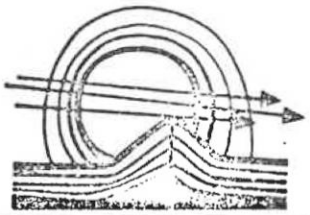

SOLAR RESOURCE SERVICE

SOLAR: WATER HEATERS, GREENHOUSES, SPACE HEATING/DESIGN, CONSTRUCTION, TRAINING, SALES

July 22, 1983

To whom it may concern:

I am writing to document the exceptional contributions of Bhagwan Shree Rajneesh to the welfare of the United States of America in science and technology. I am an acknowledged regional expert in solar and conservation technologies. A business and personal resume are included with this letter to serve as a description of my professional abilities. Please note the extensive training and research done for the federal government and recent awards received.

The work at Rajneeshpuram is unusual in complexity, scope, and speed of completion. The enclosed article, written by request of the Solar Energy Association of Oregon, documents the work accomplished at Rajneeshpuram during the last year.

I have trained hundreds of technicians for government and industry, but found the sannyassins of Rajneeshpuram the fastest and best learners of my career. The work completed at Rajneeshpuram was executed at speeds that exceeded the most sophisticated "fast track" construction projects. The quality of work met highest industry standards. Construction projects requiring months of work by traditional subcontractors are accomplished in weeks. Planning and consensus making in the average city government (see my resume for comprehensive planning at the city of Forest Grove) required years to complete. At Rajneeshpuram the work was done in several months and satisfied the exacting requirements of the state of Oregon.

After working as a consultant to the Rajneesh community for nine months, Bhagwan's silent communion with his disciples became so obvious that my wife and I became sannyassins. To treat the work of Bhagwan Shree Rajneesh as anything less than inspirational is a tragic loss to the welfare and prosperity of our great nation.

Sincerely yours,

Paul

Paul Sansone
aka Swami Anand Paul
President, Solar Resource Service

EXHIBIT "A-566"

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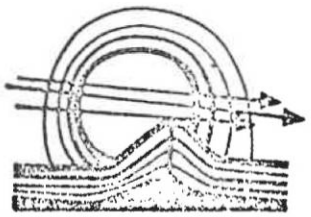

SOLAR RESOURCE SERVICE

SOLAR: WATER HEATERS, GREENHOUSES, SPACE HEATING/DESIGN, CONSTRUCTION, TRAINING, SALES

Resume of Solar Resource Service

Solar Resource Service specializes in the design, construction, consultation, and training of solar space and water heating technologies. The firm combines the previous businesses of Paul Sansone, Solar Consultant, and San/Bro Construction, Inc., to include over 12 years of solar construction experience.

Oregon Builder #36339, Portland General Electric approved Solar Installation Firm, Bonneville Power Administration approved Solar Trainers. Bonded and insured for the sale, design, and installation of solar space and water heating systems.

January 1983 - 1981

Private design and construction of 2500 sq. ft. superinsulated custom home.

Private construction of numerous solar waterheating systems.

Consultant to Rajneeshpuram, Oregon. (Rajneesh Neo-Sannyas International Commune) in the design and construction of a new city in eastern Oregon for 2,500 people. One year consulting contract to train staff and assist design and construction of alternate energy facilities and development of a Comprehensive Plan for State of Oregon approval. Projects included:

88,000 sq. ft. energy conserving greenhouse for intensive vegetable production. Design included state-of-art double glazing system, free-span metal framing, shading/heat-retention curtains, HVAC systems, drip-irrigation systems, computer controls and natural ventilation systems.

Solar water system for 10,000 sq. ft. cafeteria. System included 1000 sq. ft. of collection aperature with 1800 gallon storage tank. A closed-loop system designed to preheat all hot water for structure.

Solar heated indoor swimming pool.

Design of optimum insulation levels for 400 residences.

Watershed management, erosion control and irrigation systems for intensive agriculture production for provision of food for 2,500 persons.

10,000 sq. ft. office building including superinsulation, waste heat recovery systems, daylighting, and passive cooling technologies.

Consultant/Trainer to Canby Utility Board, Canby, Oregon. Conducted public solar water heating workhop. Under Bonneville Power Administration Pilot

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Program. Trained 25 persons, and assisted in the installation of five solar water heating systems with monitoring equipment.

1982 - 1981

Private construction of numerous passive and hybrid space heating systems.

Private installation of numerous active solar water heating systems - - active/passive, closed-loop, open-loop. Dealer for large product line of collectors, pumps, heat-exchangers, controllers, etc.

