

TRANSRAPID MONTHLY

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Transrapid 07

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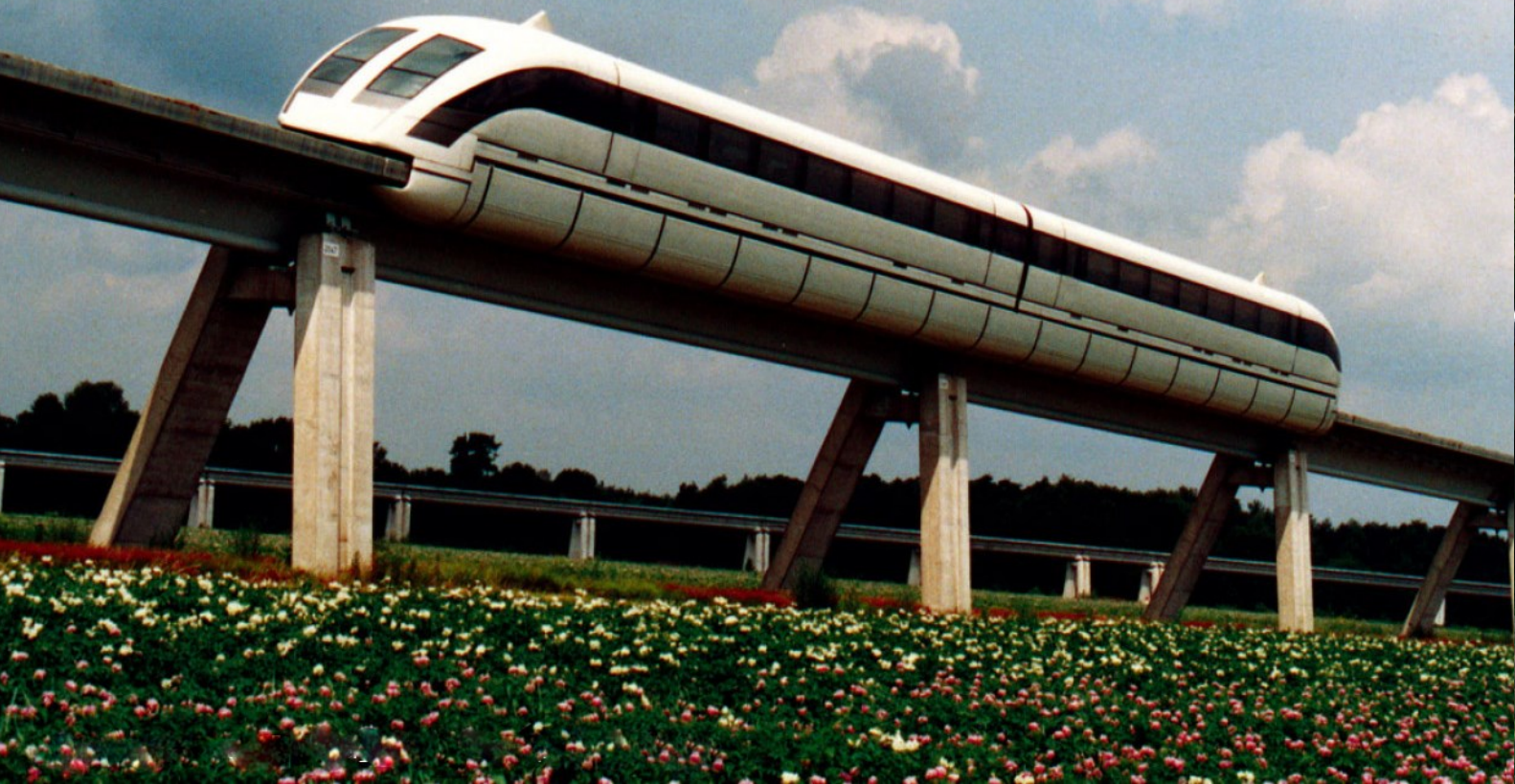
& more!

WELCOME AGAIN!

