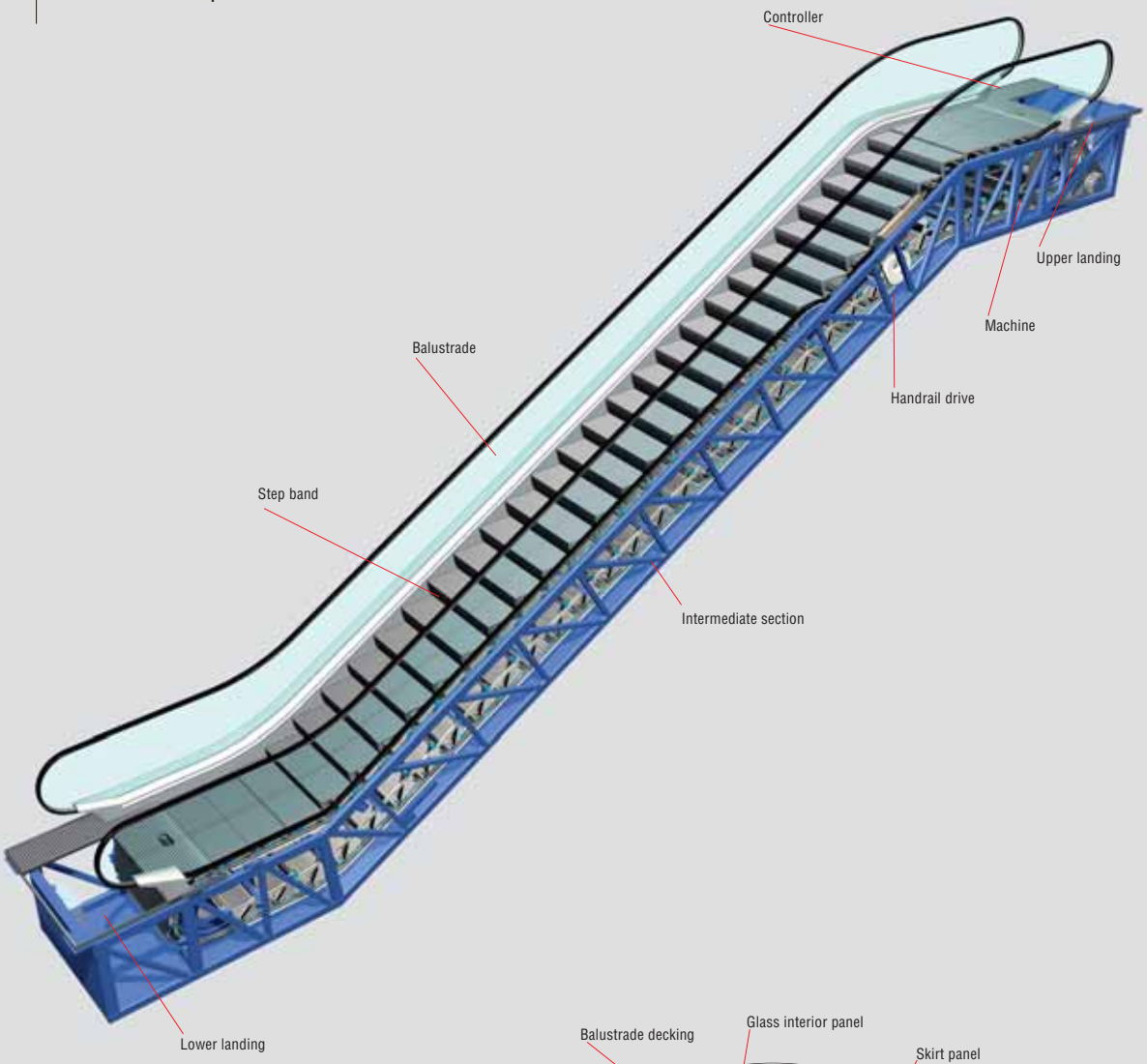
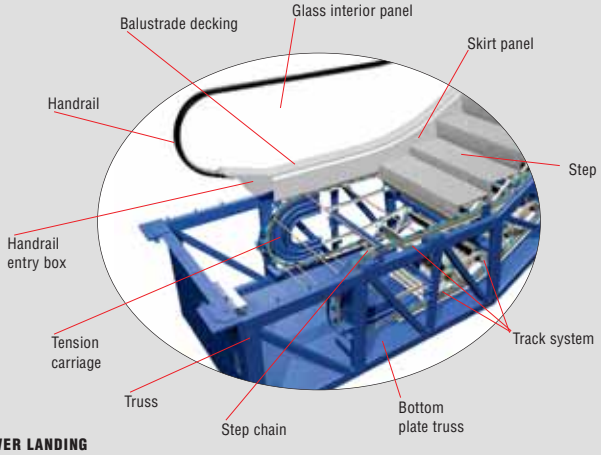

OTIS
NCE Technology

NCE Escalator

In close-up





LOWER LANDING

The NCE: technology that establishes benchmarks in escalator safety, reliability and environmental concern.

