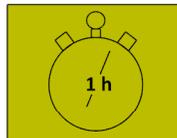
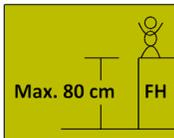
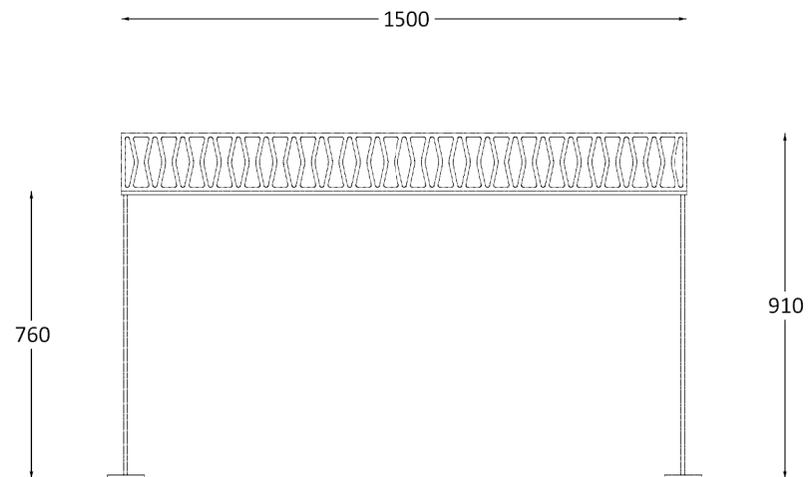


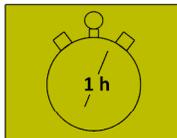
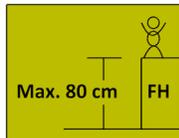
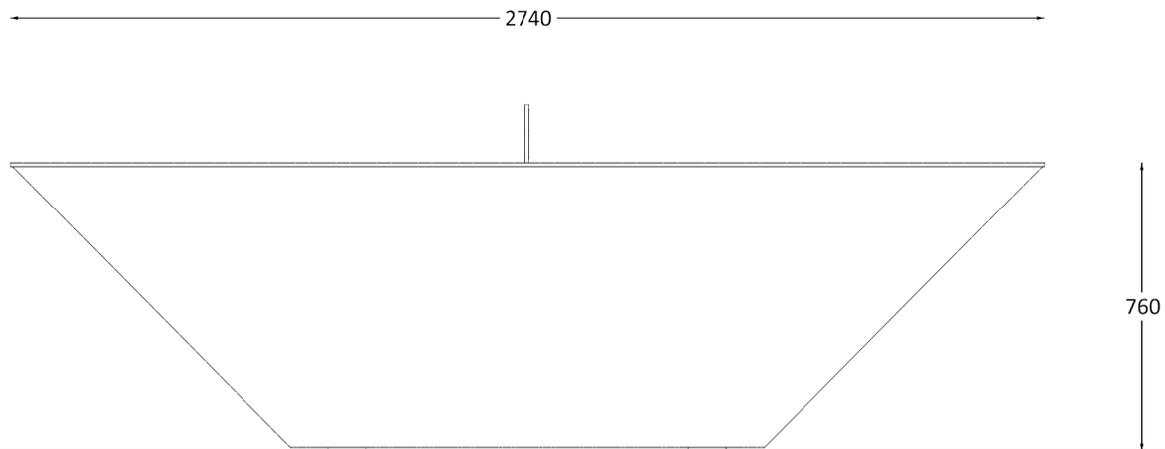
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Elverdald