Thank you for picking up the new issue of Transrapid Monthly! As you might have noticed, we have updated our graphical style. It might seem more complicated, but we hope that you'll appreciate our effort. This new style is meant to subtly increase the amount of text per page, which means you'll get more content in a smaller form factor. Let us know what do you think about our new style, do you like it, or would you change something? Feel free to reach out to us. Also, if you don't mind, there are three announcements to be made: firstly, the one-man staff of Transrapid Monthly would like to thank maglev.net for sharing with us a sizeable image archive! If you'd like to expand your knowledge when it comes to maglev technology outside of the Transrapid project, don't hesitate to visit their website. Secondly, I was contacted by Michael Dittmer, the creator of the short film titled "Eine Rundfahrt im Transrapid TR09". He has replaced the old version, which I reviewed, with a new one, without the subtitles. So, if you still haven't seen this video, you can now view it with much less fatigue than before. One last announcement before we float away, there are 4K 16:9 wallpapers of the graphics found on the front and the back cover of this magazine available free of charge on my website, transrapidmonthly.weebly.com, under the "Resources" tab. Now, on with the issue!



Sincerely,
Transrapid Monthly's
editorial team



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TRANSRAPID 07: GLITZ AND GLAMOUR

The TR07 always seemed underrepresented to me. Not only was it created in an era when affordable VHS cameras were uncommon, which transferred to its poor presence in the digital age, but also it experienced the growing pains of the TVE, similarly to the TR06, although it did substantially better than its predecessor. How did it pull through and became the second furthest traveling Transrapid after the SMT?

Similarly to the TR08, the story of the Transrapid 07 started with a 1:1 size replica made out of glass fiber. But



this is where the similarities end; the Transrapid 07's mockup was much bigger in comparison to the 08's empty fore. Here, the mockup was entirely furnished and replicated a full section, unlike the TR08's mockup, which represented only the frontal part of the section in the actual vehicle. The first public appearance of the TR07's replica dates back to the spring of 1985 when the world-famous Hannover Messe took place. There, on the Thyssen section, the replica was placed, as visible on the photograph.

The second appearance of the replica was on the 1986 Vancouver Expo, where the mockup was transported and situated onto the pavilion of the Federal Republic of Germany, as you can spot in the background of this photograph. The replica was then shipped back to Germany and shown to the public again, for the third time in 1987, when a spring exhibition in Frankfurt demonstrated Transrapid's capability



to be integrated with conventional rail transport by laying conventional tracks onto the top of the Magnetfahweg. With this solution, the Transrapid could share platforms with conventional wheeled vehicles, which are currently utilized in rail transport. The mockup appeared a year later, in 1988, on that year's IVA, the International Traffic Exhibition. This is the same event on which the



TR05 temporal exhibit was installed in 1979. This replica's fifth public appearance was a second one on the Hannover Messe, this time five years later, in 1990. That's the last time the mockup was publicly displayed.

That's because the replica (somewhat) crossed paths with the Transrapid 05 again, when it was placed inside the old station from the IVA '79, which was relocated from Hamburg to the Henschel site in Kassel, the one where the HMB1, HMB-2, the Transurban and the TR05 were tested. To this day, this replica is situated inside that station without public access. If you want to see other interesting



images of this very replica, you can follow the link under this QR code, which will lead to a post by Magnetbahn on Instagram. Interestingly, the mockup inside features a TR05 seating layout with an identical moquette, which is

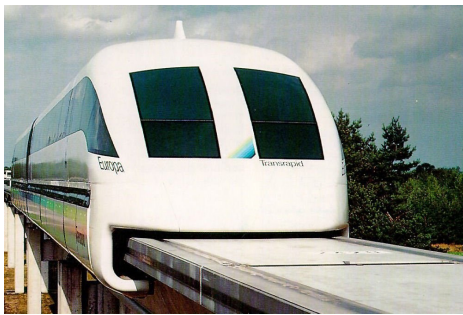
odd, since such a seating arrangement was never planned for the TR07 since it was designed specifically as a long-range inter-city vehicle.



I think we got a bit ahead of ourselves – let’s move a year back, to the year 1989, when the actual Transrapid 07 began scheduled operation on the TVE. The vehicle, nicknamed „Europa”, consisted of two identical units with an overall length of 50 m, a width of 3.7 m, a height of 3.9 m, a capacity of 200 passengers, and a total weight of 110 metric tons, including a payload of about 20 metric tons. The TR07 design was improved based on the research on previous vehicle models, and in particular, on the experience and findings gained from the TR06. A detailed study of aerodynamic drag resulted in reshaping of the nose section, which was modifiable (which we will discuss in a moment) and cowling around the magnets.