Innnovation has been a constant theme in Otis' development as the world's leading escalator manufacturer - ever since we invented the escalator more than 100 years ago. (The word escalator, in fact, was an Otis trademark before it passed into the public domain.)

Pioneering initiatives like the glass balustrade, the cleated riser and the newel have moved escalator technology forward and subsequently been adopted by the industry as a whole.

Today, the NCE escalator delivers engineering quality that is the result of our long experience and, equally, of a sustained R&D programme. It demonstrates our commitment to the core values of safety, reliability, service and concern for the environment. And, by striving relentlessly to improve these values, Otis creates industry benchmarks in each.

NCE: THE BENEFITS

1. **While benefiting from the advantages of volume production, the NCE can be configured to meet individual engineering specifications.**
2. **Excellent structural rigidity is achieved through the use of rectangular tube steel profiles rather than traditional angled trusses.**
3. **Leading-edge technology which includes a microprocessor controller and microlimit switches contributes to unsurpassed reliability.**
4. **Rigorous synchronisation of the handrail and step speeds ensures maximum safety and comfort.**
5. **A closed-loop, polymer guidance system in conjunction with the handrail drive system means friction and wear is minimised. This results in an exceptionally smooth and quiet ride.**
6. **The rigidity of the balustrade is assured, firstly, with the use of 10 mm safety glass and, secondly, by the continuous glass support profile.**
7. **The handrail entry box offers unrivalled safety and newel rigidity. Tapered in design, it incorporates deflectors to minimise the risk of contact by passengers - especially children - at the entry point.**
8. **Easy access to the machine on the upper landing reduces inspection downtime.**
9. **Robust polyurethane rollers with sealed-for-life bearings minimise maintenance downtime and environmental impact.**
10. **The NCE escalator is first assembled in the factory and then, after extensive testing, delivered in either one-piece or in sections according to your requirements.**

Safety

With specially tapered deflectors, the handrail entry box is certified to TÜV Authority standards and exceeds worldwide codes.

INNOVATIVE TECHNOLOGY PUTS SAFETY FIRST

The elongated newel allows passengers to balance themselves before moving onto the moving escalator steps.

The handrail entry box houses tapered deflectors. Unique to Otis, they minimise the risk of objects being trapped at the point where the handrail enters the module. Importantly, the design of the handrail entry box also provides the newel with extra rigidity.

Handrail and step speeds are precisely synchronised so passengers don't have to adjust their grip.

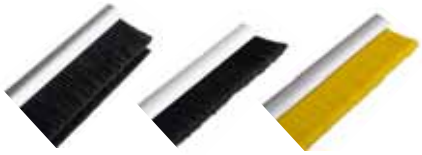
An anti-climb barrier discourages ascent or descent on the outer decking.

The gap between the moving step and the stationary skirt is minimal and it is constant. Moreover, it is smaller than that required by the codes. Factors which contribute to this key safety feature are the one-piece, die-cast aluminium step, a full-width axle support and a step-chain with a rigorously controlled tolerance.

The skirt panel is constructed of steel to render it rigid and then treated with a special low-friction powder coating. As such, it removes the problem of resistance caused by certain types of footware and luggage.

Skirt lighting can be incorporated to offer a further safety alert for passengers. An impact-resistant diffuser fully protects the light source.

Comb lighting alerts passengers to the change from the moving step to fixed combplate - and vice-versa. The area where the step meshes into the combplate can also be highlighted by a yellow strip.

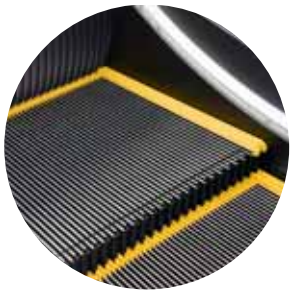


A brushguard deflector discourages foot contact with the skirt panel. If desired, two brushes can be fitted or the brush can be in yellow.

The optional multi-function operation panel at the upper and lower landings can identify and often rectify a problem.

The optional traffic flow light indicates the direction in which the escalator is travelling.

The optional rounded step nose reduces the risk of scrapes and cuts in the event of a passenger fall.



Optional yellow demarcation lines and yellow step inserts - incorporated on the sides and on the rear of the step - add to visual safety. Brushguards act as a further deterrent.

Quality

INTELLIGENT ENGINEERING ENSURES REFINED PERFORMANCE

The reliability of an escalator is linked to the quality of its design and to the quality of its build. And also to the level of service with which it's maintained.

In all three areas, Otis has established industry standards.

Escalator rigidity and passenger comfort
To achieve extra escalator rigidity - which ultimately contributes to passenger comfort - we have developed a truss construction comprised of tubular steel profiles welded into a single unit.

