

ART 2024
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Asphalt at the limit
using the example of race tracks and proving grounds

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Basics about race tracks and proving grounds

- Racetracks and proving grounds are multimodal asphalt surfaces
- A wide range of requirements must be met in a relatively small area:

Race Tracks

- Complex design in terms of track design and elevation to give spectators a good view

Proving Grounds

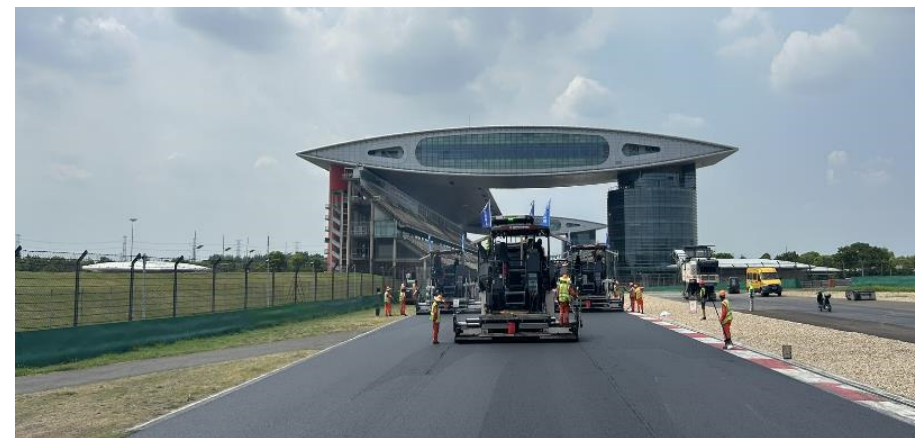
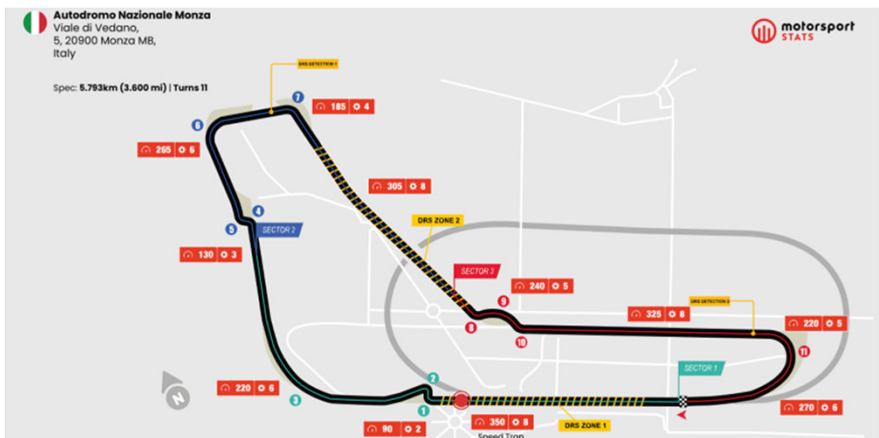
- Many small test areas with different test cycles

