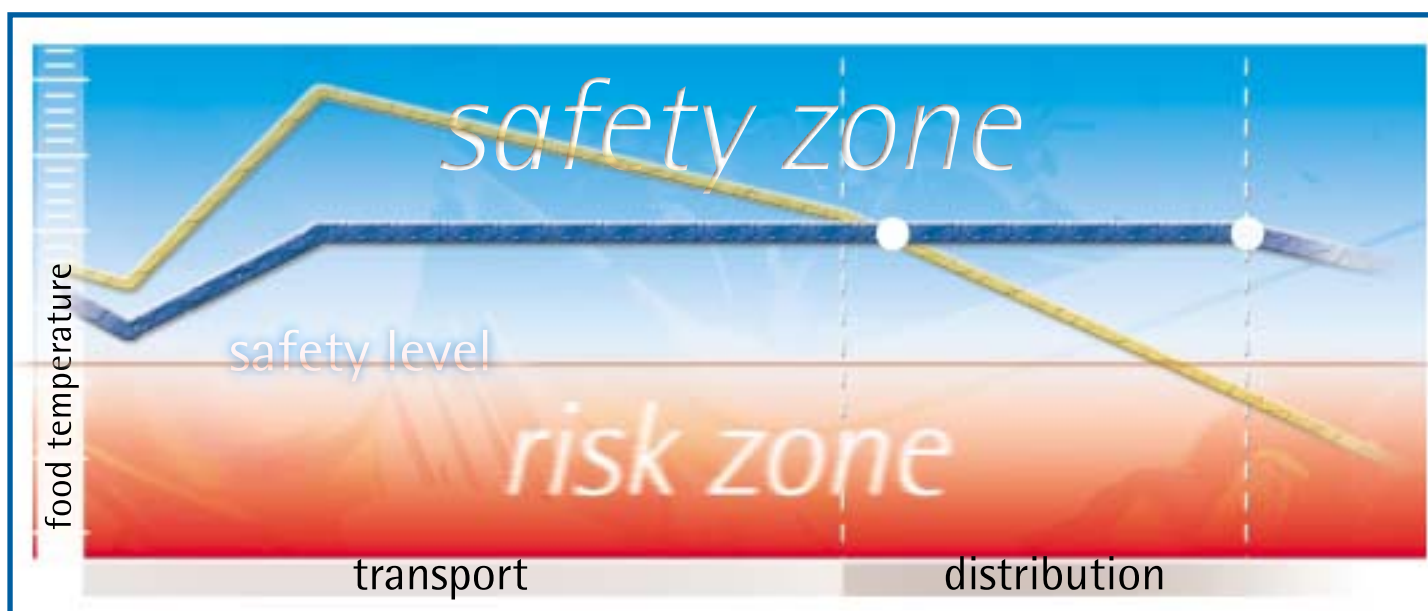
- All the products feature IPX5 water protection level to speed up cleaning operations

- Low power trolleys allow a high flexibility (single ph., 230 V) minimising costs



- The tray leaves the kitchen complete. No further rehandling is required in the ward

The highest safety...



■ **Traditional transport** > fast preheating and quick, sudden temperature reduction
■ **Electrolux transport** > self-regulation of temperature throughout the transport

• Food safety

• Transport is the most critical point of the meal distribution. The innovative Electrolux system grants a continuous automatic adjustment of every plate temperature to the set parameters, thanks to the energy supplied by the on-board battery and to the innovative technology. Hot and cold plates are continuously heated or refrigerated during transport

• Even if the trolley is unplugged, temperatures are safely controlled during the transport phase. On the contrary, food in the traditional method of transport has been heated again just before the transport phase starts. Afterwards, there is a sudden and dramatic lowering of temperatures, as shown in the above graph. Instead, temperatures are maintained during the transport phase in the Electrolux clever trolley

• Food safety rules

Hot food: should be served no less than 65 °C (*), from the first to the last consumer.