Arguably, the one thing that changed the most in the Transrapid 07 throughout the years was its paint job. However, that wasn’t the only variable that determined the outward appearance of the TR07, because there also was the variable nose section, which could be modified to point upwards, just like on the mockup, or come closer to the TR08’s shape on a whim. The only thing to do to change the nose shape, which was also tested for aerodynamics (and based on the TR08’s shape, you might guess which one was better), was to install one piece during a routine maintenance check. The other variable was the paint job, which, in comparison to the other Transrapid vehicles, changes significantly. I will now go over each one of them.

Starting with the most recognizable coat of paint, namely, the one featuring its nickname, Europa, on the fore. It features an interesting color scheme, which I featured on the cover. This particular scheme also features its own variations, namely, the variations around the front window area. The style presented on this image,



which visually elongates the front and side window panels is, in my opinion, the best one so far. It just looks very futuristic, sleek, and even more streamlined than the TR09’s style.

After that, there was a second front variation, which just removed a bit of paint on the front panels.

The second major variation came in the



form of stripping the color scheme featured on the previous style, leaving the vehicle completely blank, and including a small BMFT logo on the

side of the vehicle. In this form, the TR07 retired and was replaced by the TR08. After a short period of staying on a piece of the track meant for maintenance vehicles just by the exit from the facility, it was relocated to as the outdoor exhibit right outside the Besucherzentrum. All this time, the second section stayed happily recolored to fit the style of the Transrapid TR-Regio, which was soon to transport passengers to the Munich International Airport, where the TR07 section served the purpose of being a portable Besucherzentrum and showing the visitors the advantages of the system. Meanwhile, the section which rested in Lathen was repainted to the same color scheme as its brother in Munich and placed in Essen to promote the Metrorapid project. Shortly after that, it was brought



back to Lathen, where it stays to this day, unprotected from the elements and in a worse state than its immobile mockup. The other section



was bought by Max Bögl, repainted to a black and white scheme, and moved from the Airport to Senthenegeal, where the Transport System Bögl is/ was tested.



GÜNTER STEINMETZ AND HIS DISBELIEF IN THE TRANSPRAPID

As we may come to expect, with the Transrapid being an insanely huge project spanning multiple companies, it would be impossible to pinpoint a single person, without whom the Transrapid would hugely suffer. While that's certainly true, today I'd like to talk about the person to whom my mind instantly jumps to when thinking about the Transrapid: Günter Steinmetz.

Mr. Steinmetz's journey with maglev technology started right when the first projects were proving their worth, namely the MBB Prinzipfahrzeug era. He worked alongside Krauss-Maffei and other associated companies, such as Messerschmitt-Bölkow-Blohm as a project developer in the Transrapid technology. He held this position for 13 years, between 1972 and 1985. He then moved on to be the manager of the Transrapid Versuchsanlage Emsland, where he stayed for 12 years, starting in 1994 and ending in 2006, after the tragic accident in September of that year. On a side note, he and his colleague, Jörg Metzner, were fined €20.000, as ordered by the Osnabrück regional court. From 2008 onwards, he works as an independent consulting systems engineer.

In April of 2014, Mr. Steinmetz wrote a book titled „Im Marionetten-Theater: Freie Fahrt ... aber nicht für Transrapid?“. Unfortunately, it is not available in English. But, for my German-speaking audience, based on the introduction available on the publisher's website, I can safely predict that it will be an all-encompassing read. Just based

on the table of contents, with separate chapters for nearly all stages of his work-life and everything which would cover the evolution of the Transrapid, I'd definitely point to that book if somebody asked me for a complete history of the Transrapid.

„But when did Steinmetz started to doubt the feasi-

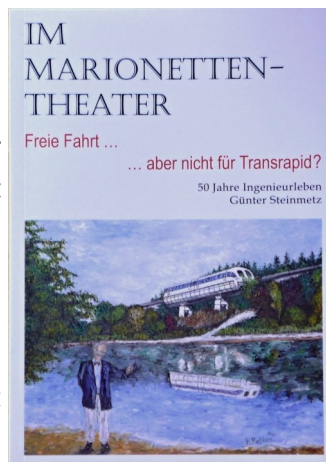
bility of the Transrapid?“ you may ask; if he has worked on the technology for years on end, wouldn't he see the clear advantages of the Transrapid system? Well, he explained his point of view in an interview conducted by „Die Zeit“ in 2005. Let's analyze his arguments and try to understand why he had nearly given up months before the accident.

