Otis is one of the world’s biggest manufacturer and maintainer of people-moving products, including lifts, escalators and moving walkways. Founded more than 160 years ago by the inventor of the safety elevator, Otis is equally committed to environmental responsibility by developing and improving energy efficient products to meet your building requirements. We view our relationship with our customers as a long-term partnership and it’s our commitment to supply them the best service every day, every hour.

Production to the highest quality for department stores, shopping centers, metros, railway stations, airports, sports complexes, exhibition halls and a host of other building uses ensures continuous and smooth operation for all building users. The key to their smooth and successful operation is the care and enthusiasm of our employees to provide our customers with the best products.

OTIS produces its escalators and trav-o-lators for the European market in a state of the art factory based in the Czech Republic. Our escalator delivers engineering quality that is the result of our long experience and equally of a sustained research and development program. Components are carefully tested directly in World wide Quality test centrum in the production plant.

So while the escalator benefits from all the economies of volume production, it can be assembled to your individual specification – both as regards its engineering characteristics and its aesthetics. Be that for retail, leisure, office or other applications. Břeclav is your escalator factory.
The passenger

is free to enjoy secure, comfortable yet adventurous travelling experience thanks to the harmony between practical and aesthetic design.

is guaranteed unwavering stability thanks to the rigidity of the balustrade which is comprised of the synergy between the use of 10 mm safety glass and continuous glass support profile.

is able to enjoy exceptionally smooth and quiet ride thanks to a closed-loop, polymer guidance systems in conjunction with the handrail drive system which minimize friction and wear.

is ensured the maximum safety and comfort thanks to the handrail and step speeds being rigorously synchronized.

and especially the children are provided with unrivalled safety thanks to the state-of-the-art handrail entry box which incorporates deflectors to minimize the risk of contact at the end point.

The customer

is free to modify any of the NCE’ engineering specifics to meet their individual desires.

is guaranteed that the NCE will be extensively tested during and after its assembly

is able to avoid long downtimes for Inspection for every NCE comes with an easy access to the machine on the upper landing.

is ensured that the shipment will be carried out in precise accordance to the requirements.

will be provided with the help of the most professional team of experts currently on the market.
**Escalator components**

1. Handrail
2. Skirting
3. Steps
4. Decking
5. Balustrade
6. Horizontal steps
7. Machine
8. Controller
9. Entry box
10. Handrail drive
11. Truss
12. Exterior cladding
13. Step chain
14. Tracks
15. Floor plate
16. Newel
17. Deflector device
18. Upper landing
19. Lower landing
20. Comb plate
21. Main drive
22. Junction box
23. Tension carriage

**Base parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum rise</td>
<td>8000</td>
</tr>
<tr>
<td>Minimum rise</td>
<td>2150 mm</td>
</tr>
<tr>
<td>Intermediate support</td>
<td>rise &gt; 6–7 m*</td>
</tr>
<tr>
<td>Inclination</td>
<td>27.3°; 30°; 35°</td>
</tr>
<tr>
<td>Horizontal step</td>
<td>2,3</td>
</tr>
<tr>
<td>Step width type</td>
<td>600 800 1000</td>
</tr>
</tbody>
</table>

**Balustrade type**
glass

**Balustrade height**
930, 1000, 1100 mm

**Speed**
0.5m/s

**Duty cycle**
70,000 hours

**Truss extension**
Optional: < 1200 mm

**Cladding arrangement**
Optional: Normal or to pit

* depends on type, on request
The standards, with which Otis manufactures the NCE, are indeed uncompromising and the emphasis for compliance with all the necessary norms is strictly enforced.
Standard safety devices

- **Auxiliary brake** – the upper landing. This is a standard for vertical rise over 6 m and is an option for rise below 6 m.

- **Emergency stop buttons** – Located on the upper and lower horizontal sections and close to the skirt panel of the handrail entry point. The safety stop can be manually activated by pressing the red button in case of emergency.

- **Handrail entry device** – device which keeps handrail tensioned, handrail with move after lead handrail tight and stay out to his rupture or on the contrary to his embossment.

- **Broken step chain device** – the safety switch is located on the tension carriage in the lower landing. If the step chain breaks or stretches abnormally, the safety switch will initiate stopping the escalator.

- **Broken step and chain wheel control contact** – This contact is located at both landings. It will be activated if either a step or chain wheel is broken or a step is lowered due to rupture.

- **Non reversal device** (NRD, electronic) – in controller.

- **Overspeed governor** – covered by MESD control system.

- **Comb plate safety device** – vertical.

- **Control device** – stop buttons and key switch can be activated when emergency issue or maintenance activity, this device can stop equipment immediately and protect passengers from any further accident or injury.