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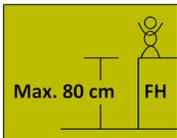
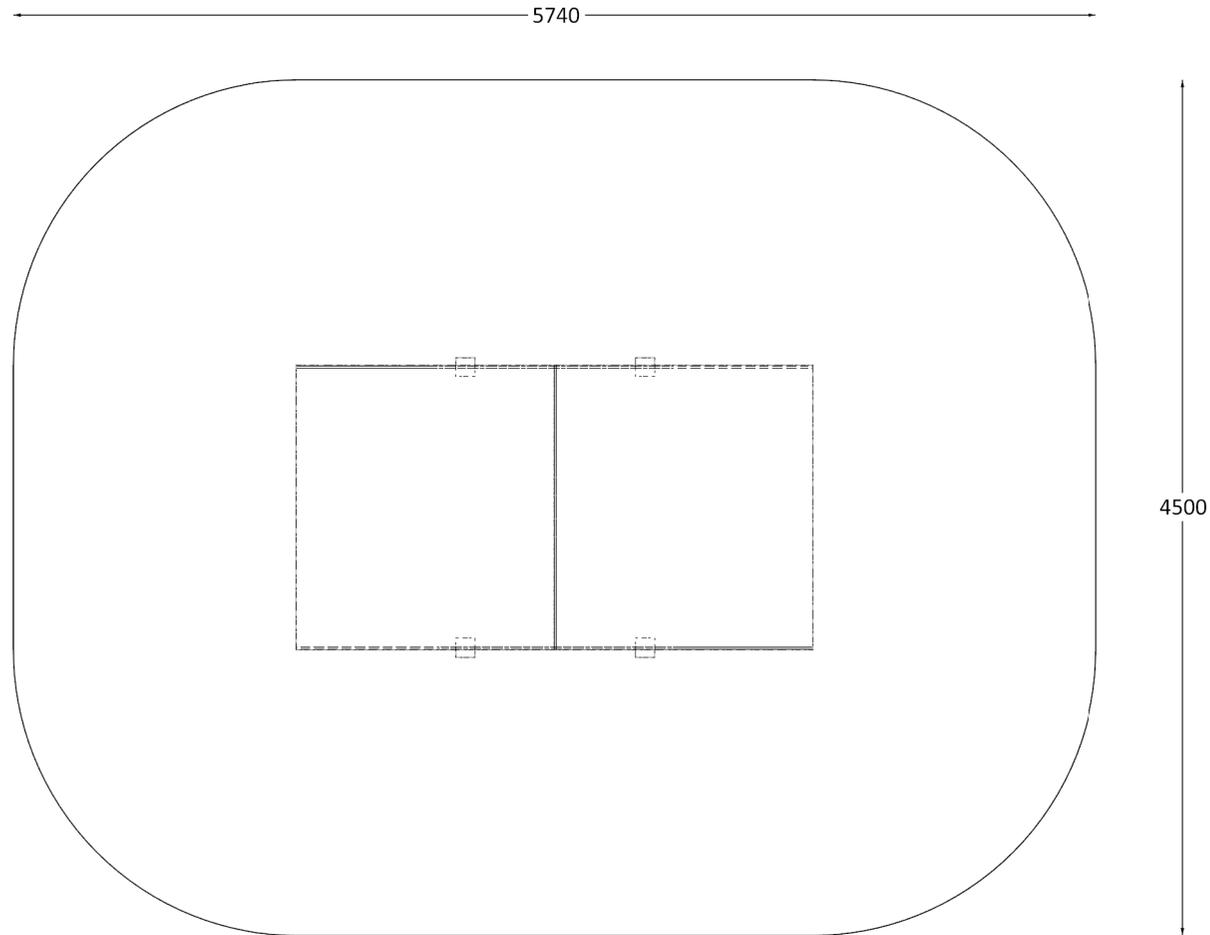
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Drawing by.: Torben Lauritsen

Elverdald

Environmental profile of the Ping Out table



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Introduction

The Ping Out table tennis concept builds on the idea of bringing social togetherness, physical activity, design and art into the city room. The table adds an extra dimension to the outdoor life in streets and parks, providing a means for exercise and competition with an aesthetic angle to it.

The table is made from steel which is a plentiful, but non-renewable resource. Steel is, however, a very durable material, especially when the surface is treated to meet the demands of the rough climate in Scandinavia. It is therefore well suited for outdoor products where maintenance should be as little as possible.

