

AV 19 KONFERENCE ASFALTOVÉ VOZOVKY 2019

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

Łukasz Biel, Marcell Toth

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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 may be covered efficiently and at reasonable 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**



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1/ Calculation of sand drying cost after extraction

Annual production	150000	Tons of asphalt
Sand graininess 0/2	28%	share in production batch
Amount of sand	42000	Tons
Sand humidity	0,5%	
Amount of water	210	Tons
Energy needed to dry	177240	KWh
Equivalent	28,9	Tons of coal dust
Monetization	1 ton of coal dust to EUR	150 €
Final cost in EUR		4 331 €



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

(Outdoor stored sand, exposed to rain)

Annual production	150000	Tons of asphalt
Sand graininess 0/2	28%	share in production batch
Amount of sand	42000	Tons
Sand humidity	5,0%	
Amount of water	2100	Tons
Energy needed to dry	1772400	KWh
Equivalent	288,71	Tons of coal dust
Monetization	1 ton of coal dust to EUR	150 €
Final cost in EUR		43 307 €

42 300 EUR / 42 000
tons of sand
= 1 EUR / 1 ton of sand

Annual savings

42 300 €

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)**



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1/ Calculation of sand drying cost after extraction

Annual production	150000	Tons of asphalt
Sand graininess 0/2	28%	share in production batch
Amount of sand	42000	Tons
Sand humidity	0,5%	
Amount of water	210	Tons
Energy needed to dry	177240	KWh
Equivalent	15,5	Tons of Mazut
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

(Outdoor stored sand, exposed to rain)

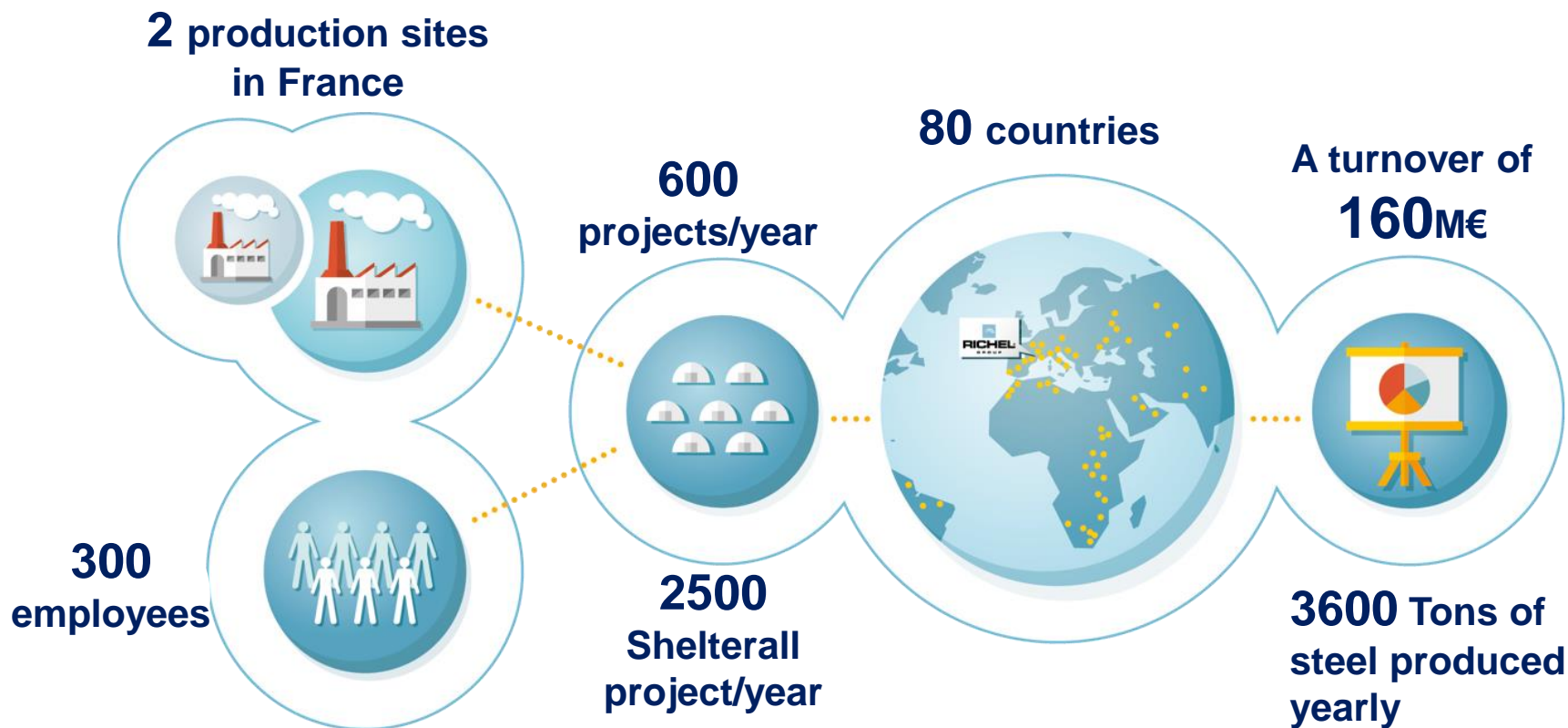
Annual production	150000	Tons of asphalt
Sand graininess 0/2	28%	share in production batch
Amount of sand	42000	Tons
Sand humidity	5,0%	
Amount of water	2100	Tons
Energy needed to dry	1772400	KWh
Equivalent	155,26	Tons of Mazut
Monetization	1 ton of Mazut to EUR	575,00 €
Final cost in EUR		89 272 €

