THE ITALIAN NATIONAL SOLAR ENERGY HISTORY PROJECT

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INTRODUCTION

This poster presentation introduces "The Italian National Solar Energy History Project" (The Project) to the participants of the ISES SWC 2007. The Project is currently being promoted by the "Italian National Committee 'The History of Solar Energy'" (CONASES), a multi disciplinary non profit entity established in 2006 by the Italian Ministry for Cultural Heritage and Activities.

The Project, whose first phase will be carried out over the four year period from 2006 through 2009, is structured as three main initiatives:

- The National Archive on the History of Solar Energy (Solar Archive).
- 100 solar history events in 100 local communities on "Solar Energy From the Past to the Future: History, Art, Science and Technology."
- Travelling exhibition on "Solar Cities from the Past to the Future – Scientific Discoveries and Technological Developments" (Genova 2006, Rome 2007/2009, South Italy pending).

Fig. 1 – Roman Solar Architecture – A reconstruction by Edmund Paulin of the Baths of Diocletian. "From the first century a.d. onward, the public baths became immensely popular gathering places. On a typical afternoon, thousands of Romans would be bathing, exercising and cavorting inside." (From A Golden Thread by K. Butti and J. Perlin, 1981).

Human civilizations developed using exclusively solar renewable energy in all its direct and indirect forms (wind, hydro, forests and other biomass) until just 200 years ago. Is it possible to return to the use of only solar energy in modern times?
This history project's goal is primarily cultural, aimed at changing the perception of solar energy's potential and its modern application.

SOLAR ARCHIVE

To reconstruct and document in a systematic and easily accessible way the work of the scores of Italian inventors, physicists, chemists, mathematicians, engineers and architects who played a leading role in the history of renewable solar energy, CONASES has promoted the creation of a National Archive on the History of Solar Energy. The Archive, whose units are physically located throughout Italy and accessible through the Internet, is being organized around three main subjects. They are: solar pioneers and devices starting in the early years of industrialization, solar architecture and city planning, and the use of solar energy in agriculture.

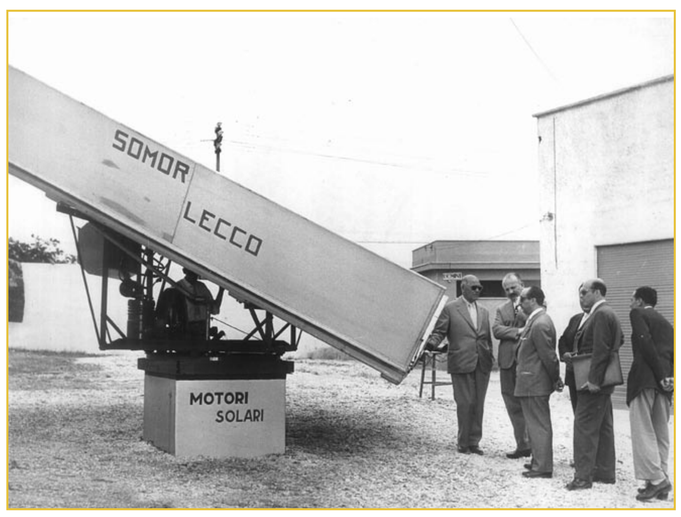


Fig. 2 – The Somor Solar Pump invented in 1948 and patented in 1951 by Ferruccio Grassi from Lecco (Italy). Somor Pump was exhibited in Phoenix (Arizona, USA) in 1955 on the occasion of the 1st Solar World Symposium organized by the Association of Applied Solar Energy (AFASE), the precursor of the International Solar Energy Society (ISES) (Photo courtesy of the Grassi heirs).

Fig. 3 – A marketing leaflet of Somor Solar Pump of the early 1960s.

The Archive's initial core of excellence has been created in the past five years in Brescia, in northern Italy, at the Luigi Micheletti Foundation and the Eugenio Battisti Museum of Industry and Work.

Fig. 4 – Interior design of the Eugenio Battisti Museum of Industry and Work in Brescia (Italy). In the Museum, whose opening is planned in 2008, there are shelves for storing machines as well associated historical documents.

The Museum's documentation centre on solar energy includes the Giorgio and Gabriella Nebbia collection, one of the largest Italian archives on the environment and solar energy. The Nebbia collection has already been partially inventoried and may be examined at www.musil.bs.it.

At present, CONASES is focusing on the preservation and enhancement of archives and documents that belonged to great Italian solar scientists and scholars of international standing in the 20th century. Examples of recent acquisitions and archives now being inventoried are those of Giovanni Francia (1911–1980) and Gaetano Vinaccia (1889–1971), donated by the heirs.

Fig. 5 – Giovanni Francia (1911-1980) a talented mathematician, engineer, and inventor, speaking at an international conference in Athens, early 1960s (Photo courtesy of the Francia heirs).

Known around the world as the father of solar thermoelectric power plants, Francia was forgotten following his death, as were his many extraordinary contributions to the development of a wide-ranging series of solar applications. He contributed to advanced solar research, from the production of heat at low, medium and high temperatures to the concept of a city powered solely by solar energy. In addition, his studies on the Earth's thermal equilibrium are of interest today.

