

Recycled household plastics improve slabs storage

Member Company **Outokumpu Oyj**
Category **material efficiency; investment in new processes and products**

Challenge

There was a lot of work involved in cleaning the yard where we store our raw material, cast semis, also known as slabs. A single semi can weigh up to 25 tonnes, and we use railroad sleepers to prevent the semis from coming in direct contact with the ground. Due to the loads and weather conditions, wooden sleepers tend to crack and crumble. There were wood chips everywhere. There are also safety considerations involved. Railroad sleepers break down, causing the slabs to tilt. Changing weather conditions create problems every winter: wood absorbs water, which then freezes, resulting in extremely slippery surfaces. If the sleepers deform, they may begin to slant and the slabs may slide off.

Action

Christopher Myhrman, head of the Grinding Hall began to look into more durable alternatives for wooden sleepers. That is when we spotted the composite railroad sleepers. The railroad sleepers are produced by a local company called Plaståtervinning i Wermland. The company has delivered sleepers to station areas and is now testing them on the Inland railroad line running through central Sweden. The company grinds the collected plastic into composite granulate, which is used to make sleepers. Composite railroad sleepers are 100% recyclable. After their use, they can be ground and made into new sleepers. The project involving sleepers means that instead of being incinerated, the plastic can be reused to make new products and to save the environment – a

contribution to the circular economy, that is.

To date Outokumpu Degerfors has brought in 105 full-length sleepers of 6 meters each, which means 31.9 tons of recycled plastics. Each kg of recycled plastics saves 2.7 kg CO₂ compared with the business-as-usual scenario that is incineration of waste plastics and producing new plastic. For the sleeper at Outokumpu Degerfors yard it means a saving of 86.2 ton of CO₂. Outokumpu Degerfors is currently looking into other applications where recycled plastic could replace wooden products on site.



Plastic waste



Recycled household plastics improve slabs storage

Outcome

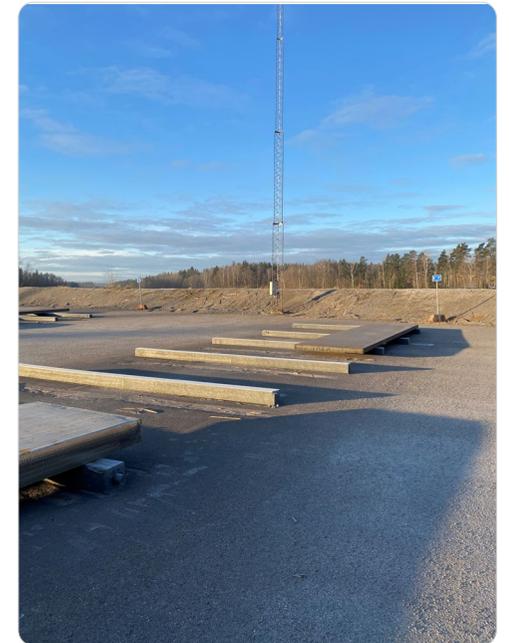
The plastic sleepers are about 1.5 times more expensive than the wooden sleepers, but as they are up to 5-10 times more durable the initial extra cost is quickly offset.

Additionally, there are savings when it comes to cleaning the facilities. Before we had to perform cleaning often as the yard became full of wood chips.

From a societal point of view, using recycled plastic instead of incinerating it is very beneficial. For each kilogram of recycled plastic, the carbon dioxide emissions can be reduced by as much as 2.7 kg compared to incineration. Outokumpu is already tuned in on the circular economy, our steel production is based on recycled scrap, but we want to demonstrate that there are potential to increase waste sorting and use also for other materials that we use in the production.



Recycled sleeper



Slab storage