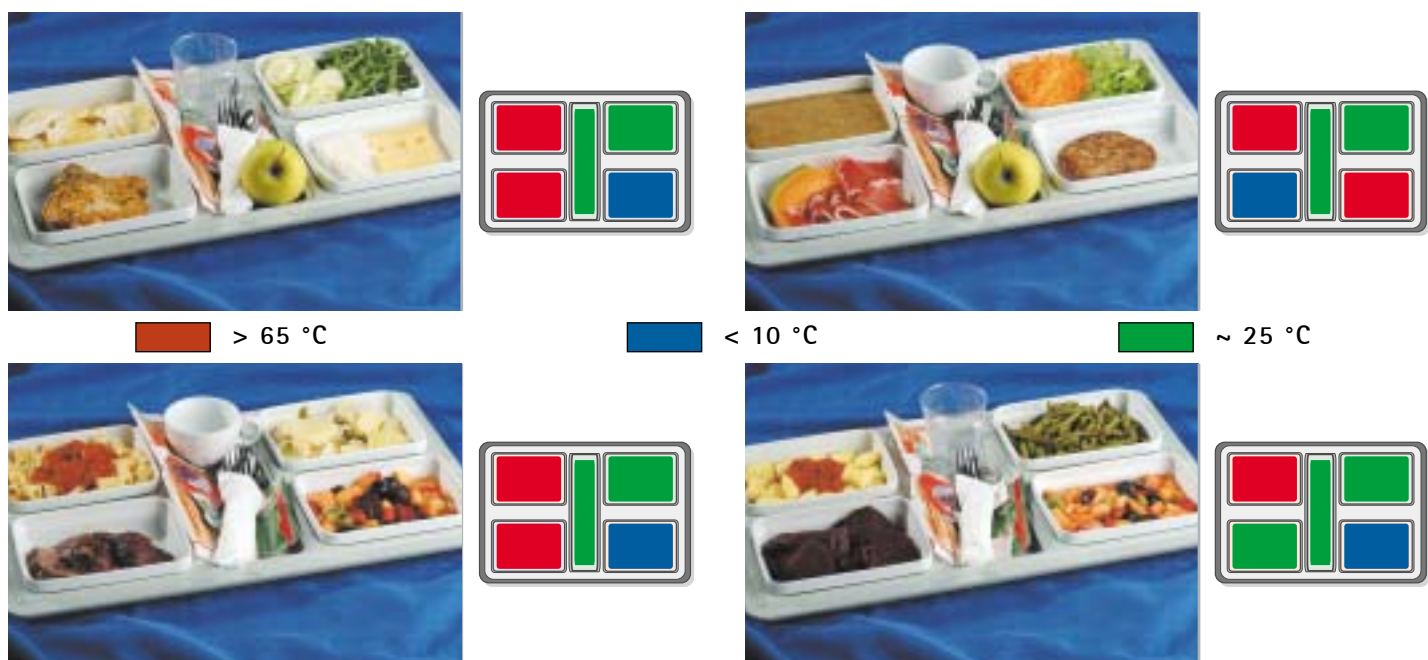
Cold food: should be served at no more than 10 °C (*) from the first to the last consumer.

The clever trolley can guarantee the final result, without heating or cooling the food too much, preserving its original quality.

(*) Safety temperature levels depend on the country rules

• Each plate temperature is also monitored, recorded and it can be also downloaded in the computer programme

...for every single portion



The extreme **flexibility** allows transporting meals that are completely different.

3 temperatures on the same tray are completely separated in order to ensure a final perfect result.

During the distribution phase, the tray can be handled without burning risk, only plates inside are heated.

Moreover, the tray can be completely prepared in the assembling area thanks to the following 5 zone tray (4 areas fit perfectly with the rectangular plate):

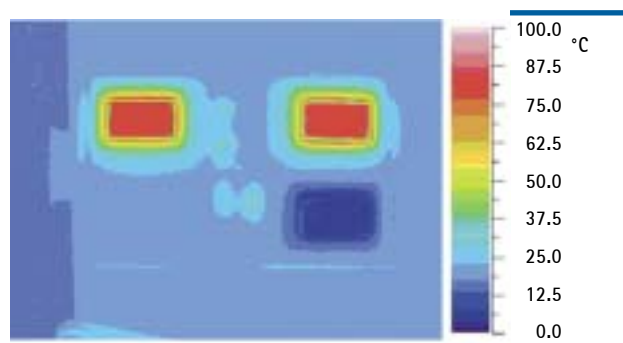
- 3 for the hot ($> 65\text{ }^{\circ}\text{C}$) or cold ($< 10\text{ }^{\circ}\text{C}$) meals: they are directly controlled by the trolley system, able to maintain the initial temperature

- 1 neutral ($25\text{ }^{\circ}\text{C}$): suitable for all the food served at ambient temperature