In line with the conceptual approach of Ping Out, the designers want the environmental properties of the table to be known. To meet this request, FORCE Technology has been asked to make a Life Cycle Assessment of the table, examining a broad range of environmental aspects in a cradle-to-grave perspective.

The life cycle of the Ping Out table

The PingOut table is made from unalloyed carbon steel using a hot-dip galvanization to protect the surface and ensure a long life also under challenging climate conditions.

The steel is bought from suppliers in Germany and transported to Thisted in Northern Jutland in Denmark, where the steel plates are cut into the requested sizes and welded together using argon welding. Subsequently, the tables are transported to Herning in Central Jutland for surface treatment and from there further on to the distributor, Elverdal A/S, outside Copenhagen for temporary storage. Transport is also needed from Elverdal A/S to the customer and user of the table, but since the table is sold all over Scandinavia the exact destination is not known. In our calculations we have assumed that the raw materials and the table are transported about 1900 km before the table reach the customer.

The table is designed to be used for many years without any special maintenance activities. When the user for one reason or the other decides to discard the table, it must be known that it is a valuable resource, being 100% recyclable. In most cases, a scrap dealer will therefore be happy to send the table on its first steps towards recycling, and perhaps even pay the user for the scrap. We have therefore assumed that all PingOut tables are recycled at the end of their useful life, about 20 years from now.

The life cycle of the Ping Out table is shown in Figure 1.

About Life Cycle Assessments (LCA)

The environmental properties of a product shall be examined looking broadly at the full life cycle, from extraction of raw materials to the point where the same materials enter a new system. LCA is a science-based tool used to establish a broad overview of the environmental properties of a product or a service system. In our analysis of the Ping Out table we have chosen to address selected types of environmental impacts on the global and regional level, including both production of raw materials, manufacturing of the table, transport and distribution, and end of life considerations. Use of table is not included in the analysis, simply because there are no environmental impacts from its use.

Together with information from the manufacturers we have used an advanced calculation tool, GaBi5, and its associated databases. We have used an approach which is in accordance with ISO 14040, and we believe that the results are both robust and informative.