In short, the number one cause for the failure of the Transrapid, according to Steinmetz, is the seven-year-long Red-Green coalition (SPD and Bündnis 90/Die Grünen), which he flat-out described as „destroying his life's work“. Judging by the tone of his statements in the interview, he seems already distraught in 2005, when saying that he's ready to retire right at the change of the government. Besides that, he clearly seems like a man with a vision and a passion for his work; the interview clearly shows this:

The Transrapid operators had scheduled 14.5 million passengers a year for the Hamburg- Berlin route , almost 40,000 a day. Did he ever believe in this absurd forecast? Steinmetz shrugs his shoulders. "I want to tell you something: I would have built the Transrapid, even if no one had ridden at all."

Steinmetz clearly points out that Die Grünen relentlessly exploited one weakness of the Transrapid: the noise. Even though we now know that the noise wasn't really the problem, and could be further eliminated in suburban areas by installing soundscreens, the ContraRapid formations took the results from the akustik-data studies and took neither the distance between the train and the microphone, nor the inverse-square law into account, and were bending over backward to minimize public support by telling them that the Transrapid wasn't worthwhile if it didn't go as fast as 500 km/h.

At the end of the interview, Steinmetz shares his views on different future aspects of the project. In his eyes, the Munich airport link, which was the most promising project back then, would be totally unnecessary, as according to him, the Transrapid isn't entirely sensible in local transport. He predicted that the Transrapid wouldn't stand a chance in Germany, but it would be explored in China. He based that on his observations when China adopted his work into the Shanghai Maglev Train. And would you know it, it turns out that his predictions are turning into facts right before our very eyes – we've already seen the Sifang and other Tongji creations use the magnetic frame based on the one made for the Transrapid. One can wait for the rest of his predictions to materialize.



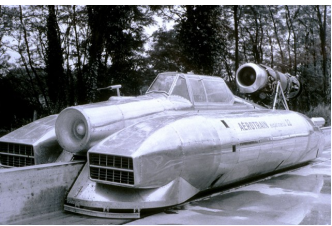
As a community, we usually think of the Transrapid and other related maglev train systems as a complete overhaul. “A completely groundbreaking innovation, which redefined high-speed transport forever”, we’d love to say. However, this claim is somewhat misleading, if not completely false. Let me introduce you to the Aerotrain.

The Aerotrain was a variation of the “hovertrain” concept, which was developed by many countries. The French project, called “L’Aérotrain” was by far the most advanced of them all. Developed originally by Jean Bertin, the Aerotrain evolved from a simple 10-meter-long prototype to a giant jet-powered record-breaking vehicle, which could carry up to 80 passengers and would achieve a top speed of over 400 km/h. But first, let’s start at the beginning.

The first model of the French hovertrain was the Aérotrain 01. Built in 1965, this half-scale prototype was fitted with propeller propulsion by a 260-horsepower aircraft engine, was 10 meters in width, and could carry four passengers. It wasn’t long before Bertin secured funding for his project, as the Aérotrain 01 proved itself after reaching a record speed on the newly built 6.7 km long test track built in Essonne, between Gometz-le-Châtel and Limours. There, in 1967, the first model of the promising hovertrain reached an astounding speed of 345 km/h.



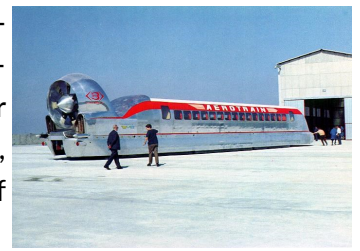
The next prototype, the Aérotrain 02 was built in 1967 by the Société d’Etudes et de Constructions Aéronaval at Le Bourget. Based on the research conducted on the first prototype, the 02’s design was further streamlined. This time, the prototype was used solely to study the behavior of the air cushion at high speed and to serve as a test bench for the



JT12 reactors made by Pratt & Whitney, with which the second model was fitted with – that’s why this model was designed to only carry one person. On January 22, 1969, the Aérotrain 02 reached a record speed of 422 km/h on the Gometz-le-Châtel test track.

The first full-size vehicle was the Aérotrain I80. It could carry 80 passengers and move at an average speed of 250 km/h. Its noteworthy feature was the enormous faired propeller with variable pitch, which was 2.30m in diameter (supplied by RATIER-FIGEAC). The I80 left the assembly

line on July 7, 1969. On September 13, 1969, on the unfinished full-size test track near Orleans, which was 9 km long, the vehicle reached a speed of 250 km/h.



