绿色低碳产品案例

The Case of Green and Low Carbon Product

钢边框能减少 77%碳排放

Steel Frames Slash Carbon Emissions by 77%

高强度合金钢边框是一种真正意义上的绿色低碳产品，其绿色环保特性体现在多个方面。首先，钢边框在全生命周期内的碳排放量显著低于铝边框。以 1GW 组件为例，钢边框的全生命周期碳排放量比铝边框低 77%，相当于节约了 90580 吨标准煤。如果全部使用回收钢，碳排放量更是可以减少 95.5%。这种显著的碳减排效果有助于实现全球碳中和目标。

High-strength alloy steel frames are truly green and low-carbon products, with their environmentally friendly characteristics manifested in several aspects. Firstly, steel frames have significantly lower carbon emissions over their entire lifecycle compared to aluminum frames. For example, in a 1GW module, the lifecycle carbon emissions of steel frames are 77% lower than those of aluminum frames, saving the equivalent of 90,580 tons of standard coal. If entirely recycled steel is used, carbon emissions can be reduced by 95.5%. This remarkable reduction in carbon emissions contributes to the global carbon neutrality goal.

钢边框在生产过程中能耗较低。钢材生产所需的能量远低于电解铝行业的能耗，具体来说，钢材料的能耗仅为铝材的三分之一，碳排放量更是下降了 6.2 倍。这不仅减少了生产过程中的能源消耗，还降低了温室气体的排放，从而大幅度减少了环境污染。

The energy consumption in the production process of steel frames is low. The energy required for steel production is far less than that for the electrolytic aluminum industry. Specifically, the energy consumption of steel materials is only one-third of that of aluminum materials, with carbon emissions reduced by 6.2 times. This not only decreases energy consumption during production but also reduces greenhouse gas emissions, significantly lowering environmental pollution.

钢边框在使用过程中具有高耐腐蚀性和自修复能力。其采用 Zn/Al/Mg 镀层和化学转换处理，形成致密的三元共晶组织，有效防止腐蚀因子穿透。这种高耐腐蚀性确保了钢边框在各

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种恶劣环境下的长久使用寿命，减少了由于更换和维护带来的资源浪费和碳排放。
Steel frames exhibit high corrosion resistance and self-repairing capabilities during use. They utilize Zn/Al/Mg coatings and chemical conversion treatments to form a dense ternary eutectic structure that effectively prevents corrosion factors from penetrating. This high corrosion resistance ensures the long-term durability of steel frames in various harsh environments, reducing resource waste and carbon emissions due to replacements and maintenance.

在性能方面，钢边框具有优异的机械性能，特别是在极端气候条件下，其抗撕裂能力更强。这种高可靠性不仅提升了产品的安全性，也减少了因损坏和更换而产生的间接碳排放。
In terms of performance, steel frames possess excellent mechanical properties, particularly their superior tear resistance under extreme climate conditions. This high reliability not only enhances product safety but also reduces indirect carbon emissions caused by damage and replacements.

钢材具有很高的回收利用率。每使用 1 吨回收钢可降低 1.6 吨碳排放，这进一步增强了钢边框的环保优势。钢材的回收利用不仅节约了资源，还减少了废物处理对环境的压力。
Steel is highly recyclable. Using 1 ton of recycled steel can reduce carbon emissions by 1.6 tons, further strengthening the environmental advantages of steel frames. The recycling of steel not only conserves resources but also reduces the environmental pressure from waste disposal.

综上所述，高强度合金钢边框不仅在碳排放、能耗、耐用性和回收利用率方面表现出色，还符合全球绿色低碳发展的趋势，是一种理想的绿色低碳产品。选择钢边框不仅有助于企业实现可持续发展目标，还能为全球环境保护贡献力量。
In summary, high-strength alloy steel frames excel in carbon emissions, energy consumption, durability, and recyclability, aligning with the global trend of green and low-carbon development. Choosing steel frames not only helps companies achieve sustainable development goals but also contributes to global environmental protection.