Consultant to the National Center for Appropriate Technology in the monitoring and evaluation of low-cost solar water heating systems. Field monitoring of three systems, and test stand monitoring of numerous prototypes.

Designers, manufacturers, installers of modular storage cabinet for the storage of heat from passive greenhouses and active air collectors. Cabinet utilizes Thermol - 81 storage rods and is capable of storing over 200,000 BTU's in a space 3'X6'X6'. Display model at office.

Consultants to the Federal Community Services Administration to provide one year of technical assistance and training to over 50 non-profit agencies in low cost solar water/space heating. Contract includes training of 40 solar technicians in the States of Oregon, Washington, Idaho, conduct series of seminars on low-cost solar water heating, publish professional papers, monitor prototype installations.

Trainers to Alternate Energy Concepts in Klamath Falls, Oregon in the instruction of 10 solar technicians for small solar installation and distribution firm. Provided curriculum, resource library, technical assistance in tool/equipment/ shop acquistion, bidding and installation procedures, etc.

January 1980 - 1981

Trainers to the Washington/Multnomah Manpower Consortium in the instruction of 20 solar technicians for the Department of Labor. Trainees achieved a 65% placement in private industry and installed 10 SDHW systems and 2 solar greenhouses during the course of their training.

Contractor to the Department of Energy and the National Center for Appropriate Technology in the field monitoring of systems installed under the SUEDE project. See below.

Private construction of a custom solar home in Canby, Oregon. Residence included SDHW, solar space heating, wood heat auxiliary and passive cooling. 2600 sq. ft. Sale Price $200,000.

Consultant to the C.S.I.R.O. of Australia for speaking engagements in Sydney and Tasmania in low-cost solar space heating. Extensive travel and research on the SolaHart passive SDHW systems, survey of system problems with old systems installed by other Australian firms.

Private construction of Sansone/Vosburg solar remodel featuring passive/hybrid

solar greenhouse space heating system. Passive solar closed-loop system featuring prototype retro-fit external heat exchanger. Passive cooling. Extensive conservation.

January 1979 - 1980

Consultant to Mid-Willamette Valley C.A.A. as Director of the Solar Utilization Economic Development/Employment (SUEDE) Project, one of 10 national demonstration grants by the Federal Department of Energy, Labor and the Community Services Administration. Project trained 20 solar technicians, developed a model solar technician training curriculum with Ecotope Group of Seattle, Washington, installed weatherization measures on over 300 low-income homes, and completed 20 solar installations. Major precedent was established on the Model Solar Code for the State Department of Commerce and the Department of Energy.

January 1978 - 1979

Consultant to Mid-Willamette Valley C.A.A. as Director of the Comprehensive Energy Program for low-income individuals. Standard weatherization project was converted to an integrated project that provided weatherization, solar, wood-heat, and crisis intervention services to a three county area in Oregon.

San/Bro Construction constructed 19 speculation homes in the Portland Metropolitan area.

Publications by SRS Staff:

Passive Solar D.H.W., Performance with lower costs in Freezing Climates, Proceeding of the Sixth National Passive Solar Conference, A.S. of I.S.E.S., 1981.

Large Scale Commercial Solar Water Heating Systems, Solar 82, Regional Conference of the Oregon Solar Energy Association, 1982.

Solar Monitoring: More Questions than Answers! Solar 82, Regional Conference of the Oregon Solar Energy Association, 1982.

Ecotope Solar Technician Training Curriculum, contributing editor and reviewer, Ecotope Group, Seattle Washington, 1980. Approved for use by the Department of Labor and Energy.

Solar Utilization Economic Development/Employment (SUEDE), Proceedings of the Solar '79 Conference in Seattle, Washington, 1979.

Towards an Alternative Rural Community, University of California Press, Santa Cruz, California, 1973. Used as college text at U.C.S.C.

Memberships:

- Oregon Solar Energy Industries Association.
- American Section of the International Solar Energy Association.
- Pacific Northwest Solar Energy Association.

DETAILED RESUME OF PAUL SANSONE

Paul Sansone
Star Rt. Box 1038
Forest Grove, Oregon 97116
Telephone: Home 357-3858
Office 357-5774

Age 30, 5/25/52
Married, one child
Excellent Health

EDUCATION

B.A. Community Studies, Cum Laude
Minor Environmental Studies, University of California at Santa Cruz.

National Center for Appropriate Technology
Technical Internship, May 1978

U.C.S.C. Farm Project, Board member 1972-1973 Research in energy efficient greenhouses, intensive agriculture, low-cost solar water heaters.