Alongside the tests of the full-scale model, Bertin greenlighted two smaller projects related to the Aérotrain, mainly to test the technology’s applications outside high-



speed intercity transport. Those projects were: Aérotrain Suburbain S-44 and the Tridim. The first of the two, the S-44 was built in 1969 near Alsace by the company De Dietrich. It

could carry 44 passengers at a speed of around 200 km/h. For this model, a new track was built, parallel to the concrete one at Gometz-la-Ville, which utilized a Duralinox guide rail. The latter vehicle, the Tridim was even smaller than the S-44. Built in 1973, this vehicle was geared towards suburban transport, similar to the S-44. The main differences are the much more compact design and a different track, which utilized a toothed wheel system alongside the air cushion system, which enabled the Tridim to glide effortlessly up steep slopes and turn into corners at mind-boggling speeds.



In 1973, the I80 model was modified. Instead of the faired propeller, it utilized a Pratt & Whitney JT8 D7 jet engine and a thrust reverser for braking. This revision, named the Aérotrain I80 HV, broke the world record for the speed of a land vehicle on March 5, 1974, reaching an average speed of



417.6 km/h with reports of it peaking at 430 km/h. On December 27, 1977, it completed its final voyage before it was stored in its hangar for a couple of decades, and ending

its life as a target of an arsonist a few days before it was set to be transported to a museum. Let’s hope the Transrapid doesn’t meet its fate.

THE AEROTRAIN
TRANSRAPID’S PREDECESSOR

OLD TEST TRACKS

A THOROUGH CORRECTION BY KENJI EILER

2400m

TR04 track

marked yellow.

Skipping the Erlanger

Erprobungsträger, mostly because I man-

aged to nail down the location of its test track in

my first article on the matter, we head right into the HMB-

1/HMB-2 test track on the premises of the Henschel factory

site in Kassel. This

100m test track con-

sisted merely of a

straight line oriented

north-east. On today's

satellite imagery, the



only clue pointing towards its existence is a short row of trees

that ran parallel to the track, as following the demolition of

the test track was a construction of new buildings, which now

partially cover the track's whereabouts.

We're staying in Kassel, as an interesting

discovery was forwarded to me; the entire TR05 route erected

from the track pieces from the exhibition in Hamburg,

which was relocated for further testing to

the same factory site in Kassel, is visible on

Google's satellite images from 2005. I have

to note, that a piece of this track still re-

mains, as well as the station, which was

moved from Hamburg as well. The only

thing missing today is the rest of the 594m

test track, which was demolished.



2020 2005

The last correction, or should I say,

addition, comes in for of a track which was

not known to me. It turns out, that the un-

manned KOMET unit had its own track!

This track, officially called "Linearer Hoch-

geschwindigkeitsprüfstand" was a 1300m long straight path

used to accelerate the KOMET to speeds unmatched by any

land vehicle at that time, along with its dedicated rocket

sledge, called

Daniel.

This

track was split into three zones: the 300m acceleration zone,

the 300m measurement zone, and the 700m braking zone.

Today, the area on which the track was once constructed

is an important German military forces test area, on which vari-

ous parachutes, anti-missile flares, and bomb models are test-

ed, and it is strongly forbidden to enter. As a substitute, you

can visit the site virtually, under these coordinates:

48.688391, 11.526378

In my first issue of this magazine, I included an article titled "Transrapid Test Facilities: where are they now?". It provided

an "expansion" of sorts to a promotional video by

Transrapid International, "The Transrapid Story". This vid-

eo showed the evolution of the project step-by-step, ex-

plaining how and when the maglev technology made its big-

gest breakthroughs. Ever since I've watched this video, I

started wondering about where exactly those old test tracks

were situated. I've got to admit, that the information pre-

sented on the internet was truly scarce, so even with archival

film scans and a few areal shots under my belt, the research

of mine was rather bare-bones, to say the least. But today, all

of that will be recouped, as I was recently contacted by Kenji

Eiler, a member of the International Maglev Board, who

came forward with exceptionally detailed information about

the locations of the old and demolished maglev tracks. So,

without further ado, let's finally close this subject for good.

