Sandwich Panel and Environment

The consideration of the building components constituted of different materials is one of the most important issues. When the sandwich panels are considered physically, their metal surfaces, organic coatings, core filling materials of polyurethane are all safe components. This case is also valid during the assembly of the materials to the building and the utilization process following the assembly. The reliability of this coating system, which is applied in the same manner approximately for fifty years except for small revisions, is fixed with the experiences.

Particularly the applications requiring food safety, all materials that are used in the sandwich panel can easily meet the hygiene requirements. The filling material, polyurethane, which features biological characteristics such as odorlessness as well as resistance against dirt, mold and corrosion at once offers serious advantages. When its high insulation capacity is also taken into consideration, this makes it the ideal filling material.

The impact of the inflator gases used in the polyurethane is one of the other issues that need to be answered. As a result of the performed searches, it has been determined that the inflator gases that were in use before, had impact on the ozone layer. Vis-a-vis this situation and with the great efforts of the environment-friendly sandwich panel manufacturers, the environment-friendly n-pentane inflator gases were preferred.

When we consider this within a natural cycle, all kinds of energy consumption have impact on the environment. The content of this impact is also related to the amount of emission in the atmosphere as much as it is complex. The amount of the energy that is used for heating purposes has direct impact on the ecological balance. Therefore, besides the economical contribution of the high-capacity insulation materials used in the buildings, they offer very serious advantages in terms of environment. All in all, the insulation material used in the buildings for long time reduces the amount of the emission in the atmosphere and also protects the energy sources.

Thanks to the filling structure of polyurethane with high insulation capacity and its non-foaming technology, sandwich panels are the most effective coating systems in terms of economy and ecology. Although there is energy consumption during the production of the sandwich panels, it has no significance when compared with the energy recovered during its utilization. The greatest advantage of the sandwich panels within the energy cycle is their long durability. The polyurethane material is preferred as insulation material approximately for fifty years. Although there are serious internal and external temperature differences in the cold store systems, which are used as of the beginning of 1960s, the polyurethane has proved itself as the most effective material.

GToday, recycling of the materials has become one of the most important parameters in terms of environment. Due to the long life of the polyurethane material used in the buildings, the idle amounts are very less when compared with the production amounts. When the disassembly is performed in a careful manner, the sandwich panels can be re-used if they are not damaged. If the polyurethane material used for years is not appropriate for re-use due to damage or necessity, then there are three different recycling methods. The old polyurethane materials still have inflator gas CFC that is hazardous to the ozone, therefore the material and raw material are not appropriate for recycling and only the energy recycling must be preferred. The polyurethane which contains CFC, used for years, can only be re-used in a material under special conditions. The recycling of the metal surfaces of the sandwich panel is frequently preferred in the metal industry.

Reference: 1. Assan Panel Studies 2. Lightweight Sandwich Construction, J.M. Davies 3. Sandwich Panel Construction, Rolf Koschade