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Festive launch of Sunny Solutions

By **Christine Polinelli**, SCI volunteer

Friday the 18th of August 2003 – the official launch of **Solar Cookers International's Sunny Solutions** project in Nyakach, Kenya – dawned with leaden skies and much praying for a perfect solar cooking day. By early morning at the NYACODA offices in Katito, located in the Nyando District near Lake Victoria in western Kenya, preparation of favorite solar dishes such as *ugali*, *omena*, green grams, cake, *talapia* and rice was well underway in a joyful, reunion-like atmosphere. This was the first opportunity for the Sunny Solutions trainers, who had undergone training with Solar Cookers International (SCI) the previous week, to come together as a group once again. It was a pleasure to share in the camaraderie of these women who have made a difference in their own lives by using solar energy to cook food and pasteurize water and who are committed to spreading this knowledge to others.



New Sunny Solutions trainers with their solar-cooked dishes

Refugees who had traveled from Kakuma refugee camp to Katito – together with our Ugandan solar friends **Amos, Patrick and Jolly** – helped in the preparation of solar-cooked foods. The refugees have learned much more from their involvement in SCI's Kakuma solar cooking project than just how to solar cook. These young people arrived in Kenya from their homelands eight years ago as teenagers and are now self-confident, articulate adults equipped with many skills. **Shadrack, Anthony and James** shared fond memories and cultural insights into their former lives, which they miss.

All told, solar cooks from six nations – Uganda, Sudan, Kenya, USA, Canada and Australia helped prepare food for the launch.

It had rained the night before so the tarpaulins erected for the grand occasion were emptied of water, which was stored for later use. Chairs were unloaded and set up under the tarpaulins, a sound system and generator were installed, and tables and chairs, together with cotton tablecloths and fine china, were assembled in the hall for dignitaries.

By early afternoon many guests had started to arrive on foot. While the weather was very warm, the low clouds were still not interested in moving on. As guests and officials arrived they were shown a number of solar cookers, including many CookKits, a couple of solar box cookers, and a parabolic cooker. Much interest was generated. As trainers lined up to receive guests and explain how solar cookers work, the sun decided to shine!



Guests and officials line up to view cookers and ask questions

Many local school children wore traditional outfits and sang and danced energetically to songs prepared especially for the occasion. These children were fantastic! You could look along the rows of seated guests and see legions of feet and hands tapping out the rhythm. Next, the Sunny Solutions trainers sang and danced to songs they learned the previous week. It must have been contagious, because it wasn't long before **Margaret (Owino)**, SCI's eastern Africa regional representative), **Pascale (Dennery)**, SCI's program manager), **Dinah (Chienjo)**, Sunny Solutions project officer), **Bob (Metcalf)**, SCI volunteer) and I were up dancing too, adding to the amusement of the crowd, which had grown to nearly 500.



Local children celebrate the launch through song and dance

Kenyans love speeches and this was a wonderful occasion to reflect on the achievements of **NYACODA** (SCI's Sunny Solutions partner organization), the local schooling system, various local dignitaries, and, most importantly, the aspirations and achievements of SCI. Some solar dishes were ready by the end of the speeches; so dignitaries were treated to solar-cooked roasted peanuts, beef stew and a few other items. All guests then enjoyed a catered feast.

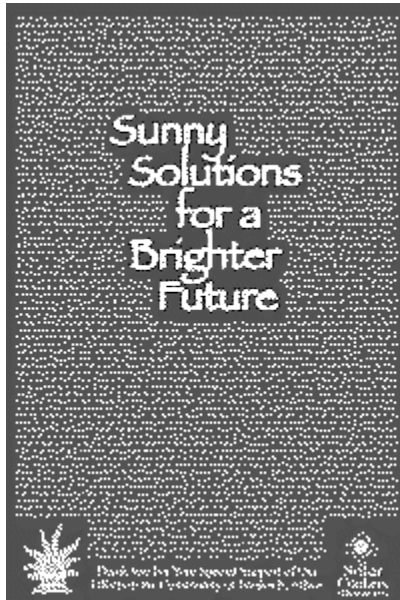
It seems to me, after having spent two weeks in Nyando district, that SCI has made a good choice in siting the project here. Results of the February 2003 pre-project assessment support this claim.

Like the welcome into the world of a new baby, Sunny Solutions has been launched in a grand manner!

Contact: Christine Polinelli. E-mail: Christine.Polinelli@health.gov.au

Christine Polinelli, a health worker from Australia, has on multiple occasions worked alongside Dr. Bob Metcalf on water testing and solar pasteurization projects in Africa.

Note: SC I s K enya office w ill display a recognition plaque listing Sunny Solutions supporters. A representation of that plaque can be seen on the next page. As always, our deepest thanks go to those who make the spread of solar cooking a reality. Thank you!