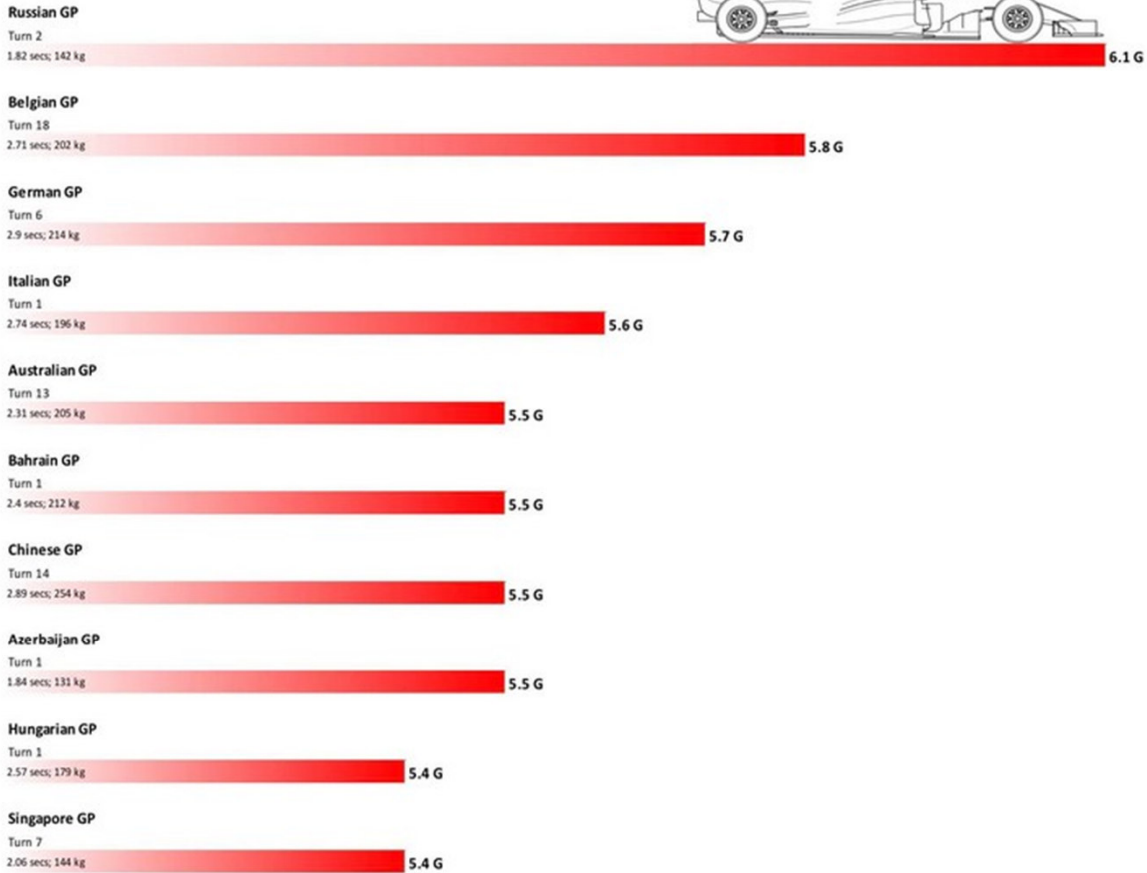
Common shared requirements

Asphalt as a safety element of the track

- ✓ RT/ PG - evenness (max. 2 or 3 mm/ 4 m, IRI max, 0.8 m/km)
- ✓ RT - high and uniform grip over a long period of time (> 12 - 15 years)
- ✓ PG - uniform grip over a long period of time (> 12 - 15 years)
- ✓ RT - high texture homogeneity for uniform drainage and tire temperature
- ✓ PG - high texture homogeneity for uniform irrigation and water depth
- ✓ RT/ PG - high surface wear resistance to grain breakage and mastic loss
- ✓ RT/ PG - no plastic deformation allowed (braking points are always the same)

Basics about race tracks and proving grounds

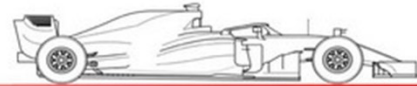




2019 Braking Forces Infographic via Brembo

19.09.2024

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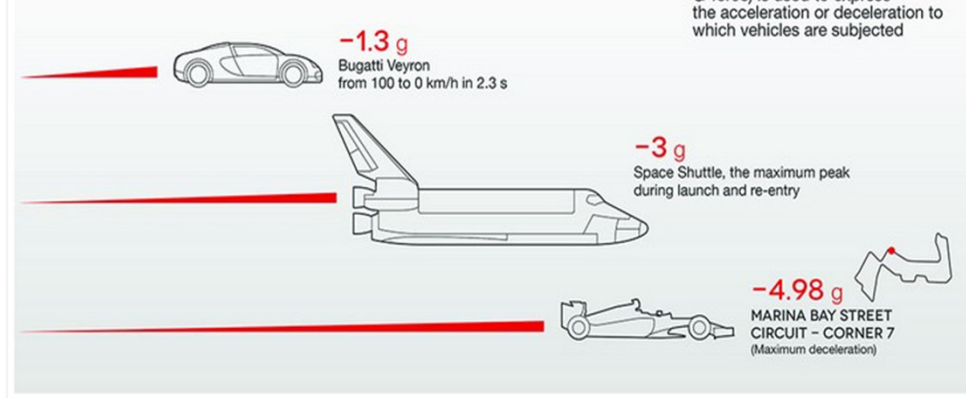
The driver would be thrown forward towards the steering wheel and any vehicle load would shift to the



ed on the vehicle. The driver would be thrown back into their seat and the load could shift.



be exerted on the vehicle. The load could shift and unrestrained objects on the seat could be thrown.



Braking Infographics Via Brembo

Basics about race tracks and proving grounds



Wet Handling Course

ISO 10844 (Pass By Noise) - driving lanes

ISO 23671 (Wet Braking) – driving lanes

Basics about race tracks and proving grounds

Heavy duty testing areas



Is it useful to use RAP for a racetrack or proving ground?



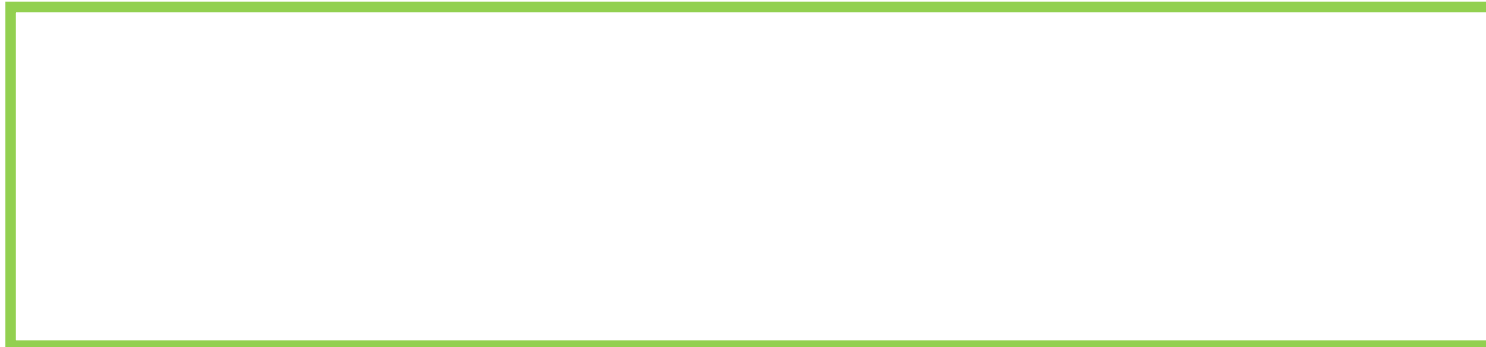
It depends on the possibilities on the ground like a proper recycling management and the will to implement them!

