PRODUCTION FOR RAILWAY COACH

ICE «Techenergoptom» LLC
Dolphin Steel Ltd.
«Techenergoprom-Georgia» LLC
«Techenergoprom» LLC
FLANGE BEAM

I-beams are widely used in railway car construction as an element of the car frame for the upper strapping of freight cars for the manufacture of carcass trolleys, etc.

The I-beam is mainly made of low alloy and carbon steel. I-beams may be measured length, 4-18 m long and more for special usage, and a multiple measured length.
STEEL ANGLES

There are two different types of angles: equal and unequal.

Steel angles are usually made 4-15m length, a shelf width of 20-250mm and a wall thickness of up to 35 mm.

Angles are made by hot rolling from billets or cold bending from steel sheets.

Angles especially unequal are very useful in railway car construction.
Steel channels is very useful in building, in heavy engineering, where it acts as a separate element of metal construction, in the automotive industry, machine tool construction, as well as railway car construction. Channels are made of carbon, alloyed and stainless steel.

Channel bars are made not only of steel, but also of various kinds of non-ferrous metals, and in particular of aluminum, which can significantly expand the scope of this product.

The length of channel varies from 2 to 12 meters and more for special usage, and height varies from 50 to 400 mm.
AUTOMATIC COUPLING

Automatic coupling CA-3 consist of lock, lock holder, safety-lock of unwanted uncoupling, lock lifter, lock lifter pin and bolt.

The lock is used to lock two engaged gear couplers. It is a flat part of a complex configuration.

The incrassation of its closing part prevents the lock from being squeezed out of the throat into the pocket of the housing by friction forces when displacing adjacent automatic couplings.

At the top of the lock there is a spike for hanging-on a safety-lock. At the bottom of the lock there is a radial surface, which it rests on the bottom of the pocket of the head of the body of the automatic coupler and can be rolled over it.
BRAKE COUPLING

Brake coupling is used to flexible detachable connection of air ducts of adjacent rolling stock units.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>2.9 kg</td>
</tr>
<tr>
<td>Dimensions</td>
<td>759x35x35 mm</td>
</tr>
<tr>
<td>Working pressure of compressed air, no more</td>
<td>1,0(10) Mpa(kG/sm²)</td>
</tr>
<tr>
<td>Connecting pipe thread</td>
<td>G 1 ½ - B</td>
</tr>
</tbody>
</table>

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WHEELSET

Wheelsets belong to running gears and are one of the crucial elements of the RAIWAY car. They used to direct the movement of the car along the rail track and the perception of all the loads transferred from the car to the rails during their rotation.

Working in difficult loading conditions, wheelsets must provide high reliability, since the safety of train movement depends on them in many respects.

The design and technical condition of the wheelsets affect the ride, the magnitude of the forces arising from the interaction of the car and the track, and the resistance to movement.

<table>
<thead>
<tr>
<th>GOST Wheelsets</th>
<th>Wagon type</th>
<th>Car speed, km/h</th>
<th>maximum estimated statistical load of the wheelset on the rails, kN (tf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>РУ1Ш-957-Г</td>
<td>Freight</td>
<td>120</td>
<td>230,5 (23,5)</td>
</tr>
<tr>
<td>РУ1Ш-957-Г</td>
<td>Passenger</td>
<td>160</td>
<td>176,6 (18,0)</td>
</tr>
<tr>
<td>РУ1Ш-957-Э</td>
<td>Non motorized electrical train</td>
<td>130</td>
<td>186,4 (19,0)</td>
</tr>
</tbody>
</table>
BANDAGES AND AXLES FOR ROLLING STOCK

Bandage is a rolled steel ring of a shaped profile, put on in a hot state on the wheel of a locomotive, tram, motor car, etc.

The bandages are made of carbon structural steel and are used for the possibility of replacement while preserving the remaining parts of the wheelset, since the skating surface wears out most during operation.

The wagon axis is one of the most critical parts of the wagon bogies, on which wheels and other structural elements are rigidly fixed.

Rough railway axles are made, as a rule, from continuously cast billets by hot deformation (free forging and stamping), undergo further heat treatment, and undergo all types of necessary tests.