The verdict is in: solar cooking has positive impact in Aisha

by **Pascale Dennery**, SCI program manager



In March 1997 **Solar Cookers International** (SCI) was asked by the Office of the **United Nations High Commissioner for Refugees** (UNHCR) to initiate a solar cooking project in Aisha, a refugee camp located in northeastern Ethiopia near Somalia and Djibouti. Despite early setbacks, nearly all of the camps 2,000 Somali families learned how to solar cook by 1999. SCI commissioned an independent, month-long evaluation of the project at the end of 2001. The findings indicate that SCI succeeded in its efforts to disseminate solar cooking throughout the camp and to reduce consumption of traditional wood and

charcoal cooking fuels.

Evaluation results show significant changes in traditional energy use and a consequent reduction of local deforestation. Refugees saved time, money and effort. By 2001 close to 95 percent of

surveyed households used SC I s solarC ooK it for some of their cooking. Cam p-wide, consumption of firewood decreased by approximately 32 percent compared to data from four years earlier. As can be expected, solar cooking was used in conjunction with other cooking methods capable of cooking during periods of darkness or inclement weather. Frequent solar cooks consumed 44 percent less firewood and 78 percent less charcoal, while occasional solar cooks used 27 percent less firewood and 22 percent less charcoal. With solar cooking, refugees spent a full four to six fewer days each month gathering firewood, freeing up time for children to attend school and women to engage in other community and household activities.

C ooK it durability w as the project s prim ary obstacle. Early on, CooKits of acceptable quality w ere im ported from K enya. H andled properly, these C ooK its lasted about a year in A isha s harsh conditions, allowing for hundreds of solar-cooked m eals. SC I s repeated attem pts to find an Ethiopian manufacturer of acceptable CooKits fell flat, mostly due to the limited manufacturing base in Ethiopia and lack of quality cardboard. A local vocational school tried hand production, but the test-run of 500 cookers proved to be of low durability, lasting only a few months each. Unfortunately, supplying wooden box cookers was cost prohibitive.

Aisha refugee camp is slated for closure by the UNHCR. In May 2003, several months prior to the scheduled closing, SC I ended its Aisha presence. D uring SC I s seven years in A isha, nearly all camp families received solar cooking training and supplies. Additionally, 1,000 high-quality CooKits from Kenya were delivered recently to Aisha and entrusted to camp authorities. These CooKits will be distributed to refugees as needed.

Message from the director

by **Bev Blum**, SC I executive director



Returning after four years absence, I find **Solar Cookers International (SCI)** is strong, vibrant and moving ahead impressively. It has been a joy to renew contacts with hundreds of advocates working to spread awareness of one solution that com es up every m orning. SC I s sm all, dedicated staff six people in the USA and six people in Kenya are simply the best and truly inspiring to work with.

A t its annual board retreat, SC I s directors rev iew ed a list of twenty countries in the world where solar cooking could benefit the most people. It pledged SC I to a vision that *by the year 2020 at least three of these countries will have self-sustaining spread of solar cooking and at least five more will have wide public aw areness of solar cooking's usefulness.*

Having empowered tens of thousands of refugees to solar cook, and having documented high uptake and use, SCI is now expanding to settled communities, where businesses, self-help groups and government agencies can spread this clean, safe, simple technology much more widely.

And, having exchanged information with thousands of solar cooking advocates through correspondence and conferences, SCI is now consolidating expertise and expanding two websites for greater worldwide access to rapidly growing developments.

A recent gathering to thank SCI friends in New York was hosted by distinguished artist **Mary Frank**. Two of SCI's volunteer advocates at United Nations meetings, **Joyce Jett** of Geneva and **Deling Wang** of New York, were publicly thanked.

As we approach the year-end season of giving, your thoughtful contribution now will go to work immediately. Many millions still wait for the gift of knowing how to solar cook. On behalf of them, a million thanks to you for your support.

A solar cooker's odyssey on three continents

by **Inge** and **Greg Bolin**

In 1992 a solar box cooker from Solar Box Cookers International (now **Solar Cookers International**) was taken to Peru, where one of the authors was engaged in anthropological fieldwork. This cooker and its idea traveled halfway across the globe and back before it inspired a series of small-scale solar projects back in the highlands of Peru.

Too poor to buy kerosene to cook their meals, people living in the virtually treeless regions of the high Andes search for dead wood and branches to supplement the dried llama and alpaca dung they use to make cooking fires. The villagers of highland Peru were thrilled to see how easy it is to cook with the sun. It seemed miraculous to them and yet so simple that they wondered why they never thought themselves of using the sun's energy in this way.



Peruvian agriculturists and herders eagerly assemble a solar box cooker

SC I s solar box cooker w as used as a m odel by the **Technical School of Urubamba**, where, in 1992, an initial thirty cookers were fabricated and distributed to health stations and families living at altitudes up to 5,000 meters (16,400 feet) above sea level.

Every year the teachers and students of the technical school build 20 to 40 more solar cookers for health stations, first aid stations, schools and high altitude settlements. Despite having a lower boiling point, intense solar radiation in these high altitude regions allows for rapid cooking of vegetables, meats and soups. Health stations also use the solar cookers to heat water and sterilize instruments.