Let's start from the beginning – the MBB Prinzipfahr-

zeug. In my first article, the only

information I could find mentioned

that the 660m test track, which ran

in a straight line, was located some-

where on the premises of the Mes-

serschmitt-Bölkow-Blohm factory

situated on the southern edge of

the city of Ottobrunn. With the newfound data I was pre-

sented with, I can show you the exact line, on which the MBB

Prinzipfahrzeug ran on. If you want to explore the map your-

self, here are the coordinates: **48.050233, 11.651352**



The next set of tracks are the ones from the Allach dis-

trict of Munich. The first track, used by the TR02 and the

TR03, which was not mentioned by me in the previous article,

because I was led to believe that the vehicles tested on it

were using the TR04 track. It was 930m in length and ran just

next to the TR04 track. It, however, was also incorrectly

drawn. My visual was based on the markings on the ground,

which were visible from satellite imagery and would thread in

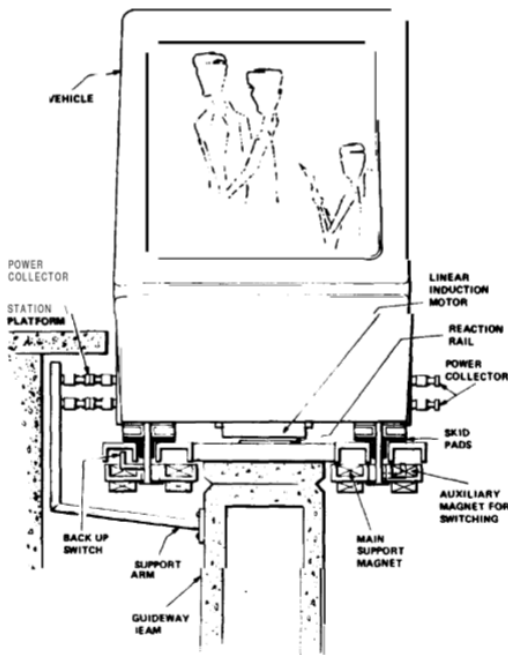
the same direction as the actual TR04 track. Here is the cor-

rected map, with the TR2&TR03 track marked red, and the

A smaller M-Bahn? An early prototype of the Heathrow pod? Whatever category you would like to put the Transurban in, it doesn't quite fit in. When did the development of this strange vehicle begin and what were its shortcomings that led it into obscurity, similar to other semi-personal transport systems? Well, let's open the history books and find out right now.

The creation of the Transurban-system began in 1970, with Krauss-Maffei taking center stage in the development process, while other small companies helped with specific parts of the system, such as Standard Elektrik Lorenz AG, which implemented the remote control and surveillance into it. The refinement of the system became significantly easier when The Ministry of Research and Technology, which we know from funding the M-Bahn, decided to share the cost of development, which happened on the 1st of October, 1971. The project was first unveiled from the shroud of secrecy in 1972. First trade-off studies by Krauss-Maffei showed a lot of advantages, which we now know to be of the Transrapid system.

The vehicle itself was 6m in length and 2m in width and height. A single car could accommodate 12 seated passengers and 6-8 standing passengers. The system could handle 5 coupled cars, which would couple and decouple automatically. Transurban's propulsion was achieved by utilizing a single-sided linear induction motor. This vehicle could achieve a 50-75 km/h maximum speed, but an average and economical one was 45 km/h. The Transurban system's guideway was very much akin to the of the Transrapid. It utilized a reinforced concrete post and beam construction surmounted by the reaction and armature rails. Its maximum slope was +8% and -15%. In 1973, a dedicated 600m circular track was built for the



Transurban on the premises of the Henschel factory site in Kassel. If you didn't realize, this is the same site on which the HMB-1, HMB-2, and the TR05 were tested.

However, the Transurban's potential wasn't visible neither in the TU-01 (the first prototype), nor the TU-02 (the second prototype), as the maglev technology's advantages were covered by Krauss-Maffei's lousy execution. The visitors, who have ridden the Transurban had two major complaints:



"The system is noisier than expected. The vibration of the reaction plate due to excitation from the linear induction motor produced an objectionable 50-cycle hum. This noise source could be corrected by a heavier plate or by anchoring it more securely to the supports.

The ride has been described as "hard." There is no secondary suspension on the vehicle. Rigid maintenance of an air gap between 10 and 25 mm (0.4-1.0 inches) gives a ride that emphasizes any imperfections in guideway smoothness."

In the end, The Ministry of Research and Technology invested \$11.3 million into the Transurban, but after realizing its minuscule potential to be utilized in mass transit and remain economically viable, decided to cut any funding for the project in 1974, putting their funds into much more reliable maglev technologies. One can imagine, what would've become of the Transurban if the development would continue.

THE TRANSUBURBAN

A FUN-SIZED TRANSRAPID BY KRAUSS MAFFEI

Transrapid 07

The image features a black background with four diagonal stripes of varying colors (teal, green, blue, and dark blue) running from the bottom-left towards the top-right. The stripes are positioned in the lower half of the frame, creating a modern, geometric design.