

1. Record Nr.	UNINA9910784330203321
Autore	Galloway Terry R
Titolo	Solar house [[electronic resource] ] : a guide for the solar designer // Terry Galloway
Pubbl/distr/stampa	Oxford ; ; Burlington, MA, : Architectural Press, 2004
ISBN	1-136-36602-4 1-281-00907-5 9786611009076 1-4175-3729-9 0-08-048101-9
Descrizione fisica	1 online resource (225 p.)
Disciplina	728.0472
Soggetti	Solar houses - Design and construction House construction - Environmental aspects
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. [189]-191) and index.
Nota di contenuto	Front Cover; Solar House: A Guide for the Solar Designer; Copyright Page; Contents; Foreword; Preface; Acknowledgements; List of figures; List of tables; Disclaimer; Dedication; 1. Goal of this guide; 1.1 Users of this guide book; 1.2 Solar is a critical part of the global renewables mix; 1.3 Energy futures; 1.4 Environmental philosophy; 1.5 New construction or rehab; 1.6 Examples of the design process; 1.7 Business philosophy; 2. Site location; 2.1 Solar insolation; 2.2 Weather and microclimates; 2.3 Heating/cooling needs; 2.4 PV power production 3. Thermal mass - heated by solar and by ground-coupled 3.1 Amount and distribution of thermal mass; 3.2 Thermal energy storage; 3.3 Re-radiation and release of heat at night or in cloudy weather; 3.4 Thermal mass - heated/cooled by ground-coupling; 3.5 Passive solar home - putting together the solar effects; 4. Attached greenhouse passive heating; 4.1 Split greenhouse design; 4.2 Fixed section - the solarium; 4.3 Controlled vent section - the solar greenhouse; 4.4 Vegetables; 4.5 Starting early seed plants; 5. Domestic hot water; 5.1 House DHW usage patterns; 5.2 DHW tank storage capacity

5.3 Plumbing configuration 5.4 Insulation; 5.5 Temperature monitoring locations; 5.6 Controls; 6. Combined DHW and swimming pool heating; 6.1 Synergistic relationship; 6.2 Collector capacity; 6.3 Swimming season and pool temperature; 6.4 Smart controls; 6.5 Solar PVs to supply power to swimming pool pump and chlorinator; 7. Space heating; 7.1 Seasonal heat demand; 7.2 Solar thermal collector heat utilization in winter; 7.3 Design of building envelope; 7.4 Radiant floors; 7.5 Living comfort; 7.6 Geothermal heat pump and location of underground coils; 7.7 Thermal zone controls  
7.8 Wood fireplace backup heat 7.9 Ceiling fans in wall upflow; 7.10 Ambiance; 8. Space cooling; 8.1 Cooling radiant floors is not recommended; 8.2 Nocturnal cooling strategy; 8.3 PV-powered attic fan is only a part-solution; 8.4 Ceiling fans in wall downflow; 8.5 Geothermal heat pump cooling of room air; 8.6 Thermal transient/capacity of ground coils; 8.7 Thermal zone controls; 9. PV electric power; 9.1 Grid-connected, net-metering, and Time-Of-Use pricing; 9.2 Stand-alone systems and energy storage options; 9.3 Sizing PV for house loads; 9.4 Load shifting options  
9.5 PV collectors with integral hot water heating (PV/T)9.6 Present research leading to cheaper/high efficiency future PV collectors; 10. Annual energy use; 10.1 Berkeley house; 10.2 Comparison of EU and US; 11. Maintenance saves money; 11.1 Preventative maintenance schedule; 11.2 Stable major suppliers; 11.3 Experience record; 12. Payback economics; 12.1 State and Federal incentives; 12.2 Tax benefits; 12.3 Payback analysis; 13. Thermal performance monitoring and control; 13.1 Real-time data display; 13.2 Archiving data; 13.3 Analyzing data trends; 13.4 Scheduling; 13.5 Adaptive controls  
13.6 Optimization

---

## Sommario/riassunto

Covering the full life span of the project, from siting issues through specific design features to maintenance of the property and equipment, this is a comprehensive guide to designing, planning and building a solar house. The author uses his experience of living in a solar house to inform the reader of the technology and practices needed for the design, operation and maintenance of the solar home. Each of the technologies of the house, such as space heating and cooling, domestic hot water and electric power technologies, are critiqued from the point of view of

---