Jane Saxton, a student at **Malaspina University College** in Nanaimo, Canada, learned about SC I s solar box cooker and its uses in the A ndes in one of the author s A pplied A nthropology classes. In 1995 Ms. Saxton went to Nepal where, together with the highland women, she developed a portable solar cooker using a basket as the “box.” This H im alayan cooker w as welcomed in the Andes, especially by people who work in the high fields and pastures. They can strap this cooker to their backs and take it with them wherever they go. Meals cook while people harvest potatoes or watch their herds.



A portable Himalayan basket cooker

Teachers and students of the technical schools in highland Peru now alternate between building the larger rectangular solar box cookers and the round, portable cookers from Nepal. The costs for production, materials and cooking pots have been carried thus far by the **Landkreis Böblingen** and the **Red Cross of Germany**.

Other solar applications that have proven very useful to the Andean people include several kinds of solar water heaters and a solar dryer for medicinal plants which is used by **Yachaq-Qosqo**, an organization we founded in 1992 that is involved in researching and applying Andean medicine, nutrition and ecology. Most recently, a solar electric lighting system was installed in a health station serving 400 herder families.

SC I s solar box cooker raised aw areness of the sun s pow er in the high A ndes and other parts of the world. This cooker, and the various models that followed in the course of our anthropological work in Peru, help preserve the marginal high altitude environment and make life much easier for the people who live in their forgotten villages close to the permanent snow.

Contact: Inge and Greg Bolin, 3165 King Richard Drive, Nanaimo, British Columbia V9T 4A1, Canada. Tel: 1-250 758-3973, fax: 1-250 758-6634, e-mail: ibolin@telus.net.

One million “hits”

Solar Cookers International website, the **Solar Cooking Archive** (<http://solarcooking.org>) recently had its 1,000,000th visitor! First published in 1996, the Archive is an unparalleled on-line resource for solar cooking and solar pasteurization information. We would like to thank everyone who has contributed to the site, especially **Tom Sponheim**, creator and volunteer Webmaster, without whom the site would not have been possible.

Solar cooking momentum in Uganda

Effective solar cookers that cost US \$0.60 to make and can easily save US \$60.00 per year? Welcome to Uganda!

Solar Connect Association (SCA) in Uganda reports teaching 20,000 people to solar cook and producing 10,000 solar cookers in the past nine years. One hundred solar cooking instructors have been trained – a key figure for continuing dissemination – including 26 in the past year.

Four of the new instructors are from **Virunga National Park Environment Project**, located in North Kivu in the Democratic Republic of the Congo. Virunga is home to mountain gorillas. SCA cites their outreach to the Congo as an example of trans-boundary collaboration possible in the Albertine Rift Eco-Region.

Low-cost cookers

SCA has worked with solar box cookers and distributes scores of the fine parabolic solar cookers sourced from **E.G. Solar** in Germany. The workhorse of its program, however, is the cardboard solar CookIt. SCA's battalion of trainers, organized by region, teach Ugandans how to make CookKits with 10 cents worth of used cardboard and 50 cents worth of aluminum foil. Using even cheaper aluminized gift wrap, cookers can be produced for about US \$0.45. Trainers then teach use of the cooker and provide follow-up services. Water pasteurization using solar CookKits is also taught.

SCA has found that 70 percent of trainees become long-term users of solar cookers. In many cases, neighbors have copied the idea and adopted solar cooking on their own without direct intervention by SCA.

SCA reports 1,161 new trainees this year and 1,354 solar cookers of various types produced.

Huge savings per family

The economics in Uganda are favorable for the spread of solar cooking, according to SCA's founder **Kawesa Mukasa**. He says the price of a bag of charcoal recently leaped from about US \$2.50 to \$4.00 per bag. Bags contain about 10 kilograms and last the typical family roughly one week for a total outlay of over US \$200 per year. A family will save more than \$60 per year by using the 60 cent solar CookKit for just one-third of its cooking.

Helping in the spread of solar cooking is the fact that cooking pots in Uganda are commonly black already, including the lid, from long use over smoky fires. Plastic bags suitable as heat traps are common and inexpensive.

Mr. Mukasa reports that SCA staff members solar cook their lunches and conduct daily solar cooking demonstrations in Kampala. The first response from the ordinary Ugandan to the idea that one can cook with sunlight is disbelief. However, at these demonstrations, passers-by can taste solar-cooked food and are invited to make their own tea in a solar cooker.

"When they drink the tea, they believe," Mr. Mukasa says.

Many related benefits

"Young women and men are generating small-scale jobs for themselves and these include metal work, carpentry, canning fruits, baking small cakes and bread and boiling drinking water.

"... Income levels and sanitation have noticeably risen in homesteads using solar cookers since 1994. Married women can work their fields while the sun does cooking. This raises their productivity in terms of time put in productive work. Women are also engaging in baking cakes, bread and canning fruits using the cooker and some dry fruits that get ready market.