RAP for race tracks and proving grounds

RAP for **wearing course**? – in our opinion, no technical advantage due to the high requirements

Only selected raw materials are suitable for such high demands:

1. Aggregates – only very few rock sources known to us worldwide that completely fulfill the high requirements
2. Fillers – very high demands on chemical reactivity
3. Bitumen – only very few crude oil sources known to us worldwide that completely fulfill the high requirements



RAP für race tracks and proving grounds

RAP für binder and base course? – in our opinion possible with single-grade milled material and a parallel drum.

However, production is only possible at suitable mixing plants and under suitable production conditions:

Cold recycling für race tracks and proving grounds

Cold recycling für base and binder course? – 2008 race track in the Czech Republic



The process has never really caught on due to the complex curve radii and track design.

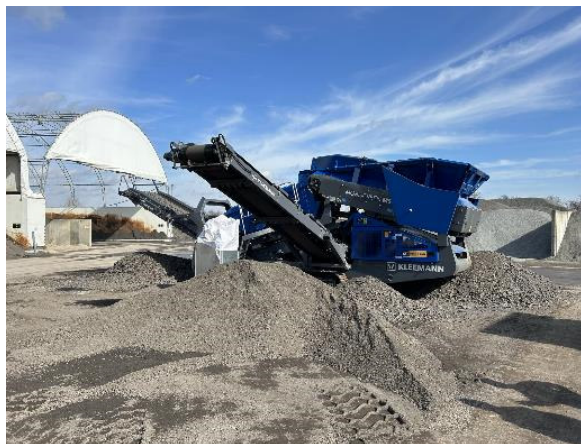
RAP für race tracks and proving grounds

RAP für base and binder course? – 2024 Germany (WC and BC resurfacing)
(at the same time with temperature reduction appr. – 20°C and high-polymer bitumen)

- 30 m.-% type-pure milled material from the construction site, which was previously sampled on the construction site and incorporated into the mix design
- parallel drum at the mixing plants
- separate storage at the mixing plant
- trial mixing & daily quality control



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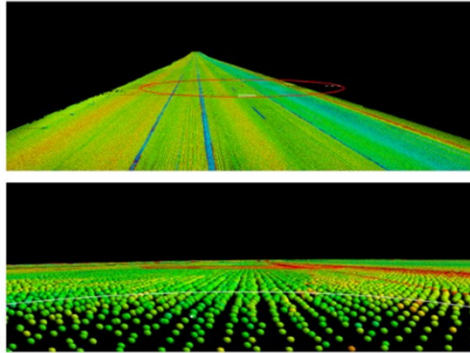
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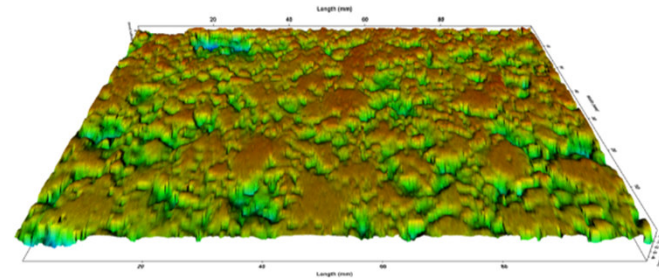
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Other solutions and state of the art technology for race tracks and proving grounds

3-D scanning and DGM Modelling
for milling



None destructive testing methods
while paving



Special water blasting for initial grip
and rubber cleaning without textur
changings



Summery race tracks and proving grounds

- Racetracks and proving grounds are subject to very high stresses
- The surface courses are made of very high-quality raw materials and are therefore these layer is much more expensive compared to normal roads
- The surface course is the data basis; every resurfacing or maintenance destroys the data basis built up over years and leads to financial losses for operators and users.
- Therefore, it must always be weighed up whether the technical disadvantages due to a possible shorter lifespan could outweigh the economic advantage of RAP.
- If the technical solution like a proper recycling management is implemented and the technical requirements are met, there is nothing to be said against the use of very high-quality and unmixed RAP in the lower layers.
- But you cannot cover a special use with standard asphalts, individual asphalt concepts are therefore necessary.

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Thank you for your attention and enjoy the rest of the interesting lectures.



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