The steps too reflect this singleminded focus on engineering excellence. Constructed in one-piece, die-cast aluminium, they are exceptionally sturdy and are supported on a step-chain using spring-loaded pins and individual full-width axles to ensure a positive alignment with the step track system.

Of note also is that the steps can be easily removed for maintenance without the need to dismantle the skirting or balustrade.

and Reliability

Engineering precision and escalator performance
Balustrade rigidity is obtained through the continuous glass support profile - as opposed to supports fixed by intermediate clamps.

Synchronised step and handrail speeds also enhance ride quality as does a closed-loop polymer handrail guidance system. The system minimises friction and wear making the ride exceptionally smooth and quiet.

At all production stages, rigorous assembly controls are implemented which compare each operation against a strict tolerance parameter.

An initiative pioneered by Otis is a computerised jig which fine-tunes adjustments to the tension carriage, track system and main drive, so ensuring accurate alignment and fit.

Important, also, is that before an escalator is shipped from the factory, it undergoes a series of Final Assembly Tests. Again, this process establishes benchmarks in escalator performance.

Quality programmes and extended lifetime
At Otis, a quality certificate is issued for certain key components such as the step chain and main drive. This continual focus on quality means that a typical installation, operating 12 hours a day, 6 days a week, achieves a lifetime of 20 years without major repair.

Passport controls and enhanced reliability
Fundamental to our reliability process is a system known as 'Passport' which sets strict controls from design through to manufacture and, ultimately, delivery. Unreserved approval has to be obtained at each checkpoint before the product can proceed to the next stage. Passport is a constant reminder that quality is paramount. It is central to our quality assurance strategy and a commitment by which quality is assured.

Environment

PIONEERING TECHNOLOGY ENHANCES ECOLOGICAL CREDENTIALS.

Sealed-for-life bearings (shown above) combined with high efficiency lubrication systems minimise environmental impact.

As a result of Otis' environmental concern, initiatives have been taken to reduce the impact of the NCE escalator on the environment.

Sealed-for-life bearings and an optional, highly efficient lubrication system which uses up to 40 times less oil than a conventional system are typical of such measures.

Energy-saving operating modes

The availability of three operating modes also offers the opportunity to achieve energy savings. ETA Plus is an electronic power monitoring system which operates at a constant speed and adjusts the energy consumed in accordance with the load that is carried. Light rays are installed at each landing so that that the controller can compute the number of passengers travelling at a given time.

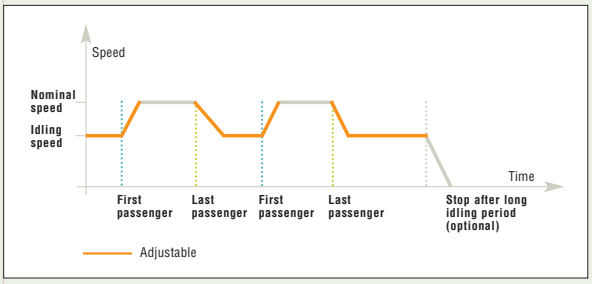
The variable-frequency drive continuous mode, on the other hand, permits the NCE escalator to run at a reduced speed when there are no passengers. As soon as a passenger approaches the escalator - detected either by light sensor or the Piezo contact mat - the escalator accelerates to the normal running speed of 0,5 m/s.

Finally, the VF drive suspend-mode - which is ideal for installations with less traffic - achieves the greatest savings by deactivating the escalator in the absence of passengers.

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.

Energy-efficient stand-by VF speed curve



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.

Continuous LED skirt panel lighting results in energy savings.

Planning

PARTNERSHIP IS THE KEY TO RAPID INSTALLATION

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

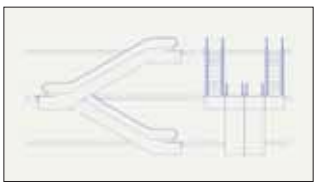
First we dedicate a team of specialists to the project. The team will analyse your expectations and help define a specification taking into account traffic and aesthetic aspirations. (Traffic flow in a store, for instance, might be required to route passengers through a certain area.)

The team will help determine the most efficient arrangement for your installation - be that standard, parallel, criss-cross or scissor - and will also consider vertical and horizontal distances to determine the escalator pitch and the length.

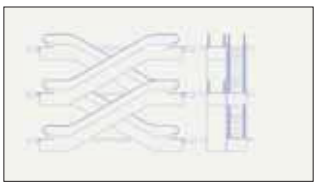
Critical, too is the physical installation itself. At Otis, we can either deliver the unit as a single piece or in a number of sections - depending on cost and site considerations.

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

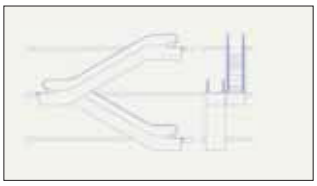
Advanced manufacturing procedures ensure outstanding product quality.



Double scissors and side-by-side



Criss cross



Scissors

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