"Girls are liberated from having to walk long distances looking for firewood each day. Instead, they are now free to attend school, and the number of girls enrolling in village primary schools of targeted areas is rising. Trees are less cut and the environmental impact that takes time to manifest itself is shown by once bare hills starting to get shrub and wild tree cover. Most of all, people are aware of the consequences of their actions to the environment. In our view that is a very important development.

"These factors, coupled with the effect that the solar cooker has had in stemming waterborne diseases and respiratory diseases due to smoke inhalation, plus slowing the pace of the rural exodus to cities, are what make the solar cooker a tangible and exciting solution to a severe local problem of firewood scarcity."

This amazing story began over 10 years ago, when an idealistic student in Switzerland attending a festival met **Ulrich Oehler** of **Group ULOG**, a Swiss solar cooking organization, and learned about solar cookers. This student, Mr. Mukasa, next contacted **Solar Cookers International** and received information about solar cookers and solar cooking promotion, backed up by a subscription to this newsletter, the *Solar Cooker Review*. SCA went on to gather information and gain assistance from many other organizations, including E.G. Solar, the **World Wildlife Fund - Switzerland**, **Foundation Lord Michaelham of Hellingly**, **Free Sans Frontier**, and the

McArthur Foundation. The not so amazing morale of the story: one person, especially with the help of practical information and a supportive network, can make an extraordinary difference.

SCA is hoping to expand its work in the Albertine Rift region, which includes Burundi and parts of the Democratic Republic of the Congo, but they are facing a budget gap of nearly US \$30,000 and are searching for international funding partners.

Note: Many of the details in this article came from an interview with Mr. Mukasa conducted by Tom Sponheim, SC I's Webmaster, in August 2003. The entire interview can be heard on the Internet at <http://solarcooking.org/media/broadcast>.

Contact: Solar Connect Association, P.O. Box 425, Kampala-Kyandodo 256, Uganda. Tel: 256-41-530262, e-mail: solarconnect23@yahoo.com, web: <http://solarconect.4t.com>.

News you send

AFRICA AND EUROPE

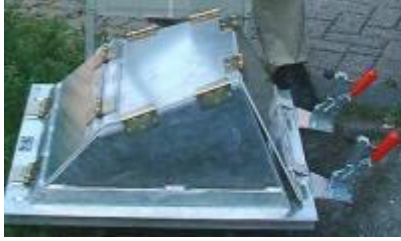
Germany

Dr. Paul Kramer's article "Die Holzknappheit im Sahel und das potential der solarkocher (Wood scarcity in the Sahel and the potential of solar cookers) was published in the periodical *Gaia - Ecological Perspectives in Science, Humanities, and Economics*, number 3/2003, pages 208-214 (with English summary on page 240). The article is available online at www.ingenta.com.

Contact: Dr. Paul Kramer, Schoppmannweg 6, D-59494 Soest, Germany. Tel: 49-02921-80523, e-mail: P.Kraemer.soest@t-online.de.

The Netherlands

Workgroup Solar Cookers Sliedrecht NL promotes solar cookers use, particularly of the Dierx-type solar box cooker from Holland. The workgroup has designed and built a mold apparatus for simplified fabrication of the inner box structure from aluminum sheets 0.3-0.5 millimeters thick. They purchase aluminum in rolls 100 meters long. Once the inner box is fabricated, an outer box can be made from wood or other available materials and insulation can be inserted. The inner box structures are often taken by travelers to developing countries, and can be carried via a provided large cotton bag. The inner box structure weighs 1.3 kilograms and costs U.S. \$7.50 to manufacture. The first mold was given freely to a workgroup in Mali, Africa.



Mold apparatus



Finished inner box structure

Contact: Werkgroep Solar Cookers, p/a Kringloop winkel Sliedrecht, Rivierdijk 721, 3361 BT Sliedrecht, the Netherlands. Tel: 0031-(0)184-421189, fax: 0031-(0)184-417764; Jacob de Bruin, Kromme stoep 13, 3361 CH Sliedrecht, the Netherlands. Tel: 0031-(0)184-412545.

South Africa

Richard Pocock is teaching unemployed people how to make a panel-type solar cooker in KwaZulu-Natal. His design, which he calls the Pentagon Star cooker, is easily and quickly built from one cardboard box that is cut and folded into a pentagon shape. Like most solar cookers of this type, food is cooked inside a black, lidded-pot enclosed by a transparent oven bag or similar structure.



Contact: Richard Pocock, Solarworks, 81 Archer Crescent, Manor Gardens, Durban 4001, KwaZulu-Natal, South Africa. E-mail: edufun1@iafrica.com.

Spain



Sunseed Desert Technology aims to be a working example of sustainable living, giving visitors the opportunity to think about and reduce their impact on the planet. Sunseed has promoted solar cooker use for a number of years.

Most recently Sunseed conducted a “holistic food” course, where participants first learned about organic horticulture, then moved into the kitchens – conventional and solar – to think about energy use, solar cookers and hay boxes; to build Sunstar solar box cookers; and to prepare delicious, nutritious food. In

addition, food was preserved in a solar dryer. Back in the gardens, participants learned about composting to continue cycles of growth and food. As the compost heap was built, treacle tarts and flapjacks were solar cooking for the end-of-course solar tea party. According to Course Coordinator **Lara Marsh**, “It s so good to rem em ber that food can taste good, be good for you and good for the p lanet!”