Finish axis have high demands on the for surface quality.

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BANDAGE AND AXLE FOR TRAMS
The new direction, which the Teheneroprom group of companies is developing, is the supply of spare parts for the repair of trams and rolling stock.
These are bandages and axles for all Tatra, KTM trams, as well as brake discs, brake assemblies and other spare parts.

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TRAM BANDAGES

High level of noise and vibration are unpleasant effects on the environment. Due to the increasing volume of traffic, transport is also a great source of noise and vibration. Most of the overall noise and vibration levels in cities are trams and overhead sections of the metro. The noise is generated primarily by the contact of the wheels with the rails, which is well observed during the passage of the tram through turnouts and loops.

We offer a new type of wheels with a sprung rubber bandage for all types of trams, metro trains and trains of suburban transport made in Czech.

The advantages of this product:
- minimization of noise and vibrations generated by the contact of the wheel with the rail,
- simplification of repair work when replacing bandages,
- significant increase in service life compared to classic wheels.

<table>
<thead>
<tr>
<th>Tram type</th>
<th>Bandage dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tatra</td>
<td>93x554 mm</td>
</tr>
<tr>
<td>KTM</td>
<td>93x595 mm</td>
</tr>
</tbody>
</table>

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Tram axles

Tehenergoprom offers tram axles of the ChKD T3 type (Czech Republic) and Tatra TsAKF 7154.20.001 (Russia)

Our advantages:
- efficiency
- the possibility of delivery in small lots.

We are ready to supply axles according to customer drawings, by customer’s drawing.
SUCK IN APPARATUS ПМКП-110

Suck In apparatus ПМКП-110 is designed to effectively protect the railway cars and transported goods from the action of longitudinal loads arising from the collision of cars during shunting operations and transient modes of train operation.

Advantages of the ПМКП-110 suck In apparatus:

- Operation, does not require preliminary running-in to obtain regulatory energy intensity. The device reliably protects the car from damage already at the first blows;
- Big power consumption and reliability in comparison with the previous models;
- Wear-resistant cermet elements on the main friction surfaces significantly stabilize the work;
- More efficient safety of transported goods, increased traffic safety, increased turnaround mileage and reduced cost of repairing a wagon;
- Ability to install on cars of any carrying capacity carrying non-hazardous goods;
- Operation without maintenance (standard non-repairable service life is 16 years).

<table>
<thead>
<tr>
<th>ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ</th>
<th>friction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus type</td>
<td>friction</td>
</tr>
<tr>
<td>Class</td>
<td>T1</td>
</tr>
<tr>
<td>Movement, mm</td>
<td>110</td>
</tr>
<tr>
<td>Energy intensity, kJ, not less than:</td>
<td></td>
</tr>
<tr>
<td>- nominal</td>
<td>70</td>
</tr>
<tr>
<td>- maximum</td>
<td>90</td>
</tr>
<tr>
<td>Operating temperature range, °C</td>
<td>From -60 to +50</td>
</tr>
<tr>
<td>Warranty</td>
<td>8 years or 1 million km</td>
</tr>
</tbody>
</table>

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BOGIE SUSPENSION SPRINGS
The bogie suspension springs of the wagon boggies have increased strength, durability and geometric accuracy.

Heavy-duty springs are produced using technology that forms a nanoscale structure in the material and does not have precipitation during operation, they maintain a constant inter-turn gap, excluding collision of coils, work without failure at increased voltages by 30-40%, and with rated voltages the service life is increased by hundreds of time.

During certification, the springs successfully passed cyclic durability tests: instead of 500,000 cycles (according to the requirements of the standard), the springs withstood up to 10 million compression cycles.
BRAKE BEAMS
An element of the brake lever transmission of a freight wagon used for transferring the force developed by the piston of the brake cylinder or the drive of the hand brake to friction elements (brake pads) to uniformly press them against the surface.

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THE OTHER PRODUCTION

Contact wire

Inter-rail connectors for tram tracks.

Brake stops

Traction clamp

Gondola car covers

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