Venetian blinds are air conditioning with a positive CO2 balance

On our journey through everyday life we all leave traces on the planet, regardless of what we do. Typically energy consumed creates CO_2. A building and its services are critical determinants in a CO_2 footprint because they use a significant amount of energy.

The importance of our CO_2 footprint has increased in recent years as the climate impact of products, services and other activities have affected our everyday life. But correctly specified and operated solar shading can have a very positive impact in reducing CO_2 levels.

People, packaging, food, drink, office supplies and many more have already been tested for their CO_2 footprint. Obviously, the smaller the better. But one thing is certain there is no product in the world that can be created, nor a building constructed and operated that does not emit CO_2.

In the calculation two factors must be considered - the CO_2 emissions through resource extraction, production, transportation, use or operation, and the CO_2 savings by recycling.

In recent decades our buildings have become the number one consumer of energy - they "consume" 40% of the total energy we use. Therefore, it is extremely important that the CO_2 emissions from buildings are reduced quickly and permanently. *"With the construction and operation of buildings, there are enormous potential savings,"* says Johann Gerstmann, and engineer with the Austrian Association of Sunscreen Technology (BVST), "*this primarily affects the operation of a building, it is not the construction that is the decisive factor for CO_2 emissions, but the heating, cooling and lighting used once it is built and occupied. Thus flexible shading solutions such as awnings, shutters and blinds can all significantly improve the CO_2 footprint of buildings."*

CO_2 Footprint of a Venetian Blind

A major study was undertaken by a member of the BVST to calculate the CO_2 footprint for venetian blinds. This particular sun protection device is popular in central Europe mainly because of its flexibility in controlling the energy and entry of light depending on the day and the season. According to the Institute of Applied Logistics (IAL) at the University of Applied Sciences Würzburg-Schweinfurt, a venetian blind will save around 8.5 tonnes of CO_2 over its life cycle – and yet creates only 150 kg of CO_2 from production to disposal.

This means that it saves nearly 60 times its CO_2 emissions footprint over a typical 20-year life. The study was commissioned by Warema from Marktheidenfeld and the calculation was carried out according to international performance measurement standards.

These significant savings are derived from three factors:

- Firstly in the summer the venetian blind reduces the solar heat very effectively, so that the need for mechanical cooling (with correspondingly high CO_2 emissions) is mitigated or even negated.
- Secondly, in cold weather during the day the blind can be raised to allow the sun's warming rays into the interior and then lowered at night in the closed position, to reduce heat losses. A zero-energy building or passive house that covers 20% or more of its heating.
- Thirdly with this blind type natural daylight can be harvested as a free energy light source that can, for example, reduce the power required for lighting in offices and schools by up to 80%.

Gerstmann concludes: *"The result of these studies demonstrates the enormous energy saving potential of external shading. It also highlights just how important variable shading systems are for our climate zones to regulate the heat like a thermostat at the window. Similarly they act like a dimmer switch to the control the entry of light."*

Notes:
The Schweinfurt Institute calculated the CO_2 footprint of the so-called Greenhouse Gas Protocol of the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD).

For the calculation a motorised standard external venetian blind with 80mm slats was chosen with dimensions 1.20m x 2.00m. The results show that 86% of the CO_2 emissions resulted from the extraction of raw materials and the production of primary products. Only 0.5% was created in the manufacture of the blinds. Assuming a life span of twenty years up to 11% of emissions are created in the operational phase with transport and disposal accounting for a total of 2.4%. So a venetian blind in the course of its product life creates around 150 kilograms of CO_2 emissions. However, this sunscreen will save over 8.5 tonnes of CO_2, so that is a 57-fold improvement.