Contact: Sunseed Desert Technology. E-mail: sunseedspain@arrakis.es, web: www.sunseed.org.uk.

Tanzania

Sperancea K. Gabone of the **Kilimanjaro Biogas and Solar Center** recently led a solar cooking workshop at **Palangeny primary school** in Moshi, Tanzania. The school received 11 solar cookers thanks to generous support from Ms. **Judith Babka**. Head teacher **Victoria Godfrey Mongi** reports that the w orkshop w ent w ell and that the food w as “delicious.”



Ms. Mongi (third from left) tests the solar-cooked dish held by Ms. Gabone

Contact: Sperancea K. Gabone, Kilimanjaro Biogas and Solar Center, P.O. Box 7322, Moshi, Tanzania. E-mail: gabonesperancia@yahoo.com.

United Kingdom

Terinex Limited manufactures clear heat-resistant oven bags that can be used for solar cooking applications, particularly as a heat trap surrounding the cooking pot in panel-type solar cookers. The bags are made from a unique polyester-based film (TSP02™) that is resistant to oils, fats and grease, and withstands temperatures above 392° F (200° C).

Contact: **Richard Hawke**, Group Quality and Technical Services Manager, Terinex Limited. Tel: +44 (0)1234 364411, e-mail: Richard.Hawke@terinex.co.uk.

THE AMERICAS

Argentina

In March 2003 **Laura Garat de Larran** of Salta province, Argentina, contacted Solar Cookers International to receive instructions and advice for making and using solar cookers. By September she had taught 25 women to build and use solar box cookers and was beginning to experiment with CookIt-type solar cookers, called “anafes” or “portable stoves” in Salta. Workshops are held periodically in Grand Bourg and other communities in the area. In one workshop, Ms. Larran demonstrated solar cooking to 30 agronomy engineers from the **National Institute of Agricultural Technology**.

Ms. Larran has been teaching local people about the use and processing of soybean products. She reports that solar box cookers are ideal for processing soybeans into soy pulp and soymilk.

Ms. Larran is a member of a new network of solar cooking promoters in Argentina who swap ideas via e-mail. For example, another member is **Maria Ceccarelli**, who works with low-income families in the Chaco region of Argentina. She has begun experimenting with solar cooking and suspects that solar preparation of fruit jams and jellies such as “dulce de ciruela” may provide an income source for poor families. Through the Argentina network, Ms. Ceccarelli was able to ask Ms. Larran for advice about solar cooking and soy products, while another member of the network, **Alfredo Esteves**, has provided tips for making the jams and jellies in a solar cooker. He has also given solar cooking courses in Argentina reaching 160 people.

Another member of the new network **Susana Mazzolli** has been involved in solar cooking promotion in Jujuy province, where she taught hundreds about solar cooking and trained at least three builders of solar cookers. More recently, Ms. Mazzolli has been spreading solar cooking knowledge through schools in Buenos Aires province.

Contact: Laura Larran, e-mail: lgdel@arnet.com.ar; Maria Ceccarelli, e-mail: ciet@satlink.com; Alfredo Esteves, e-mail: aesteves@lab.cricyt.edu.ar; Susana Mazzolli, e-mail: mazzolli@wamani.apc.org.

Haiti

Solar Oven Partners a joint effort of the **United Methodist Church of the Dakotas, Rotary District 5610** and established Methodist development programs in Haiti promotes solar cooking in Haiti. Teams of volunteers travel to Haiti to build solar cookers and lead educational seminars. The most recent team of thirteen volunteers returned in August after successfully accomplishing their goals. These goals included offering a three-day solar cooking seminar in the village of Anous, constructing 100 solar cookers both for sale in Anous and for distribution in the coming months, and the presentation of an innovative puppet presentation for children called “Solar Oven Puppet Theater.” Volunteer **Diane Rieken** had this to say, “Observing the pride of ownership following the three-day solar cooking seminar with the latest group of trained solar cooks purchasing 27 of the 100 newly minted solar ovens was a truly amazing scene!”

Contact: **Rick Jost**, 21939 464th Avenue, Volga, South Dakota 57071, USA. E-mail: rjost@itctel.com.

Nicaragua

Grupo Fenix, a nonprofit organization supporting renewable energy and sustainable development in Nicaragua, offers twice-yearly “solar culture” courses. Participants, primarily eco-tourists from other countries, spend 12 days learning about solar energy applications in Nicaragua. Solar cooker construction and testing are part of the course, as is the installation of a photovoltaic lighting system in a rural village. Solar-cooked meals are served. The next course is January 4-16, 2004, costing US \$850.

Contact: **Richard Komp**. Tel: +1 (207) 497-2204, e-mail: sunwatt@juno.com, web: www.grupofenix.org.

