

Building Energy Simulation and the C-2000 Program

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EXECUTIVE SUMMARY

Building energy simulation is an analytical tool used to simulate and predict the energy consumption of a building and its systems. The tool can either be simple and easy to use, such as an analysis based on heating degree days, or complicated and requiring time to learn and operate, such as with hour by hour programs. This report briefly describes different energy simulation methods, but focusses on one program, DOE-2.1E, and how it relates to the C-2000 Program. An overview is given on the DOE-2.1E program describing required inputs, potential trouble spots and limitations. Results from the DOE-2.1E program generated by various C-2000 design teams are also presented and discussed. The report concludes with a discussion of what may be the future for building energy simulation and its relation to the C-2000 Program.

RÉSUMÉ

La simulation énergétique d'un bâtiment est un outil analytique utilisé pour simuler et prévoir la consommation énergétique d'un bâtiment et des systèmes qu'il contient. Cet outil peut s'avérer simple et facile à utiliser, comme une analyse qui se base sur le degrés-jours de chauffage, ou compliqué et nécessiter un certain temps à comprendre et à faire fonctionner, comme dans le cas des programmes à l'heure. Ce rapport contient une courte description des diverses méthodes de simulation énergétique, mettant particulièrement l'accent sur un programme, le DOE-2.1E, et sur la façon dont il se rapporte au Programme C-2000. On y donne un aperçu de ce programme en expliquant quels renseignements sont nécessaires, les points névralgiques éventuels et les limites. D'autre part, sont présentés et examinés les résultats du Programme DOE-2.1E qui découlent de l'utilisation de différentes équipes de conception C-2000. Enfin, la conclusion du rapport englobe un exposé au sujet de l'avenir possible de la simulation énergétique dans les bâtiments et de son rapport avec le Programme C-2000.