Tzopival Agricultural Experiment Station-Valle de Bravo, Mexico. Ejido Systemas de Mexico. Faculty advisor in Solar Water Heating, fuel conserving stoves (Lorena), intensive agriculture, and gravity and drip irrigation.

SKILLS:

Fluent in Spanish.

Solar space and water heating design, installation, repair, monitoring, and training.

Intensive agriculture, cultivation, irrigation, greenhouse/cloche, integrated pest management.

Wood heat technology - from earthen Lorena Stoves to complete boiler systems. Design, installation, training.

Extensive foreign travel/living experience. Raised as an "Air Force Brat" and lived in over twelve foreign countries. See professional experience for overseas consulting.

SUMMARY OF EXPERIENCE:

Three years solar technician training experience.

Three years Professional Planning Experience.

Two and One-half years experience in administration, research and teaching in appropriate technologies and agricultural ecosystems.

Two years community Development in Latin America.

Fluent in Spanish-three years study in Madrid, Spain.

Extensive experience in public presentations, teaching, liason, agency and citizen involvement and the use of mass media.

Five years solar design consultation experience.

PROFESSIONAL EXPERIENCE:

January 1983 - 1981

Private design and construction of 2500 sq. ft. superinsulated custom home.

Private construction of numerous solar waterheating systems.

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Trainers to Alternate Energy Concepts in Klamath Falls, Oregon in the instruction of 10 solar technicians for small solar installation and distribution firm. Provided curriculum, resource library, technical assistance in tool-equipment/shop acquisition, bidding and installation procedures, etc.

1980 - 1979

Solar Consultant in firm with six employees. Sole proprietorship projects and contracts include the following:

Training Services to Washington County Community Action Agency and the Multnomah Washington County Manpower Consortium. 20 trainees in nine month trining project installing 10 solar waterheating systems and two solar greenhouses, and 30 weatherization jobs to solar standards.

Solar Monitoring Consulting Services to Mid-Willamette Valley Community Action Agency/Community Services Administration/National Center for Appropriate Technology. Field installation, collection, and reduction of monitoring data on three solar waterheating systems. Construction of solar test stand for monitoring of solar hydronic components.

Private consultation: Four solar space heating remodels, 5 solar water heating systems, one custom solar (passive) home, one 2600 sq. ft. passively solar heated medical clinic.

Foreign Consultation: CSIRO Australian Government Research Agency. Solar Space heating in southern Australia, air systems research guest lecturer.

1978 - 1979

Community Action Agency Energy Program Director; director of comprehensive energy program with projects in Weatherization, Solarization, and Wood Heat. Extensive emphasis in participant training, community education and low-income advocacy. Supervision of fiteen employees and a yearly budget in excess of $600,000. Project SUEDE, National Demonstration Project in Solar Utilization and Training. Project trained community groups and fifteen CETA participants in solar technologies and constructed over thirty solar installations in Yamhill, Marion, and Polk counties, Oregon.

1976 - 1978

Associate Planner, City of Forest Grove; planner in charge of the development of the comprehensive plan. Duties included supervision of four staff members (Planner, Planning Aide, Draftsperson, CETA Secretary) and consultants (Port of Portland; Carl Buttke, Consulting Traffic Engineer; State Forestry Department; Center for Population Research and Census). Comprehensive planning program development and implementation including: citizen involvement, agency coordination, Requests for Proposals, contract development and consultant program development, land use surveys, housing and environmental analysis.

1975

Planning Aide, U.S. Forest Service, Baker River Ranger Station, Concrete, WA.; sensitive site analysis, Mt. Baker lookout (weather, seismic readings, fire watch, patrol and logging operations inspection). Fire suppression on-call.

1974

Project Director/Technical Advisor, Tzopival Experimental Farm, Systema de Ejidos, Valle de Bravo, Mexico - Federal Government of Mexico. - Project included building Lorena Stoves for fuel conservation, solar waterheating systems, intensive agriculture (pest management, composting, irrigation). Staff training, public presentations and citizen involvement.

1973 - 1971

Community Studies/Environmental Studies Intern University of California at Santa Cruz - Extensive work establishing U.C.S.C. Farm Project. Student administrator, work in energy conserving, greenhouses, solar water heating, instensive agriculture and land reclaimation.