Peru

As part of the “Glass of Milk” program that donates milk to community members and involves them in development projects, **Ruth** and **Charles Dow** helped a group of 20 people near Lima to construct 11 solar cookers. Ruth notes that some participants had walked three hours to come to the workshop. And, of course, three hours back!

Contact: Ruth and Charles Dow, 41317 Beacon Road, Novi, Michigan 48375, USA. Tel: (248) 344-0296, fax: (305) 597-9078, e-mail: ruthdow@hotmail.com.

United States

Solar-cooked pasta can sometimes be a little more or less done than preferred, and it can be tricky getting it just right. **Mark Saliers**, a longtime participant in **Solar Cookers International**’s e-mail discussion group, has had success using the following technique, which involves cooking pasta in a glass jar that has been blackened on the outside with nontoxic latex or similar paint. (*Editor’s note: for safety purposes, we recommend using canning jars and lids, which are designed to release excessive steam pressure if needed.*)

1. Fill a quart-sized wide-mouth jar with water to within 1.5 inches of the top and seal securely.
2. Solar heat the water for one to two hours so that water is at or near boiling.
3. Using thick oven gloves, slowly and carefully open the jar. Avoid steam burns.
4. Add up to two cups of dry pasta to the jar and seal securely.
5. Gently agitate jar to mix water and pasta thoroughly.
6. Solar cook pasta for approximately 150 percent of the suggesting cooking time.
7. Using thick oven gloves, loosen the lid just slightly and pour out water.
8. If needed, seal securely and continue to solar cook pasta, sans water, for an additional 10 minutes.

Greg Carrier, another discussion group member, adds that you can drop in slices of cheese after step seven, seal securely and shake to make “macaroni and cheese” or similar dishes. It’s his daughter’s favorite!

Speaking of e-mail discussion groups ... you can learn more about **Solar Cookers International**’s e-mail discussion group by visiting <http://solarcooking.org/solar-l.htm>.

(Archived messages can be viewed without registration.) ... Solar promoter **Michael Little**, from Nevada, has started an MSN solar cooking e-mail discussion group. For more information visit <http://groups.msn.com/SolarCooking>.

Venezuela

Norvex, an ecological cooperative, is developing a solar cooking program whereby poor families in Venezuela receive instruction in the construction and use of solar box cookers. Seventy cookers have been constructed thus far with financial assistance from the German embassy in Caracas. The cookers primarily have gone to families in the Venezuelan outback and small coastal islands. In addition to cooking, solar water pasteurization is important in these rural communities where water is often contaminated. Former **Solar Cookers International** board member **Shyam Nandwani**, of Costa Rica's **Universidad Nacional**, has provided technical assistance to this project.

Contact: Asociacion Ecologica Norvex, Apartado No. 50092-1050, Sabana Grande, D.C., Caracas, Venezuela. Tel: 58-0414-839-2909, 0282-4-250584, e-mail: aguasay2001@yahoo.com.

ASIA AND PACIFIC

India

FUTEK (Technology Futuristic) manufactures solar box cookers made from sheet metal, plywood or fiber-reinforced plastic. The cookers measure 1.5 feet by 1.5 feet. With the included eight-sided reflector the cooker reaches maximum temperatures of nearly 300° F (150° C). Retail price is US \$75.

Contact: FUTEK, 209 Picnic Garden Road, Calcutta 700 039, India. Tel: +91 (33) 2271584, e-mail: surya39@vsnl.net.

Dr. **S.D. Sharma** reports that he and a team of researchers have been studying the use of phase change materials (PCMs) for latent heat storage in solar box cookers. (Stored solar heat energy can potentially allow for cooking during cloudy weather and evening hours.) Dr. Sharma et al. devised a cooking vessel consisting of two nested, concentric aluminum cylinders, of different diameters, with space between for acetanilide—a PCM that melts at 246° F (118.9° C). A cooking pot is then set inside the smaller-diameter cylinder, allowing for heat transfer from the PCM to the pot. Using a double-glazed solar box cooker with three reflectors, the PCM was solar heated during daylight, and the resulting heat used to successfully cook varying quantities of rice during late afternoon and early evening hours up to 8:00 p.m. Results of their research are published in *Energy Conversion & Management*, number 44/2003, pages 809-817.

Contact: Dr. S.D. Sharma. E-mail: sharma_sd@yahoo.com

Vietnam

The latest report from **Nguyen Tan Bich** is that his volunteer organization has distributed 700 solar cookers throughout the Quang Nam province in the past three years. These well-crafted solar box cookers are assembled by disabled individuals using local materials. Plans for the cookers are distributed freely. Funds are needed to help continue the spread of solar cooking in Vietnam.



Contact: Nguyen Tan Bich, 222 Nguyen Tri Phuong, Da Nang city, Viet Nam. Tel: (84-55)520018, e-mail: solarserve@yahoo.com or tanbichs@dng.vnn.vn.