- **Deflector device** – keeps a distance between movable steps and skirt panel, protects passengers (especially children) from putting legs or fingers between steps and skirt panel.

- **Barrier panels** – acrylic glass panels, protect passengers from climbing on lower deck at both landings or between adjacent escalators.

- **Wedge guards** – acrylic glass deflector, which protect passengers from putting their hands between two units in criss-cross arrangement.

- **Floor plate safety device** – device which is connected to floor plate and upper and lower landing, if floor plate is not installed properly the escalator cannot start.

- **Warning signs** – label with pictograms, to prevent incorrect use of escalator.

- **Missing step device** – sensor device which monitors continuity of steps, to prevent hazard for passengers thanks to missing step, possible serious accident.

- **Handrail speed monitoring device** – device which monitors speed between step speed and handrail speed, this safety device monitors proper handrail running conditions. If the handrail loses its tension or the handrail speed deviates more than -15 % actual speed for more than 15 s, the escalator will be stopped.

- **Control contact for brake lifting** – the device is used to detect the operation of break lever (lift or fasten), to detect the operation of break lever (lift or fasten); once it fails to operate normally, the escalator will stop immediately.
OTIS CARE ABOUT YOU MORE THAN THE NORMS

Otis safety devices – set of devices which fulfil Otis safety standard, to protect mechanics against serious hazard

Additional safety devices – set of devices which helps mechanics and owner of equipment, to prevent serious accidents and help to monitor equipment
**OTIS safety devices**

1. **Comb plate safety device – horizontal** – safety switch located between comb plate and truss, if an object is drawn between the step and the combs, it will lift the comb plate to activate the safety contact. After removing the object, the comb plates can be held down by adjustable springs.

2. **Controller lifting device for controller** – device which helps to plug out controller from upper landing truss section, this device helps mechanics to easily lifted out controller from truss and reduce safety hazard and service time.

3. **Hand wheel** – supported device at machine, device which helps mechanic in case of by a hand wheel.

4. **Motor cover control** – switch which controls covering of all moveable parts on motor, in case covering is damaged switch is activated to stop operation of escalator and reduce safety hazard for mechanics and passengers.

5. **Escalator safety tool** – tool delivered with escalator, helps mechanics to set up escalator and to monitor further error messages.

6. **Entry steps for maintenance room** – metallic steps, to prevent mechanics to step outside of reinforced area.

7. **Manual inspection control device** – inspection box to facilitate service, adjustment and repair, consists of one portable button box and two sockets, control escalator by pressing up or down buttons as well as start buttons.

8. **Maintenance safety barrier** – plastic barriers, to prevent accessibility into escalator area through service activities.

9. **Floor plate lifting tool**

**Additional safety devices**

2. **Main drive chain speed sensor**

3. **Control contact for brake lining wear in machine**

4. **Auxiliary main drive brake (wedge type) <= 6 m rise**

5. **LED Under step lighting**

6. **LED Comb lighting** – alerts passengers to the change from the moving step to fixed comb plate – and vice versa. The area where the step meshes into the comb plate can also be highlighted by a yellow strip.

7. **LED Skirt panel lighting** – can be incorporated to offer a further safety alert for passengers and an impact-resistant diffuser fully protects the light source.

8. **Buzzer** – acoustic device, voice signalization of emergency status at escalator.

9. **Handrail broken device** – device to monitor tension of handrail, to prevent possible breaking of handrail and further hazard for passengers.

10. **Skirt panel safety device** – switch installed between skirt panel and step side, if an object is trapped between the side of a step and the skirt panel, the safety switch will be activated.

11. **Upthrust track device** – sensor device which monitors step upthrust, to prevent possible breaking of step and further hazard for passengers.

12. **Step chain roller monitoring device** – safety devices at each side of the tension carriage, if the step chain breaks or stretches, tension carriage will recoil and activate the safety contacts and stop operation of escalator.

13. **Fire shutter operation** – fire alarm signal provided by customer.

14. **Sprinkler system** – pipes and outlets on escalator connected into building fire system, to reduce or eliminate fire in building area.
ENERGY-EFFICIENT, ECO-FRIENDLY

As a result of Otis’ environmental concern, initiatives have been taken to reduce the impact of the NCE escalator on the environment. The optional, highly ecological as well as economical, lubrication system is a fine example.