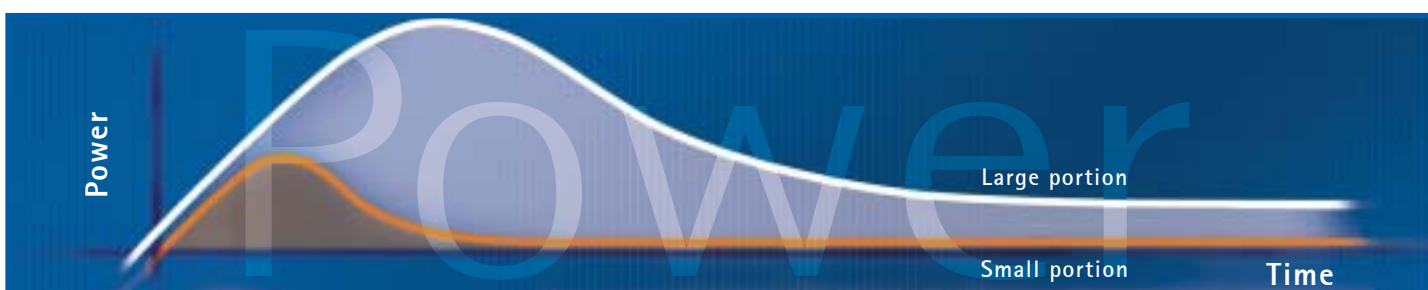
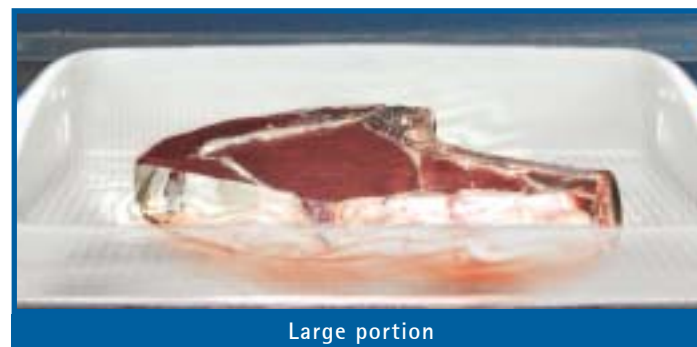
- 1 central neutral area: placed in the middle for the cutlery, napkins and even for the glass and fruit

• Thermal separation between zones

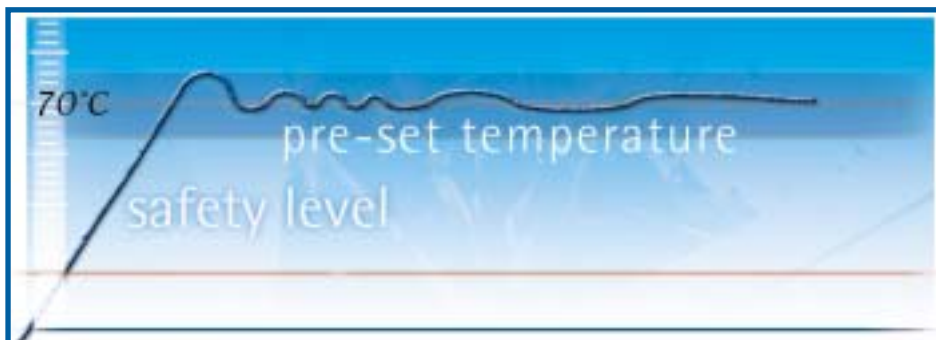
The thermographic analysis of the heating/cooling elements shows the temperature separation between plates.



Food quality

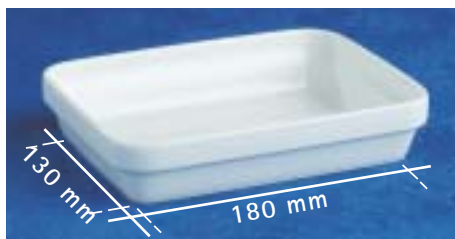


- The intelligent power management grants the correct heating or cooling on each plate, independently from food quantity or type
- In order to reach the preset temperature, the power applied to the large portion will be higher than the one applied to the small one
- Every portion is managed independently, even when the doors are opened, so each patient will receive his meal at the right temperature even if he is not present during the distribution operations



- The dedicated power management on each plate precisely controls the temperature to ± 1 °C, ensuring the best food quality, avoiding overheating the meal and, at the same time, reducing power consumption

Personalised menu



Any kind of food can safely be transported. The above examples show food portions on the rectangular plates.

The clever trolley



- 1 Wide and functional working surface
- 2 Electronic control panel
- 3 Ergonomic handles
- 4 Computer and electricity connection

- 5 Rubber bumpers
- 6 200 mm wheels (2 swivelling with brake)
- Height is always 148 cm for all kinds of trolleys: 16, 20, 24, 32 tray trolley.