1970 - 1969

Community Development Aide, National Volunteers of Panama, (USAID - A.F.S. Affiliated) - Community development in rural communities of Cerro Ingelsia/ Santiago in Panama. Work included intensive agriculture, sheep production, jungle land cultivation/rotation, native rabbit breeding, fish propagation/ low head hydro, solar water purification.

1969 - 1968

Mechanical Maintenance Technician, Lake Eldora Ski Area, Colorado. Repair and maintenance of lift and lodge facilities, including high tower work, electrical work, and mechanical servicing.

MILITARY EXPERIENCE

Honorable Discharge August 24, 1972

PUBLICATIONS:

Solar Monitoring: More Questions than Answers, Solar '82, Regional Conference of Oregon Solar Energy Association, 1982.

Large Scale Solar Applications, Solar '82, Regional Conference of Oregon Solar Energy Association, 1982.

Passive Solar D.H.W., Performance with Lower Costs in Freezing Climates, Proceedings of Sixth National Passive Solar Conference, A.S. of I.S.E.S., 1981.

Ecotope Solar Technician Training Curriculum, contributing editor and reviewer, Ecotope Group, SEattle Washington, 1980. Approved for use by the Department of Labor and Energy.

Solar Utilization Economic Development/Employment (SUEDE), Proceedings of the Solar '79 Conference in Seattle, Washington, 1979.

Towards an Alternative Rural Community, University of California Press, Santa Cruz, California, 1973. Used as college text at U.C.S.C.

MEMBERSHIPS:

- Oregon Solar Energy Industries Association.

- American Section of the International Solar Energy Association.

- Pacific Northwest Solar Energy Association.

AWARDS:

Award of Excellence, in the design of the Bours Medical Clinic, by Columbia Solar Energy Association. Only award for Commercial Buildings, 1982.

SEA of O

Solar Energy Association of Oregon

2637 S.W. Water Ave.
Portland, OR 97201

SEAOGRAM is the official magazine of the Solar Energy Association of Oregon. It is published quarterly in December, March, June and September. Mailing adress is 2637 S.W. Water Ave., Portland, OR 97201. Phone: (503) 224-7867.

Membership in SEA of O is $10 for students and seniors, $16 for individual members of SEA of O member organizations, $20 for regular members, $35 for small businesses and professionals, $50 for large corporations and institutions.

SEAOGRAM accepts unsolicited manuscripts, artwork and photographs. The deadline for receiving material is the last day of the month prior to publication. All material is subject to editing.

Signed articles represent the opinion of the author and not necessarily that of the Solar Energy Association of Oregon.

Members receive SEAOGRAM 4 times a year, Conference discounts and other benefits.

EDITOR — John Jennings
PRODUCTION ASST. — Larry Parker

EXECUTIVE DIRECTOR — Allen Brown

SEAOGRAM

Volume 2 No. 1 — **March 1983**

CONTENTS

Cover Photo by Chris Rathe
Greenhouse Retrofit above Portland

A special thanks to the folks at OAT for their support and facili

dard glazier guidelines generally allow for weepholes or drain spacings to eliminate water problems, but most tightness enthusiastes seal these up in the interest of preventing heat loss. Actually, leaving them open is probably a better idea in the long run.

Another all too common problem with insulated glass is fogging between the two panes. If you have this problem, you've probably not installed the glass properly. Usually, the only thing holding the two panes together is a strip of adhesive. This adhesive can break down if exposed to excess moisture or sunlight. To protect it, you need to overlap the seal with some form of fascia. In most cases, glazing compound or tape, paint, or your cap strip will do the trick, but double check on both the interior and exterior surfaces. The excess moisture problem is dealt with by utilizing spacers that keep the glass from sitting on wet wood. If your glass is mounted at an angle, the bottom tip of the glass, both panes, must be equally supported by perpendicular mounting.

That's about all I know or could find out about this glazing issue. I know I've been partial to glass here, but I am partial to glass, and almost everyone I spoke with agreed. If you want to study the other options, the January 1982 issue of New Shelter magazine contains a fairly extensive survey of solar glazings.