HIGH EFFICIENCY LUBRICATION SYSTEM

Special brush design provides full contact with the chain surface and minimizes the oil dissipation which in turn ensures cleaner truss interior, essential when considering transparent escalator cladding. Independent, programmable controlling unit capable of interfacing with external devices and a single case of oil reservoir warrant operating foreknowledge and surprisingly short maintenance time. This extremely effective system contributes to lowering oil consumption, saving up to 70% more oil in comparison to the traditional lubrication system. Sealed-for-life bearings combined with high efficiency lubrication systems minimize environmental impact.
**Energy-saving modes**

During operation, escalator has to handle the continuous changing load. Usually, short periods of full load are followed by long periods of low load. So, constant standard motor power will result in unnecessary energy consumption. As it becomes more important to reduce energy consumption nowadays, Otis has developed three energy saving modes, including intermittent operation and Stand-By variable frequency (VF) operation. The VF drive runs at a reduced speed until a passenger approaches the escalator. It then accelerates to a normal speed of 0.5 m/sec.

1. **INTERMITTENT OPERATION**

   Suitable for an office building, people go to office in the morning and back home in the evening.

   **Save up to 50 % energy**

   Escalator is resting with no passenger load. Machine restarts by passenger detector (Piezo contact mat, photo cell barrier or radar). Follow up movement when the last passenger left can be adjusted (10–255 sec).

2. **ETA-PLUS**

   Suitable for a low traffic subway station located in suburb, people keep coming and going in every minute during all day but without rush hour.

   **Save up to 30 % energy**

   Escalator runs continuously without no impact on the traffic flow. Improves efficiency of the electric motor by switching to STAR mode when there are < 5 passengers on the escalator. Machine is controlled either in STAR or DELTA mode by means of passenger counter device (contact mat or photo cell barrier). Efficiency $\eta$ of motor in optimum mode:

   - empty escalator in STAR $\Rightarrow \eta_{\text{motor}} \approx 0.85$
   - empty escalator in DELTA $\Rightarrow \eta_{\text{motor}} \approx 0.73$
VARIABLE FREQUENCY OPERATION

Suitable for continuous traffic flow with zero passenger intervals + escalator in the absence of passengers travels at slow speed.
Oncoming passenger sees “functional” escalator.

Save up to 20 % energy

Escalator runs low speed in VF mode with no passenger load
Motor efficiency is improved in case of no passenger.
Machine is started by VF inverter and switched to DELTA mode by passenger detector device (contact mat or photo cell barrier). Motor is driven directly from the building power supply in DELTA mode and VF is not active in DELTA mode.
VF is by-passed in case of power generation in down running.
Follow up movement when the last passenger left at nominal.

Stand-by VF

<table>
<thead>
<tr>
<th>Speed</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>No passenger</td>
<td>10−255 sec (*)</td>
</tr>
<tr>
<td>1 person ≤ 30 sec × (1~255) (*)</td>
<td>20 %~50 % (*) of V nominal</td>
</tr>
<tr>
<td>Stand by VF</td>
<td>Stand by VF + NT</td>
</tr>
</tbody>
</table>

*Customer input parameter

Full load VF

<table>
<thead>
<tr>
<th>Speed</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>No passenger</td>
<td>10−255 sec (*)</td>
</tr>
<tr>
<td>1 person ≤ 30 sec × (1−255) (*)</td>
<td>20 %~50 % (*) of V nominal</td>
</tr>
<tr>
<td>Full load VF</td>
<td>Full load VF + NT</td>
</tr>
</tbody>
</table>

*Customer input parameter
Outdoor packages

For installation of escalators under various weather conditions, Otis has defined different packages, which includes:

OUTDOOR PACKAGE A1

- sheltered, not directly exposed to weather
- Temperature range +4 °C up to +40 °C;
  Humidity Range < 80 %

OUTDOOR PACKAGE A2

- sheltered, not directly exposed to weather
- Temperature range -10 °C up to +40 °C;
  Humidity range < 80 %

OUTDOOR PACKAGE B

- not sheltered, directly exposed to weather
- Temperature range +4 °C up to +40 °C;
  Humidity range < 80 %

Lighting economies

Skirt panel lighting has proved an increasingly attractive option to customers and again achieves energy savings since we have replaced conventional spots with an LED source.
Planning & Shipment

Expertise gained from the shared experience of installing escalators around the world enables us to work fast, efficiently and with the minimal disruption.

Planning

First we dedicate a team of specialists to the project.
The team analyzes your expectations and helps to define a specification, taking into account every conceivable merit from traffic to your aesthetic aspirations. Traffic flow in a store, for instance, might be required to route passengers through a certain area. The team will also provide advice to help you determine the most efficient arrangement for installation – be that standard parallel, crisscross or scissor – and will also consider vertical and horizontal distances to determine the escalator pitch and length.

