Tunnel storage shelters as economic solution for covering sand and recycled asphalt

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26. – 27. listopadu 2019, České Budějovice
Aggregate (sand, recycled asphalt) is very often stored outdoor (without shelter) which impacts its *humidity* and might impact *stable quality* of the asphalt produced.

Meanwhile it my be covered efficiently and at resonable cost!
Savings from sand sheltering

Assumptions

- Sand humidity after extraction 0,5%
- Sand humidity stored outdoor 5%
- Sand share in production batch 28%
- Annual asphalt production: 150 000 tons
- Source of heating: coal dust
1/ Calculation of sand drying cost after extraction

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<td>Annual production</td>
<td>150000</td>
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<td>Sand graininess 0/2</td>
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<td>Amount of sand</td>
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<td>Sand humidity</td>
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<tr>
<td>Amount of water</td>
<td>210</td>
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</tr>
<tr>
<td>Energy needed to dry</td>
<td>177240</td>
<td>KWh</td>
</tr>
<tr>
<td>Equivalent</td>
<td>28,9</td>
<td>Tons of coal dust</td>
</tr>
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Monetization: 1 ton of coal dust to EUR 150 €

Final cost in EUR 4331 €

2/ Calculation of the cost of sand drying, which is stored outdoor

(Outdoor stored sand, exposed to rain)

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Monetization: 1 ton of coal dust to EUR 150 €

Final cost in EUR 43307 €

Annual savings 42 300 €

42 300 EUR / 42 000 tons of sand = 1 EUR / 1 ton of sand
Savings from sand sheltering

Assumptions

- Sand humidity after extraction 0,5%
- Sand humidity stored outdoor 5%
- Sand share in production batch 28%
- Annual asphalt production: 150 000 tons
- Source of heating: heavy oil (mazut)
1/ Calculation of sand drying cost after extraction

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Monetization: 1 ton of Mazut to EUR = 575 €
Final cost in EUR = 8 927 €

2/ Calculation of the cost of sand drying, which is stored outdoor

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Monetization: 1 ton of Mazut to EUR = 575.00 €
Final cost in EUR = 89 272 €

Annual savings = 87 196 €
RICHEL Group – Key Figures

- 2 production sites in France
- 300 employees
- 600 projects/year
- 2500 Shelterall project/year
- 80 countries
- A turnover of 160€
- 3600 Tons of steel produced yearly

RICHEL

1.2000 projets ToutAbri®/an
2.2000 production sites in France
3.300 employees
4.600 projects/year
5.800 countries
6.3600 Tons of steel produced yearly
7. A turnover of 160M€
Mounting possibilities

- Ground mounting
- On sea container
- On concrete blocks
Simple arch range

Big size range
(welded truss arches)
Tarp: PVC - Polyester Multilayer Coating

- waterproof
- windproof

Surface density:
- 670 g/m² - standard
- 650 g/m² - flame-retardant M2/B
- 900 g/m² - flame-retardant M2/B

Available colours:
- White
- Grey/white
- Beige
- Green/white
Shelterall standards: suitable unloading height

10.45 m height from ground to reachpole
Shelterall standars: calculation of maximal storage height

Maximal storage height

*Density 1.6T:m3
Shelterall standards: warning board and red tape marking
Our references: road construction and mining

- Quarries
- Mines
- Cement plants
- Asphalt plants
- Recycling plants
References - Lafarge
References - Colas
References - Eurovia
Děkuji

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