- **Battery Energy during the transport***
Working life: approximately 40 minutes
Charging: 1.5/2 hours at 230 V, 1 phase
Power consumption: max 1.55-2.4 kW (according to the model)

* low power consumption due to the 230 V, 1 ph connection.

Easy to clean, easy to use



• Easy and fast cleaning

The **internal chamber**, with rounded corners and smooth surfaces without joints or holes, is **completely washable**. After opening the doors the trolley can be easily and quickly washed (IPX5 water protection) by a **water spray gun** without removing the inside shelves.

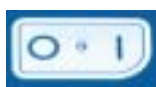
• Reliability

- The trolley has a **modular construction** and total solid-state electric components for long-lasting and reliable use
- Bumpers are all round and plastic parts increase its reliability

• Ergonomics

- The compact dimensions (only 148 cm high), light weight and **optimised wheels position** allow easy trolley handling
- Retractable connection is available for queue transport
- It features a large space on the top for any additional items

• How to use



1. On/off button



2. Start sensors and data recording activated

3. Insert trays

• HACCP

The electronic devices continuously keep under control the dish temperatures and the trolley functions. The control panel can display the following information:

- Battery charge level
- Temperature level of single dish

When not working, an audio and visible alarm device advises the operator.

How it works



Gentle temperature maintenance

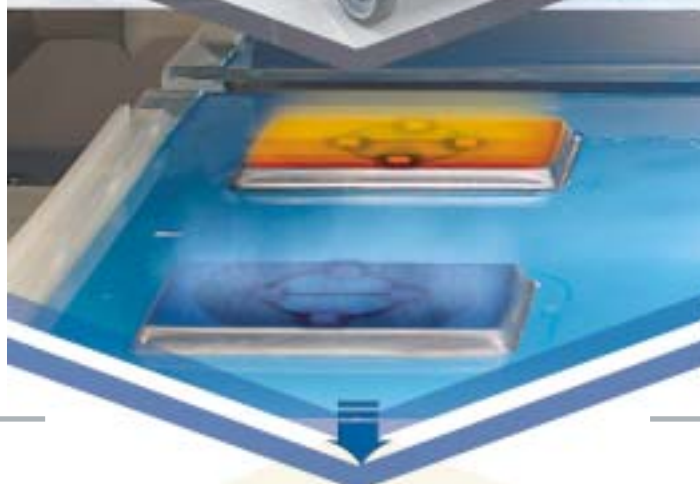
According to the measured temperature level, a hot or cold cycle is self-activated.

The **food quality** is guaranteed thanks to temperatures being kept gently constant by thermal-contact, without sudden variations in temperature, during the transport phase.

During the transport and distribution phases (open doors), the **trolley batteries** guarantee the right temperatures thanks to a **continuous energy supply** to every single dish inside the isothermal trays (patented system).

Automatic identification of single dish temperature

The clever trolley is able to identify the single dish temperature level (hot, cold, neutral) thanks to the sensors (3 or 4 according to the model) placed on the shelf where the tray is inserted. There are 4 holes in the tray, corresponding to the rectangular plates.



Independent plate management

The battery package provides energy to the processor based on data from the probes. The probe, placed under each plate, perceives if the plate is hot or cold and the "Peltier" cell placed in the shelf provides the required energy.



The "Peltier" element is a solid state double function component able to heat or refrigerate.

Its function is simple:

- When the probe detects a warm plate the electronics automatically transmits heat from the "Peltier" cell (negative tension)
- When the probe detects a cold plate the electronics automatically supplies refrigeration from the "Peltier" cell (positive tension)

The complete solution



Food safety and food quality are the results of the well-structured wide range of products – conveyors, hot and refrigerated portioning trolleys and accessories as well. Electrolux provides the complete solution.

Hot units

• The **Bain-marie trolleys** – 2 and 3 GN models – are available with 1 single well or 2/3 separated wells (depth = 210 mm)
The units are made in AISI 304 stainless steel with a heavy-duty 40 x 40 mm frame.

They have IPX5 water protection level and they are equipped with:

- **Comfortable and safe handle**
- **Ergonomic knobs**
- **High efficiency heating elements**
- **Rounded corners and hand-finished well welding**
- **4 side bumpers**
- **Drainage on each well with valve**



Heated lowerators

• The **Heated lowerator trolleys** are suitable for 550 x 550 mm or Euronorm containers. The units are made in AISI 304 stainless steel, with double insulated side panels and IPX5 water protection level.