CYTED encourages Latin American information exchange

by **Manuel Collares Pereira**, NUTECSA coordinator

CYTED, a science and technology cooperation program between Spain, Portugal and all Latin American countries, is organized into sub-programs covering a wide range of topics. Sub-program VI *New Energy Resources and Energy Conservation* focuses on rural energy issues, including several solar energy applications: heating and cooling, water pumping, and food drying to name a few. Based on perceived need, new topics for exploration are proposed by participating Latin American countries. A fairly recent addition has been solar cooking.

Through collaboration with various companies and research institutions, including universities and laboratories, knowledge and ideas from some of the best minds in each country are shared. CYTED has been mainly financed by Spain, with growing contributions from all countries. CYTED has managed to be an efficient catalyst for research and development activities.

Two groups conduct CYTED's solar cooking activities: **NUTECSA** - New technologies for the solar cooking of food, and **RICSA** - IberoAmerican network for the solar cooking of food. Both initiatives were formed in the late 1990s.

In NUTECSA, the idea is to explore new ways of collecting solar energy and delivering it for the purpose of cooking. It explores, as an example, heat transfer from collector to cooking area (located inside or outside of a building) by means of optics, liquid thermo-fluid, phase change or

heated solids. It also explores practical methods of storing heat for evening use, as well as industrial cooker designs for schools, multiple families, and small, local industries like bakeries.

Some interesting systems have been developed and are in use. One example from the **University of Salta**, is a Fresnel-type parabolic dish that heats to temperatures well above 300° C a group of aluminum bars that are taken inside a school and used to cook daily meals for 30-40 children in northern Argentina. Another example, from the **National Institute of Industrial Engineering and Technology (INETI)**, is a three-dimensional compound parabolic concentrator (CPC) designed for a fixed absorber plate, perhaps located inside a house, with energy transferred to it by a specular torus.



Aluminum bars are heated in a Fresnel-type parabolic cooker...



... and used as the heat source for baking bread in a large metal “oven”



Knowledge shared through the RICSA group has led to several advancements in conventional box-type solar cookers and concentrators, as well as new models based on these. One new box-type solar cooker concentrator, based on CPC optics, is the Sun Cook. (See *Portugal's "Sun Cook"* page___.) RICSA worked extensively on solar cooker testing protocols resulting in a procedure combining techniques proposed by **Dr. Funk** et al. and by **Dr. Mullick** et al. in order to be able to compare, in a systematic way, solar cookers built in each country.

Sub-program VI has organized a number of workshops with participants from all over Latin America. In particular, there have been well-attended solar cooking workshops in Argentina (Mendoza) and Guatemala (Antigua). Scientific reporting of the activity done within NUTECSA and RICSA has mainly occurred in solar-energy related seminars and congresses in Latin American countries or in the Iberia Peninsula, under the auspices of local sections of the **International Solar Energy Society (ISES)**.

The participating countries, institutions and responsible persons are:

Argentina - University of Salta: **Prof. Luis Saravia** (Sub-program VI coordinator) and **Prof. Graziela Lesino**; CRYCIT-Mendoza: **Ing. Alfredo Esteves**
Chile - University de Chile: **Prof. Roberto Roman**; University de Tarapaca (Arica): **Dr. Raul Sapiain**; Fundacion Terram. Concon: **Ing. Pedro Serrano**
Costa Rica - University Nac. de Heredia: **Dr. Shyam Nandwani**
Cuba - Centrodde Energias Renovables: **Ing. Susana Fonseca**
Honduras - University Nac. Autónoma de Honduras: **Ing. Marco Antonio Flores**
Mexico - University IberoAmericana: **Ing. Adolfo Finck Pastrana**
Paraguay - Inst. Nac. de Tecnologia e Normalizacion: **Dr. Maria Emilia Castel**
Peru - Universidade Nac. de Ingenieria en Lima: **Prof. Manfred Horn**
Portugal - INETI -DER-Renewable Energies Department: **Prof. Dr. Manuel Collares Pereira**; AO SOL, Energia Renováveis, Lda: **Eng. João Correia de Oliveira**
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Tributes

Tribute gifts have been given to SCI by:

The **Oklahoma-Ethiopia Society** in memory of **Billie Burger**
Marti Wallace in honor of her friends, **Linda Hayward** and **Beth Duggan**
Anne Ellis in honor of **Rose Blake**
Laura Feiwel in memory of **Linda Jean Loustalot Randolph**
Mary B. Strauss in memory of **William Daugherty**
Gwynne P. Smith in memory of her parents, **George H. Prosser** and **Gertrude B. Prosser**

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Sunshine does let them eat cake

An enterprising refugee from Ethiopia is improving the quality of life for her family and neighbors by operating a small-scale solar bakery in Kakuma refugee camp, where **Solar Cookers International** has taught solar cooking skills to refugees since 1995. **Mumina Baraka**

uses two solar CookKits to do the baking. In two days of baking, she turns 5.5 pounds of flour, plus eggs, yeast, sugar, oil, milk, shortening and baking powder, into bread and cakes. She makes small packages of the baked goods – 50 of bread, 20 of cake – so they can be sold at prices other refugees can afford.