Now, just a final note about those white flies. The good news is they only live for thirty days. The bad news is, they continuously reproduce. Anything you do to get rid of them has to be kept up for at least one month. Delores Wolfe in her excellent book, **Growing Food in Solar Greenhouses** (Doubleday, 1981) recommends reducing the infestation by vacuuming them up every day and then using the old yellow painted "Tanglefoot" coated board method. The yellow color attracts them and the Tanglefoot traps them. The famed wasp, **encarsia formosa**, works great except in cool greenhouses. If yours gets below 65 degrees, forget it. Miranda Smith, the former National Center for Appropriate Technology (NCAT) horticulturist swore by liquid seaweed spray, but I haven't talked with her lately to see if that is still her weapon of choice. And Shane Smith's wonderful book, **The Bountiful Solar Greenhouse** (John Muir Publications, 1982) rivals Wolfe's book as one of the best guides to horticulture under glass. Shane lists several predator insects that will help maintain a balance in your sunspace. And Bill Head of the Amity Foundation, in Eugene, is just finishing up what appears to be the definitive work on horticulture, etc. for Northwest greenhouses, **Gardening Under Cover.**

That should keep you busy for a few months. I await your letters.

Carlotta Colette, is probably known to most of you as the former editor of RAIN magazine. She is presently an Associate Producer and host for Portland City TV [Cable Channel 20]. She was also co-editor for The Energy Book [Solar Oregon Lobby/Center for Renewable Resources, 1982].

Rajneeshpuram. Community-Scale Renewable Energy

by Anand Paul Sansone

Rajneeshpuram is the new city being built near Antelope, Oregon by the followers of Bhagwan Shree Rajneesh. The author is a solar designer and consultant who is now a follower of Rajneesh and is intimately involved in the developments mentioned below. -ed.

Rajneeshpuram is a bold effort to construct a new city in the desert. A "Buddha Field". A joyous community of individuals living in silent communion with a spiritual teacher. People living and working to create a reflection of their own religious vision.

Rajneeshpuram's comprehensive planning and early construction exhibit sufficient synergistic vision to demonstrate a community-wide utilization of renewable technologies.

In conservation and solar technologies an impressive amount of work has been completed in the last year. A 40 foot by 60 foot indoor solar heated swimming pool, a super-insulated and daylighted office building, a 1000 square foot collector array with 1800 gallon storage solar preheating water system for the communal cafeteria, the design and partial construction of a two acre (88,000 square feet) energy-conserving greenhouse are but a few of the projects.

SOLAR HEATED INDOOR POOL

The Rancho Rajneesh Guest House has a 40 foot by 60 foot indoor swimming pool which is heted by a drain-back solar pool heating system utilizing fourteen 4 X 10 black chrome collectors mounted below the deck which extends from the pool building. This extra effort allowed the collectors to block the view of the mechanical rooms, and blend with the low profile of the single story buildings in the complex.

Freeze protection was accomplished utilizing motorized valves commonly used in freeze protecting fountains because the solenoid valves normally used required more back pressure than was present with the collectors mounted below the pool level. The collectors drain into a sump and the water is pumped by a sump pump back into the pool during a drain-back cycle.

SUPER-INSULATED OFFICE BUILDING

The Ranch Headquarters Building, Socrates, is designed utilizing super-conservation and daylighting strategies. A standard two story steel truss building provided the shell. Interior wood framed walls were framed to provide a mounting surface for interior finish and a 10" cavity for insulation. The ceiling is insulated to a hefty R-50. The slab-on-grade first floor has 2" Thermax (R-19) perimeter insulation. An interior vapor

Continued

barrier and tight construction provide limited infiltration, with ventilation control through a central H-VAC system equipped with heat recovery systems. The building has a very small heating load with most of the heating supplied by occupants and lights. The cooling load, already reduced by the conservation efforts, is lowered with landscaping, exterior seasonal sunshades, and extensive use of indirect and low-energy illumination and daylighting.

CAFETERIA SOLAR WATER HEATING SYSTEM

The sannyasins of the Rajneesh Commune eat their meals at a central location. The cafeteria, Magdalena, is designed to seat over 500 people. The major energy load of the building is heating the water. a system was designed to preheat the hot water with a large solar system (see photo). Poor water quality necessitated an indirect system for the collection loop. Four banks of six 4' X 10' black chrome collectors (950 sq. ft.) were installed on an awning on the rear of the building. The collection loop was plumbed to a bank of Noranda tube-in-tank finned heat exchangers fitted into the bottom of an 1800 gallon storage tank. Potable water is preheated by another bank of Noranda double-walled tube-in-tank exchangers fitted into the top of the tank. Heat is stored in a heavily insulated 1800 gallon tank of filtered and treated water.

The system utilizes Bray oil, a synthetic heat transfer oil in the collection loop. All soldered joints were brazed, expansion bellows installed between groups of collectors, and all threaded joints were sealed with Rector-Seal #5. The system utilizes compatible seals throughout the system, a hydrin diaphragm 75 gallon expansion tank, C-100 Independent Energy Control, and a one-third horsepower pump.