Critical, too, is the physical installation itself. At Otis, we can either deliver the unit as a single piece or in a number of sections – depending on the cost and site considerations and unit dimensions.

Shipping

• One piece shipment (standard product)
• Two piece shipment
• Three piece shipment
• Four piece shipment

Once installed, a rigorous maintenance system is immediately put into place. Otis maintenance contracts are recognized as industry’s benchmarks and form a part of comprehensive strategic approach designed to keep your escalator running efficiently. An approach, we believe, on which a long term partnership is ultimately based.
Technical layout

<table>
<thead>
<tr>
<th>Angle</th>
<th>Horizontal Way of Steps at Both Landings</th>
<th>DBE</th>
<th>E</th>
<th>G*</th>
<th>K</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>35°</td>
<td>3 FL.ST. (1200 mm)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 FL.ST. (800 m)</td>
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<td></td>
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<tr>
<td>ALPHA</td>
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<td>1.428 H+</td>
<td>5547</td>
<td>2682.4</td>
<td>2864.6</td>
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<tr>
<td></td>
<td></td>
<td>1.732 H+</td>
<td>4747</td>
<td>2282.4</td>
<td>2464.6</td>
<td>1847.8</td>
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<tr>
<td>30°</td>
<td>3 FL.ST. (1200 mm)</td>
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<tr>
<td></td>
<td></td>
<td>1.428 H+</td>
<td>4652</td>
<td>2211.6</td>
<td>2440.4</td>
<td>1823.6</td>
</tr>
</tbody>
</table>
We offer a wide range of solutions to customize equipment which provide elegant and contemporary designs for shopping centers, office buildings, department stores, airports and exhibition center installations.

Our aesthetic options allow your escalator to harmonize with the building’s interior design and provide full range of LED lighting and less energy consumption.

**Arrangements**

- Single
- Side by side
- Scissors
- Criss-cross
Steps

Aluminium – natural
Aluminium – powdered
Steel – black
Demarcation lines on one side
Demarcation lines on two sides
Demarcation lines on three sides

Decking

Aluminium powder coated silver gray
Aluminium anodized silver grey FO10
Aluminium anodized gold FO7
Aluminium anodized steel finish STAL25
Stainless steel hairline finish G2

Handrail entry box

Sheet steel powder coated black
Sheet steel powder coated silver grey
Aluminium anodized silver grey FO10
Aluminium anodized gold FO7
Aluminium anodized steel finish STAL25
Stainless steel hairline finish G2
**Handrail**

Black | Red | Beige | Blue | Gray | Green | Brown | Charcoal

**Cladding arrangement**

Joints vertical to step nose line

Joints vertical to floor

**Cladding (side, bottom, underside)**

Stainless steel G9

Stainless steel G2 Hairline finish

Glass – clear

Glass – RAL 9010 painted extra clear glass

Glass – RAL 9010 painted clear glass

Sheet steel – any RAL on repuest
Balustrade glass panel colour

Clear  Extra clear  Smoked  Bronze  Green

Skirt panel

Stainless steel hairline finish G2

Sheet steel low friction powder coated black RAL 9005

LED lighting

TRAFFIC FLOW LIGHTS

UNDER STEP LIGHTING

Blue

Green
SKIRT PANEL LIGHTING CONTINUOUS

- White (cold, warm)
- Red
- Blue
- Green

* RGB also possible

COMB LIGHTING

- White
- Blue
- Green
- Orange

BALUSTRADE ILLUMINATION

- White (cold, warm)
- Red
- Blue
- Green

EXTENDED BALUSTRADE

- Standard extension max. 815 mm
- Truss extension max 1200 mm, balustrade extension max. 2015 mm
BRUSH GUARDS LIGHTING

Yellow
White
Green
Blue

* RGB also possible

IN BOTTOM CLADDING

Spot lighting – one line
Spot lighting – two lines
Spot lighting – criss cross
Two lines strip

* RGB also possible

INSIDE TRUSS

CLADDING ILLUMINATION

White, red, blue, green
White, red, blue, green

* RGB also possible

* RGB also possible
References

The Cube, Birmingham, United Kingdom, 12 units

Il Bacio, Budapest, Hungary, 8 units

Jamsil Lotte, Seoul, South Korea, 19 units

Nákupní centrum Chodov, Prague, Czech Republic, 61 units

Quadrio, Prague, Czech Republic, 6 units
Otis moves world

Marks & Spencer, United Kingdom, 10 units

Grand Rex, Paris, France, 2 units

Schwaben Galerie, Stuttgart, Germany, 18

Vaňkovka Gallery, Brno, Czech Republic, 18 units

Sazka arena, Prague, Czech Republic, 12 units