Challenge and progress in solar mirrors and glass for greenhouses

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Abstract

With the emergence of the world population, massive urbanization, climate change, and shortage of sustainable natural energy resources, key technologies must be developed to address these vital needs and glass can profoundly contribute to overcoming these challenges. High durability industrial solar mirrors are today used in concentrated solar plants (CSP) to effectively utilize the sun power for heat and electricty generation and the longevity of these plants are well connected to the durability of the solar mirrors. Here AGC is offering one of the most performant and durable solar mirrors which have been already selected by several key CPS projects across the world. On the other hand, looking at the food safety, world population will hit 10 billion people by 2050 which requires 75% more food production by then. However, considering the total arable lands available, global warming, and water scarcity, one can simply conclude that outdorr agriculture would not be sufficient to fulfill this global need. The only viable solution for this purpose in controlled environment agriculture which is today known as greenhouses where you can increase the productivity of vegetable production by 8 times compared to the outdoor cultivation. Nevertheless, reaching to this level of productivity performance neccessitates creation of the correct level of light & climate inside greenhouse which is linked to significant energy consumption. For this matter, AGC has developed the fist economically viable energy saving glass for greenhouses which does not reduce the light transmission, very improtant for crop productivity, while saving annually around 25% of the energy consumed in greenhouse.

Keywords: Solar Mirror, Horticulture Glass, Energy Saving Glass

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