In line water filters protect the potable exchangers from water corrosion. The Bray oil eliminated the necessity of frequent anti-freeze changes but was more difficult to install than glycol. The size and cost of the solar system was reduced by conservation measures such as flow restrictors and water-saving fixtures.

A preheat system for the dishwashing hot water was specified utilizing the waste heat from the rinse cycle of the dishwasher.

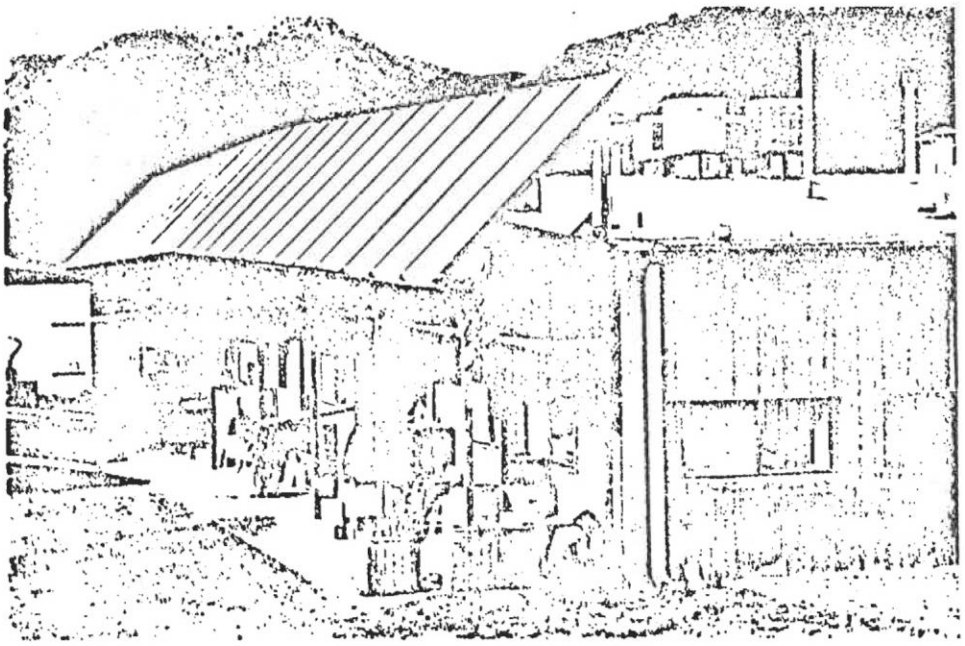
TWO ACRE SOLAR GREENHOUSE

A two acre (88,000 sq. ft.) energy-conserving greenhouse was designed utilizing two sophisticated thermal simulation software programs (SUNCODE by Palmiter/Wheeling, SUNDAY by Straub-- available from Ecotope Inc. Seattle). Simulation allowed testing of various conservation and passive solar design options for performance and cost savings.

Depending on the operation and crops to be grown in the greenhouse, energy consumption could be reduced to one tenth that of a standard commercial greenhouse of the same square footage. Glazing is Exolite Acrylic structured sheets on the roof and Exolite polycarbonate sheets on the vertical walls. This double glazing was installed in 4 foot X 25 foot long sheets in an aluminum and EPDM gasketed glazing system that allowed for thermal expansion, quick installation, and longevity. Passive venting was accomplished by utilizing commerical greenhouse ven extrusions to open large areas of the north and south walls and high vents set into "steps" in the roof. Forced ventilation utilized 40 large fans on the south wall and 440 lineal feet of evaporative cooling pad on the north wall. Micro-processor controls allow for a gradual proportionl opening of the vent actuators for passive cooling and a stepped increase through power venting and evaporative cooling stages as dictated by environmental conditions. Heat retention curtains are also controlled by the micro-processor and could also provide shading for certain crops.

SUNCODE showed that in structures this size the relative importance of glazing angle decreased. Conservation measures such as highly insulated and solid north walls, insluating heat retention curtains, double glazing, air tight construction with controlled ventilation, and efficient HVAC control strategies were effective. The latent heat contained and released by the transpiration of the plant crops proved to perform as a huge thermal storage system, rendering other solar storage strategies to a minor role. Simple solar/conservation strategies such as proper orientation and perimeter insulation had important benefits in reducing the load of the structure.

For anyone interested in viewing these projects and others first-hand, Rajneeshpuram is open to the public with tours conducted every day.



Collectors on kitchen: Rajneeshpuram

 Sansone photo