87 196 EUR / 42 000
tons of sand
= 2 EUR / 1 ton of sand

Annual savings

87 196 €

RICHEL Group – Key Figures





Economic



Resistant



Modular



Speed
Assembly

Mounting possibilities



Ground
mounting



On sea
container

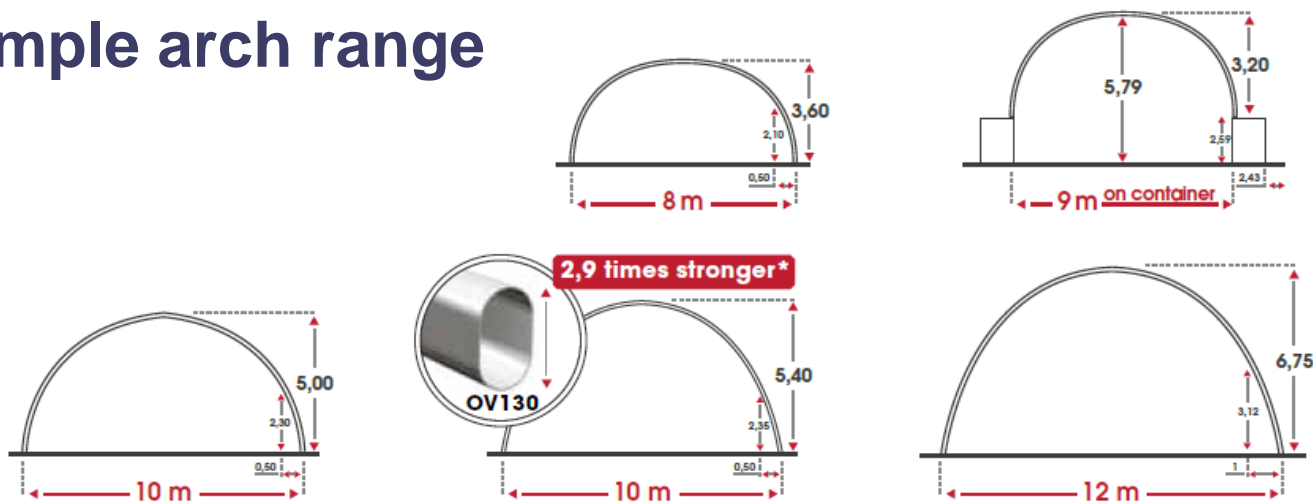


On concrete
blocks

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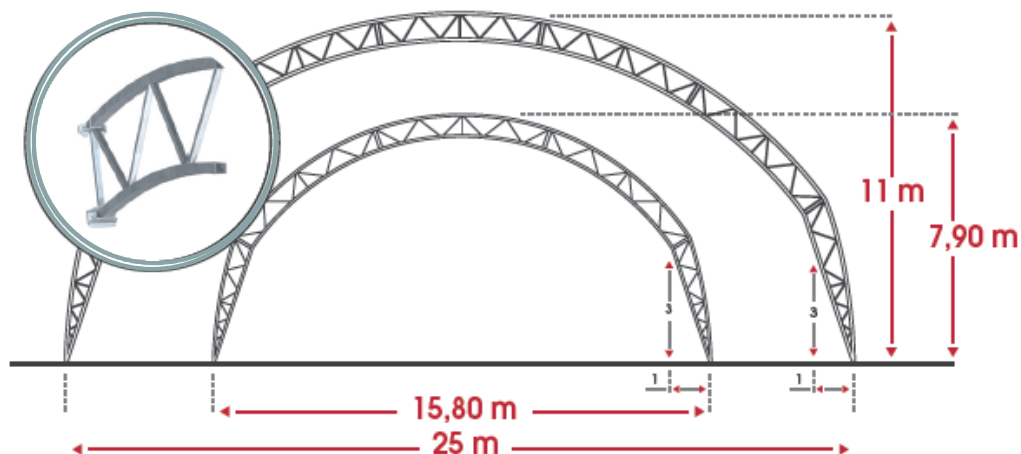
Simple arch range

Simple arch

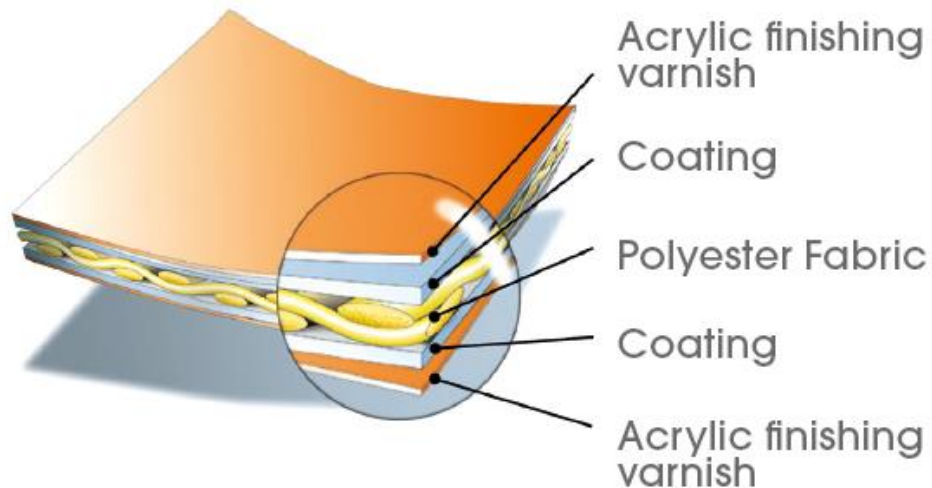


Without foundations

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

Shelterall standars: suitable unloading height

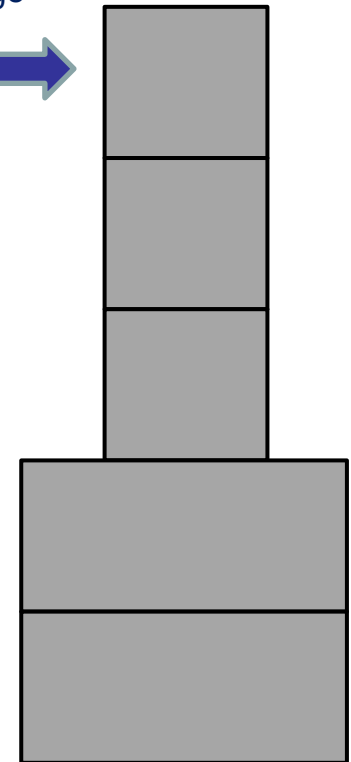


10,45 m height
from ground to
reachpole

Shelterall standars: calculation of maximal storage height



Maximal storage
height



*Density 1,6T:m3

Shelterall standards: warning board and red tape marking



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Our references : road construction and mining



- Quarries
- Mines
- Cement plants
- Asphalt plants
- Recycling plants



References - Lafarge



References - Colas



EUROVIA
VINCI

EIFFAGE
CONSTRUCTION

HARSCO
METALS & MINERALS

Ciments Calcia
Italcementi Group

BOUYGUES
CONSTRUCTION

VINCI

CEMEX

COLAS

LafargeHolcim

SHELTERALL 16
RICHEL TECHNOLOGY

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References - Eurovia





Děkuji

KRUHOVY SAL, booth nr 18

Łukasz Biel

Telefon: **+33 631 542 141**

Email: **lukasz.biel@richel.fr**

Marcell Toth

Telefon: **+33 648 811 848**

Email: **marcell.toth@richel.fr**