INTRODUCTION AND A JOURNEY WITH MAGLEV

The introduction of the maglev in Munich means that stations will have to be created in a sophisticated transport environment.

- Integration in the existing transport infrastructure both at the central railway station and at the airport,
- the innovative character of the TRANSRAPID magnetic levitation transport mode,
- the special legal regulations governing the maglev and
- the special requirements that both the customers and the operator, DB MAGNETBAHN, demand of this “premium product”

all have to be satisfied and reconciled with each other.

With that aim in mind, a product concept has been drawn up, together with the requirements for the DB MAGNETBAHN specifications and, of course, the appropriate draft and approval planning. The unique factor in this case is the holistic design concept for both rolling stock AND stations - the idea is to allow the journey chain to be experienced as an organic whole, with vehicles, stations and the environs co-ordinated with one another. Awaiting the customer are new features uncommon to railway travel in Germany as check-in for outgoing air passengers and their luggage, automatic ticketing, “gates” as means of controlling access and automated platform doors.

HAUPTBAHNHOF STATION

Munich central railway station – “Hauptbahnhof” – has more than 20 platforms, making it one of the largest rail junctions in Germany. You arrive here, in the main building, by Deutsche Bahn regional or long-distance train.

Today, an average of 750 long-distance and regional trains (regional trains account for 450 of that figure), approx. 1100 rapid transit (“S-Bahn”) trains and roughly 1000 underground trains call at this station every day. That adds up to a total of 350,000 passengers and visitors to the station. Munich is the starting and transfer point for high-speed (long-distance) rail services, regional and urban services.

The transverse platform takes you directly to the entrance of the maglev station, which is located underneath the main building, thus guaranteeing the shortest possible transfer distances and times. The target is a transfer time of less than seven minutes to and from the platforms for long-distance trains.
Stairs, escalators and lifts elevators take you to the distribution and check-in level, the point of convergence for passengers transferring to and from all other means of transport – including S-Bahn and underground – at Munich central railway station.

Display boards here show online information about flight arrivals and departures, so that you can already obtain up-to-date airport information while still at the railway station.
Customers can choose how to proceed at distribution level: if you wish to check in here at the railway station, turn right and head for one of the check-in counters, where you will be given your boarding card for the flight.

You can also obtain your ticket for the maglev journey at this check-in counter.

If you do not wish to check in for your flight at the station and have not bought your ticket for the maglev journey in advance, e.g. through the Internet, you can purchase it from a vending machine here. According to the current planning status, you will receive a ticket with a 2D barcode, like those already used by DB for online tickets.

In view of the planned automatic operations and to safeguard revenues, only ticket holders will have access to the platform. To avoid any unnecessary restrictions and ensure convenient access even for passengers with luggage, a system such as fast-opening swing doors will be provided. Tickets will be checked using a non-contact scanning procedure.

If there is no train waiting to depart, the platform itself will be designed as a pleasant place for passengers to wait. However as the trains will depart at 10-minute intervals, no one will have to wait here for long periods anyway.

There is a door system installed along the edge of the platform – an unfamiliar element, at least for German passengers. This is aimed at ensuring safe operation of the maglev without a driver. The platform door system is prescribed in the German Maglev Magnetic Levitation Train Construction and Operating Regulations” [MbBO].

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### Chart 5: Access to platform level and platform

A further flight of stairs – or, of course, alternatively escalators or lifts – takes you to the lower-level platform area. Brightly lit ceilings above the check-in level emphasise the openings in the ceilings for the stairs and lifts.

As a rule, maglev trains from the airport will arrive on the left-hand side of the central platform; trains heading for the airport will depart from the right of the platform. This means that trains can be stabled at the platforms ready for boarding in good time, so that passengers can board and alight without haste and without obstructing each other.

### Chart 6: Platform door system

Comprehensive active and preventive fire safety measures will also be taken in the interests of passenger safety, in compliance with the latest statutory regulations.

### 3 THE FUNCTIONAL PLANNING AND DESIGN CONCEPT

The design of both stations and rolling stock will reflect the concept of a DB premium product. Functional planning of the maglev station at Hauptbahnhof was handled by OBERMEYER PLANEN+BERATEN engineering office, the station at the airport was planned by SCHMITT, STUMPF AND FRÜHAUF engineering office.

The functional planning for both stations already satisfies major criteria, such as

- station layout with overall route optimisation
- stations can be reached directly from all relevant transfer points and without any unnecessary changes of level (=stairs – downstairs)
- all routes and circulating areas for public traffic are adequately dimensioned (e.g. stair widths)
- barrier-free (disabled-friendly) planning
- optimum operational track diagram
- safety and fire protection/prevention.

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The principal design criteria, and thus key elements of the overall design concept are:

- the materials, structures and colours of walls, ceilings and floors
- lighting
- the design of special eye-catching wall features, e.g. opposite the check-in area at access level in the Hauptbahnhof station, as well as the end walls of the tunnel station

The repeated use of the “magnetic wave pattern” – the abstract motif of flowing lines which is to be featured in the vehicle interiors – will also be used as a design pattern at suitable points in the stations. This motif will therefore accompany you throughout the station, and you will encounter it once again inside the vehicle.

Chart 7: Magnetic wave pattern

The plans envisage consistent design throughout, including the design of the “new” elements such as the platform doors. The glass façade, for instance, will be continued above the platform door installation to form one coherent unit with the walls up above.

Chart 8: Magnetic wave pattern in the station

You enter the vehicle through the platform doors, which open automatically. This presentation deals only briefly with vehicle design: once on board the train, although you will instantly recognise a Deutsche Bahn product from the bright red colour schemes, dark blue seats and accentuating features in steel and wood, it will also be clear – e.g. from the typical "magnetic wave pattern” described above – that this is a very special DB product.

There are special luggage racks where passengers can store their luggage during the journey. Depending on your personal preference, you can choose between face-to-face or airline style seating.

The doors close automatically before departure and the maglev train levitates.

4 MAGLEV STATION AT THE AIRPORT

After a 37 km from the central railway station which takes just 10 minutes, you arrive at the airport station, which is located in a tunnel.

Here, again, you will find the same matching design elements. The station at the airport also has the same new functional elements as those at the railway station which were described above: again, platform doors are installed as a protective measure at the platform edge. After leaving the maglev train, you can proceed over stairs, escalators or elevators.

Chart 10: Magnetic wave pattern in the station

You now cross a small mezzanine level, pass through the exit gates without any further ticket inspection, and arrive directly in Munich Airport Centre (MAC), the central forum of Munich airport. From there, you can reach Terminals 1 and 2 by short, direct routes.
As you can see, the way to the plane is just as simple as the way to the train, with the maglev as the ideal "link".