The lowerators are equipped with:

- **Self-levelling** removable platform, standing on a ball-bearing runners system
- **Comfortable and safe** handle
- **Ergonomic** knobs
- **Ventilated** heating system
- Integrated lid
- 4 side bumpers



Cold units

- **Refrigerated well trolleys** – 2 and 3 GN models – are available with static or ventilated well (+2 +8 °C – 210 mm depth). The units are made in AISI 304 stainless steel with IPX5 water protection level and equipped with:
 - **Comfortable and safe handling**
 - **Ergonomic knob**
 - **Digital temperature display controller**
 - **Self-defrosting** and automatic water evaporation
 - **4 side bumpers**
 - **easy access for cleaning**
 - **Drainage on well with open valve**

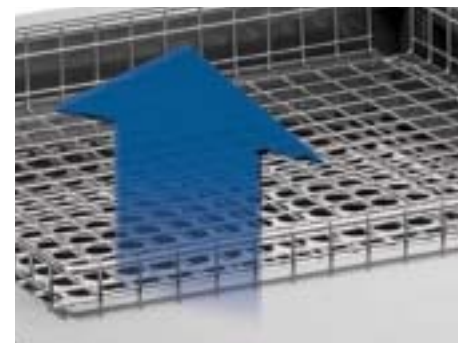


Refrigerated lowerators

- **Refrigerated lowerator trolleys** are suitable for 550 x 550 mm or Euronorm containers. The units are made in AISI 304 stainless steel with IPX5 water protection level and equipped with:

- **Self-levelling** removable platform standing on a ball-bearing runners system

- **Comfortable and safe handles**
- **Ergonomic knobs**
- **Digital control temperature display**
- **Self-defrosting** and automatic water evaporation
- **Integrated lid**
- **4 side bumpers**



Neutral lowerators

• **Neutral lowerator trolleys** – closed version – are suitable for 550 x 550 mm or Euronorm containers.

The units are made in AISI 304 stainless steel and equipped with:

- **Self-levelling** removable platform, standing on a ball-bearing runners system

- **Comfortable and safe handle**
- **Integrated lid**
- **4 side bumpers**
- **Drainage for easy cleaning**

There is a completely **open version available**, made in AISI 304 stainless steel, suitable for 550 x 550 mm or Euronorm containers as well.



Tray conveyors

The MDS range offers two conveyor models – with **cord or belt** – available in different lengths (4, 6, 8 m). The conveyor is made in AISI 304 stainless steel, has IPX5 water protection level and is equipped with:

- **Protection bar** on both sides to avoid bumping with the system trolleys
- **2 emergency switches** at both ends

- **End belt sensor** to stop the movement if there is no operator taking care of the tray
- **Electronic control panel** with speed control function
- **Soft start/stop of belt** to avoid drops
- **STD CE plugs** for connecting the system trolleys

The units can be equipped on request with a side table to be placed close to the end, as an additional working surface.



- **HACCP option**

The Electronic control panel is available with the HACCP option, consisting in **temperature probes** placed in each plug to keep the food temperature inside the portioning trolley under control. When the unit is out-of-order, an audio and visible alarm advises the operator.



Complementary units

The service trolley



In 304 AISI stainless steel is completely welded. This is the service trolley for the start-up line position so that the operator can have all the meal items available.

The upper structure can accommodate a cutlery container. Shelves, completely welded to the framework, are seamless, sound-absorbing, with double-folded edges. Fitted with plastic bumpers.

Open trolley for trays



Structured in stainless steel with side protection bars, 4 shelves with rounded edges for 56 trays, 4 swivelling antitrack wheels, two with brakes.

4 integrated bumpers in order to assure reliability and functionality to the user. This trolley is the storage unit for holding trays base and lids during the assembling and drying operations.

Diet Trolley



Is the preportioned meals trolley ideal for portioning, equipped with 4 heated drawers to hold 11 preportioned plates for each drawer. It is thermostatically controlled with temperature regulation from 30° to 90 °C. In the control panel there are 2 indicator lights: the green one to show that the appliance is on and the orange one to show the elements are heating up. The maintenance of the temperature is guaranteed by the armoured resistances.

Its structure, panels, top and handles are all made in stainless steel with side protection bars, 4 swivelling antitrack wheels, plus 4 integrated bumpers.

