vti

RECLAIMED ASPHALT PROCESSING AND MANAGEMENT AT THE MIXING PLANT

Dina Kuttah
We contribute to construct high quality roads but at the same time we contribute to demolish the roads.

We are the Re-Road project group.
We enhance the demolition of the roads in case they have reached the end of their service life and can no longer perform properly, so instead of making continuous local maintenances to the roads (something which is costly), it is better to remove the existing pavement surface and replace it by a new one.
What about the environment?

To the landfill

Or
Re-Road Objective

Facilitate the highest possible potential of recycling of reclaimed asphalt and to support recycling of RA in high percentages in surface layers in heavily trafficked roads in Europe.

WP4 Objective

To collect knowledge to support the optimum use of RA with respect to various issues like:

- RA production
- RA processing and handling
- RA introduction in the mixing plant or mixing process
The Answer of How

RA Production (Task 4.3)

Milling Operation

Excavation Operation

(In the case of minor deformation, cracking .. etc)

In the case of major weaknesses
MILLING OPERATION

Cold milling

Task 4.3

Hot milling

Not recommended

EXCAVATION OPERATION

In this case, the overall pavement surface will be removed
Handling of Recycled Asphalt (Task 4.4)

1. Receiving and rough sorting according to the following incoming qualities:
   - Milled materials
   - Excavated materials

2. Separation
   - Removal of undesirable materials like surplus, gravel, soil, etc.
Batch mixing plants

- Mixing directly in the mixer
- Mixing in the heating conveyor
- Mixing in the drying drum
- Mixing in the parallel drum
In Denmark

Denmark has close to 100 asphalt plants; most of them are batch plants.

Recycling of RA within the base course has been predominated for several years in Denmark.
The recycling RA in new hot-mix asphalt is common practice in Germany.
Due to the funds received from Re-Road project, we could recycle “for the first time” asphalt mixtures with 50% RA in Slovenia.

Typical costs (2012 prices) with and without 20% recycling obtained from CP Ljubljana

<table>
<thead>
<tr>
<th>20% (m/m) asphalt recycling</th>
<th>No recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operation and quantity</strong></td>
<td><strong>Costs in Euro</strong></td>
</tr>
<tr>
<td>cold milling 1000 m² of asphalt layer 6 cm deep</td>
<td>2170</td>
</tr>
<tr>
<td>transport of 60 m³ RAP distance 10 km</td>
<td>425.4</td>
</tr>
<tr>
<td>Crushing 60 m³ RAP</td>
<td>812.4</td>
</tr>
<tr>
<td>Production of 300 m³ asphalt containing 20% RAP</td>
<td>43800</td>
</tr>
<tr>
<td>Sum for 20% RAP</td>
<td>47207.8</td>
</tr>
</tbody>
</table>
Summary and Conclusion

The attempts have been made to incorporate RA into HTM mixes show that a moderate RA incorporation of (20-30%) does not affect the mixes composition or properties too much.

At higher RA materials incorporations (between 30-50%), the mechanical properties are more sensitive.

The technology is available regarding high percentage of RA involvement, but can be improved and optimized further.
References


• Dina Kuttah, Erik Nielsen, Anders Pettersson and Marjan Tusar (2012): “Production and processing of reclaimed asphalt - Selected case studies”, Deliverable 4.4 Re-Road Project.

IMPORTANT QUESTIONS

? What should we do in order to guarantee that the road will everyday perform as well as the first day of service?

? What mix design should we use to construct environmentally acceptable roads that can service over the whole design life?

The answer is