Solution Winter and Summer routine maintenance of motorways in Bulgaria

20.10.2016 Prague
19,850 km - road network
27 regional road departments with separate contracts for maintenance

733 km highways
Separate contracts for motorways
Area of Bulgaria - 111,000 km²
Condition of road network for 2015

- Good: 40.68%
- Average: 26.99%
- Bad: 32.33%
Condition of road network for 2015

AM
- 17% Good
- 8% Average
- 75% Bad

I клас
- 31% Good
- 13% Average
- 56% Bad

II клас
- 25% Good
- 24% Average
- 51% Bad

III клас
- 42% Good
- 28% Average
- 30% Bad
Winter maintenance

- Level of winter maintenance - depends on traffic intensity

<table>
<thead>
<tr>
<th>Traffic Intensity</th>
<th>Level of winter maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>over 4,000 vehicles per day</td>
<td>A</td>
</tr>
<tr>
<td>between 2000-4000 vehicles per day</td>
<td>B</td>
</tr>
<tr>
<td>between 500-2000 vehicles per day</td>
<td>C</td>
</tr>
<tr>
<td>less than 500 vehicles per day</td>
<td>D</td>
</tr>
</tbody>
</table>

- The motorways - level A
Level A - over 4,000 vehicles per day for motorways

✓ permissible thickness of snow cover:
  for road with level A of winter maintenance 3 cm
  for road with level B of winter maintenance 5 cm
  for road with level C of winter maintenance 7 cm
  for road with level D of winter maintenance 10 cm

✓ For winter maintenance in 2015 we was used:
  - Salt – 105 000 t
  - Sand – 298 000 t
  - chemical materials (KCl, CaCl2) – 2600 t
  - Machines – 3 250
machines – should be ready two hours before snow fall in place
We use two types of contracts for maintenance of highways

1. Contract based on performance indicators – we use it for 2 highways. The first contract of this kind was signed on 12.09.2012, with implementation period of 24 months. For these contracts based on indicators we don't assign activities. Contracts are working with a fixed monthly amount during the summer season.

2. The other type of contract: We assign activities for different types of work every month. We use this type of contracts for maintenance for five highways.
Our budget for maintenance of roads per year is about 130 million leva. For winter maintenance we pay between 55-65 million, which is almost 50% of our budget.

In 2015, we finished successfully and put into operation new highways and roads as follows: 120,81 км new highways and more 54,36 км first class roads.
Summer maintenance

- maintenance of roads - using the methods of recycling - hot recycling or cold recycling

Hot recycling

- cost effective
- environmentally friendly
- solution for damaged asphalt surface courses
Cold recycling

✓ cost effective
✓ reusing the existing asphalt pavement
Thank you for your attention!