After covering her expenses, the two days of baking yields Ms. Baraka a profit of 404 Kenyan shillings (worth about US \$5.30). Crucial to Ms. Baraka's profit margin is the fact that she uses free sunshine for her fuel. Buying wood or charcoal for baking would change her profit into a loss.

“The most important benefit of solar baking to me at this point,” Ms. Baraka says, “is that it allows me to use my skills to create something for others while earning something to buy milk, food, medicine and light for my house.”

Ms. Baraka, of Oromo ethnicity, notes that if she is able to return home, it will be easy to pack up her two CookKits and her pots to move her business. “I could move with it to Oromoland without loss of any equipment,” she states.

SolCafé prototype in Kothara, India

by Girja Sharan, Ph.D.

Indian Institute of Management

Kutch district, in Gujarat province, is hot and extremely arid. We had run three field kitchens here using some 100 solar box cookers when it was struck by earthquake in January 2001. A report of that was published in the November 2001 issue of *Solar Cooker Review*. It had occurred to us then that – given the high incidence of radiation and nearly cloud-free sky in most months – a chain of commercial eateries, tentatively called *SolCafé*, could be set up along highways to serve solar-cooked snacks or small meals. Subsequently, we sought and received funding for this from **Gujarat Energy Development Agency - Vadodara**.

A prototype SolCafé is now operational at a 100-student school in Kothara. The “café” consists of two large solar box cookers, of aperture 0.5 square meter and 1.0 square meter respectively. The cookers are located side by side on a south-facing platform attached to the building. Wheels and guide rails make it easy to move the cookers out of the sun for food access.



The café cookers prior to installation

The café cookers prior to

School cooks have been trained in proper use of the café. It will remain under our observation for some time. We intend to use this concept to build roadside eateries in coming months.

Contract: Girja Sharan, Ph.D., coordinator, Cummins-IIMA Laboratory for Environmental Technologies in Arid Areas, Indian Institute of Management, Ahmedabad 380015, India. E-mail: gsharan@iimahd.ernet.in.

Portugal's "Sun Cook"



A novel solar cooker from Portugal the Sun Cook is now available from **SUN CO, Companhia de Energia Solar S.A.** The Sun Cook is a concentrator-type solar cooker with many solar box cooker characteristics. It weighs just over 24 pounds (11 kilograms) and has a cooking area of 13.8 inches by 16.2 inches (35 centimeters by 41 centimeters).

The Sun Cook uses ideal, non-imaging optics (also known as compound parabolic concentrator, or CPC-type optics) inside the box, concentrating incoming solar radiation by a factor of 1.46x onto a black, Teflon®-coated aluminum absorber plate, upon which the pot sits. The internal box walls are shaped as two identical asymmetric CPCs in one direction and two distinct, asymmetric CPCs in the other.

The Sun Cook's unique system of external, anodized aluminum reflectors directs additional sunlight onto the absorber plate and cooking pot. The primary reflector, which can be vertically extended via a slide-out mirror, is attached at the back of the

cooker's lid. The second reflector can be attached on either side of the lid, and fans open to accommodate the primary reflector's tilt.

Five types of injection-molded plastic are used in the cooker, allowing for precise shaping of the cooker's sophisticated optics and the potential for mass production. The five plastics Polybutylene Terephthalate (PBT), Polypropylene (PP), Polyamide or Nylon (PA), a Polyamide-Polytetrafluoroethylene blend (PA/PTFE), and Polyoxymethylene or Acetal (POM) were chosen for their resilience at varying temperatures and levels of ultraviolet radiation exposure. Oven-type insulation is used inside the box and below the absorber plate. The Sun Cooker's "window" is double glazed with tempered glass and sealed to prevent moisture infiltration.

If needed, cooking times can be controlled by a unique solar "clock" that works in conjunction with the side reflector to cast a shadow across the cooker after a specified period of time.

The Sun Cooker is available at a suggested retail price of 249 € (approximately US \$290), and comes with two cooking pots and a recipe book.

Contact: SUN CO, Companhia de Energia Solar S.A., Rua Augusto Costa, Picassinos, 2431-956 Marinha Grande, Portugal. Tel: +351 244 573 420, fax: +351 244 573 428, e-mail: contact@sun-co.pt, web: www.sun-co.pt or www.sun-cook.com.

Solar Cooker Review

Solar Cooker Review is published two or three times per year with the purpose of presenting solar cooking information from around the world. Topics include solar cooker technology, dissemination strategies, educational materials, and cultural and social adaptations. From time to time we cover related topics such as women's issues, wood shortages, health, nutrition, air pollution, climatic changes, and the environment.

Solar Cooker Review is sent to those who contribute money or news about solar cooking projects. The suggested subscription price is US \$10/year. Single copies are sent free to select libraries and groups overseas.

We welcome reports and commentary related to solar cooking for possible inclusion. These may be edited for clarity or space. Please cite sources whenever possible. We will credit your contribution. Send contributions to Solar Cookers International, 1919 21st Street, Suite 101, Sacramento, California 95814-6827, USA. You may also send them by fax: (916) 455-4498 or e-mail: info@solarcookers.org.

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