Optional accessories

Sets



• Set of 16 plates



• Set of 100 plate lids



• Set of 100 watertight plate lids



• Set of 16 insulated trays



• Set of 100 meal card holders

Baskets for lowerators

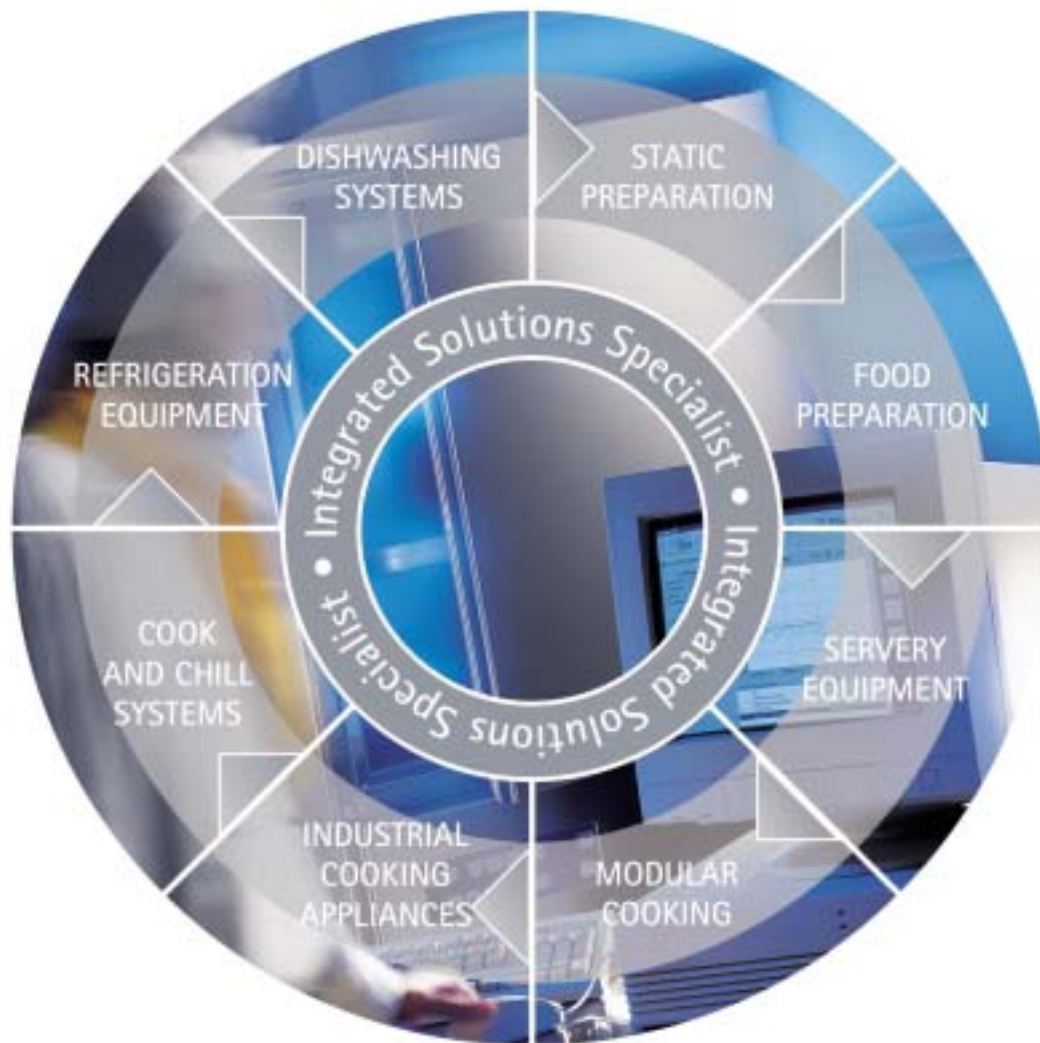
Stainless steel 304 AISI baskets



Euronorm H=70 H=130
550 x 550 H=70 H=130

Optional accessories include a set of 16 insulated trays plus a set of 16 ceramic rectangular plates, a set of 100 polyethilen plate lids and a set of 100 watertight plate lid for liquids. Moreover, there are also 100 meal card holders, so that each tray can be personalised with the consumer name. Baskets of different dimensions are also available according to different needs.

BUILDING THE future



Electrolux

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The Electrolux Group. The world's No.1 choice.

The Electrolux Group is the world's largest producer of powered appliances for kitchen, cleaning and outdoor use. More than 55 million Electrolux Group products (such as refrigerators, cookers, washing machines, vacuum cleaners, chain saws and lawn mowers) are sold each year to a value of approx. USD 14 billion in more than 150 countries around the world.