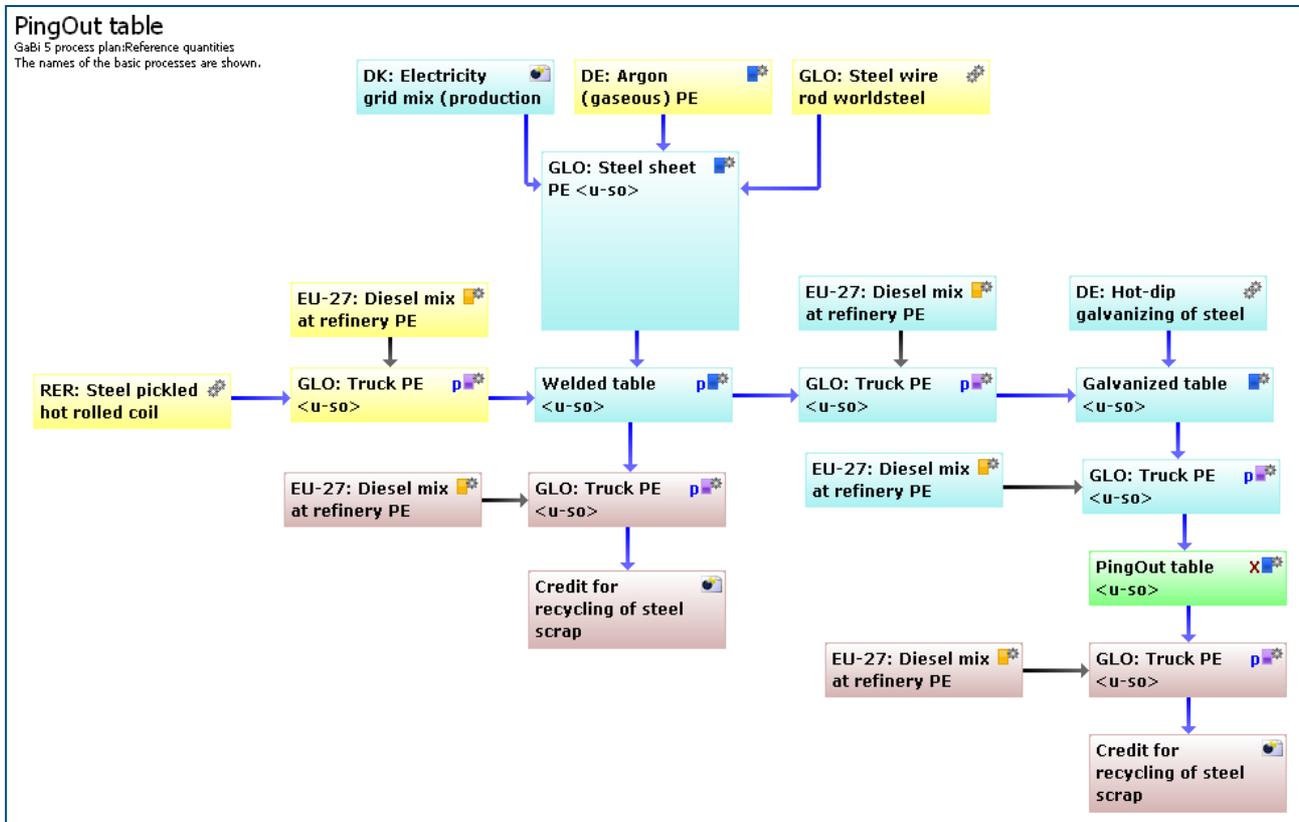


Figure 1. The life cycle of a Ping Out table

The environmental profile of the Ping Out table

The environmental profile of the Ping Out table is shown in **Fejl! Hensvisningskilde ikke fundet..**

Environmental impact	Unit	Total	Raw materials	Manufacturing	Use	End Of Life
Global warming	kg CO ₂ -e	569	1535	43	0	-1008
Ozone depletion	kg R11-e	0,00004	0,00001	0,00000	0	0,00003
Acidification	kg SO ₂ -e	1,24	3,39	0,23	0	-2,38
Nutrient enrichment	kg NO ₃ -e	2,41	2,80	0,23	0	-0,62
Photochemical ozone creation	kg C ₄ H ₄ -e	0,17	0,69	0,00	0	-0,52
Renewable energy	MJ	798	184	46	0	568
Non-renewable energy	MJ	6993	15666	694	0	-9367

Table 1. Contribution of the PingOut table to environmental impacts over a lifetime of 20 years

It is evident from the table that producing the raw material, steel, is by far the most demanding activity in the life cycle. However, about 60% of the impacts are reversed when the table is recycled at the end of its useful life. The reason for this is that the recycled steel can be used in new applications, thereby avoiding

production of virgin steel. This is of course a good argument for recycling, and at the same time the actors in the recycling chain will also be able to make an economic profit.

It also appears from **Fejl! Henvisningskilde ikke fundet.** that the manufacturing processes, welding and galvanizing, are not very demanding with respect to environmental impacts. It is noticed here that the transport processes between the welding and surface treatment companies as well as to the distributor Elverdal outside Copenhagen is included in manufacturing.

Finally it should be noted that we assume that use/maintenance of the table does not cause environmental impacts. This is true in so far you do not use hot water or detergents for cleaning of the table, but even if you clean the table on a regular basis the impacts will be negligible in the overall picture.

To put the impacts into perspective it may be useful to know that the average citizen in Europe causes emissions of 10-12 tons of CO₂-equivalents per year. Comparing this to the 500-600 kg caused by production and disposal of the table over a 20 year period it appears that the impacts per year corresponds to 0.2% of the impacts caused by a single individual in the same period of time.

The same picture is seen for consumption of energy, where the average European citizen consumes about 158.000 MJ per year, or about 25 times as much as it costs to produce the table and use it for 20 years.

Having said this it must be recognized that the table do have some environmental impacts. Most of these have already been induced when you start using the table, so you can play without caring about the environment. In fact, the more you play the smaller are the environmental impacts per hour of fun and exercise, so just go ahead and play!