

DYNAMICALLY CONTROLLED SOLAR HOME

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In the path of creating a sustainable future, an obvious and necessary step is to address the sustainability of our homes. Concepts such as passive solar heating and daylight harvesting have been studied for many years. While these technologies are effective and have been implemented together in sustainable homes in the past, the lack of control over lighting and heating levels and thus the lack of comfort in these homes have prevented these concepts from being implemented in the mainstream. The Dynamically Controlled Solar Home integrates the cutting edge in technology together with traditional sustainable energy concepts to develop a sustainable and *comfortable* home suited for suburban Canada. Technologies such as electrically controlled suspended particle device (SPD) glass, and fiber-optic natural lighting are integrated together with a lighting control system to provide a more controlled and thus comfortable living environment. In addition, a solar panel oriented for optimal power generation is included in the design to further reduce the net energy that is consumed by the home. Simulations of the design using the RETScreen software tool, show the design used in the Dynamically Controlled Solar Home consumes 34% less net energy than a standard home of the same size and orientation. The technical details of the design will be presented in a poster presentation and the concepts implemented in the design will be demonstrated through a 1:10 scale model home.