Schwellenwerk und Steuerungstechnik
Linz
SSL - Schwellenwerk und Steuerungstechnik Linz GmbH

Sleepers for
- Main-line-, Light Railways
- Narrow-gauge Railways
- Tracks for Tunnels
- Turnout sleeper
- Threshold of Frames

- Cooperation with universities
- Innovations in the sleeper technology

- up to 35 several types of sleepers
Methods of production

1. DSA - Dyckerhoff-Tensioning-Anchor-System
2. DSR - Dyckerhoff-Tensioning-Frame-System
3. Longline-System
4. Special systems
1. DSA-production
1. DSA-production

S1, S2

12pu, 19a
2. DSR-production
2. DSR-production
2. DSR-production

- Dimensions: 2,60 m long and 30 cm wide.
- Axle load: 250kN
- Crossed prestressing wires with force: 450 kN
- High lateral resistance
- Railway speed: 250km/h
3. Longline-System
3. Longline-System

Prestressed concrete turnout sleeper

- prestress force 700 kN
- Economic rail fastening
4. Special systems

Bi-Block Sleeper

- for non-ballasted tracks
- high noise reduction
- variable fastening for rail
4. Special systems

HDS – Heavy Duty Sleeper

- high lateral resistance
- recess for melting
- variable rail fastening
- Prestress force 450 KN

Test Track USA: 640 MGT in 3 years
Rail Fastening System

- Historical

Sleepers: 10, 10a
Sleeper: 11
Sleeper 12
Sleeper B

Pandrol Fastening Clip
Rus 26s
Rail Fastening System

- Tension clamp
  - Vossloh Tension clamp W14:
    - K1 Sleeper
    - Turnout Sleeper
    - S1, S2, 19a Sleepers

- Base plate
  - Ribbed plate:
    - Turnout sleeper
    - Bi-block sleeper
    - Safety Rail
Rail Fastening System

- HDS

Vossloh Fastening System

Double fastening of the rail per sleeper
Life Cycle Cost (LCC)

\[
LCC = \frac{(Re)-Investment + \sum \text{Maintenance Costs} + \sum \text{COH}}{\text{Yearly Costs}} \times \frac{1}{\text{Useful Life}}
\]

Data Source:
Life Cycle Cost (LCC)

Influence of the curve radius in the Life Cycle Costs

<table>
<thead>
<tr>
<th>Segment</th>
<th>Proportion [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000m &lt; r ≤ 3000m</td>
<td>8</td>
</tr>
<tr>
<td>600m &lt; r ≤ 1000m</td>
<td>11</td>
</tr>
<tr>
<td>250m &lt; r ≤ 400m</td>
<td>14</td>
</tr>
<tr>
<td>r ≤ 250m</td>
<td>7</td>
</tr>
<tr>
<td>Straight, R &gt; 3,000</td>
<td>60</td>
</tr>
</tbody>
</table>

Data Source:

- aprox. 80% of Budget
- 21%
Life Cycle Cost (LCC)

- Curve radius: 225 m
- Daily loading: 40,000 t
- Installation of HDS: 2009
Life Cycle Cost (LCC)

Influence of the sleeper padding

LCC from 100% to 82%
18% Savings with USP!

Without Pads | USP
---|---
100% | 82%
46% | 40%
24% | 20%
30% | 34%

Data Source: [SSL]
Thank you for your attention!

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