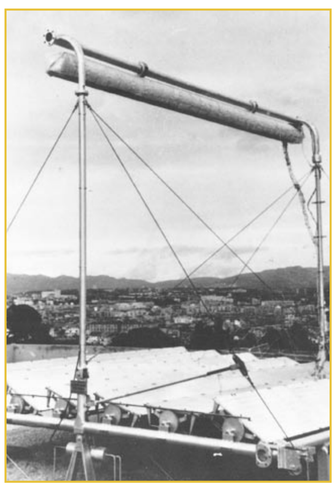


Fig. 6 –The first Fresnel Linear Reflector, pioneered by Giovanni Francia and installed in cooperation with Marcel Perrot in Marseilles in 1963 - 1964 (Photo courtesy of the Francia heirs).

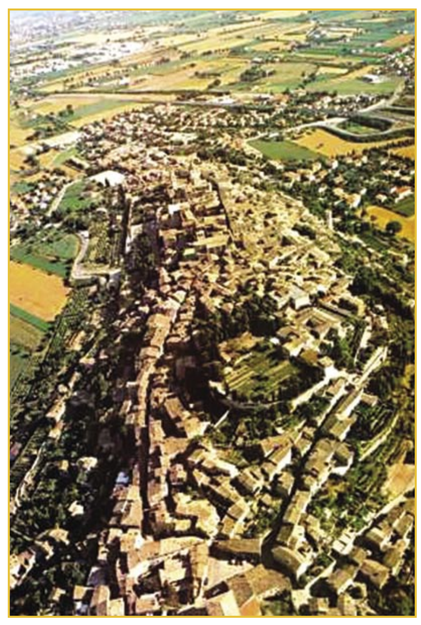
Gaetano Vinaccia (1889–1971), an architect and city-planner, is the author of dozens of overlooked publications and articles on solar urbanism and architecture. Among them is the 300 page book "Il corso del sole in urbanistica ed edilizia" "The path of the Sun in urban planning and building construction", published in 1939.

CONASES also sponsors events to call attention to solar pioneers and their work. This September, for example, the University of Bologna will commemorate the 150th anniversary of the birth of the father of modern photochemistry, Giacomo Ciamician (1857–1922).

The work ahead for CONASES is enormous. Italy has dozens of document collections – national and local, public and private, on paper and in other forms. The Project intends to survey these collections, starting with the State Archives, university and research libraries, the collections of scientific academies and societies, company records (not only energy companies), and private archives kept by scientists and scholars interested in solar energy. In parallel with the archive survey, particularly interesting bibliographic and photographic materials will be examined. To involve the whole of Italy in creating the Solar History Archive, the project will make the most of opportunities from the other two project's initiatives, as described in the following.

100 SOLAR HISTORY EVENTS

This initiative promotes events on the local history and future of solar energy in 100 Italian cities and towns. It was launched nationally on June 16, 2007 in Syracuse, Sicily, on the occasion of Speklon 2007. A central space in each of the 100 history events is devoted to rediscovering buildings and urban structures built in times when fossil fuels were still unknown or little used.



Their efficient design was dictated by the solar source and by the state of energy technology. Often these constraints resulted in a strong incentive to devise solutions whose value has remained unchanged. For instance, cities evolved compactly and greater attention was given to the orientation of buildings with regards to the sun's path.

Fig. 7- An aerial view of Spello, a typical Italian small town, whose shape and relationship with the surrounding farmland is a clear reminder of its past. Ancient cities' near total dependence on solar energy set a limit on their size (Photo courtesy of G. Reveane, 1993).

SOLAR CITY TRAVELLING EXHIBITION

Italy is the land of Marcus Vitruvius (90–20 B.C.), author of De Architectura, one of the most studied and cited ancient texts regarding solar architecture and urban planning. The "Italian Solar City Travelling Exhibition" recounts the vicissitudes of cities, of architecture, energy and food-supply infrastructures, and the scientific discoveries and technological developments that marked the major stages in the history of cities, with special focus on day lighting, heating and cooling of buildings.

Fig. 8 – Window panes from Pompeii, 1st cent. a.d. The Romans had learned to make flat transparent glass and used it to capture the sun's heat for their homes, baths and greenhouses. (Photo National Archaeological Museum, Naples).

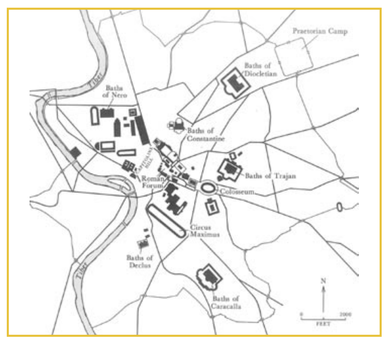


Fig. 9 – Map of Imperial Rome, showing locations of the major baths, facing south or southwest (From a Golden Thread, by K. Butti and J. Perlin, 1981).

The first edition of the Exhibition was held on the occasion of the Festival of Science in Genoa in 2006. The second edition is already under preparation and the opening expected in Rome in early spring 2009.

CONCLUSIONS

The Italian Solar Energy History Project intends to help create further cultural and cognitive references on the history of solar energy that can facilitate the start of systematic studies on the subject and possibly provide lessons for the use of solar energy in our times and in the future.

ACKNOWLEDGMENTS
In collecting the material for the poster I had the benefit of accounts from and contacts with many people. I would like to thank in particular Giorgio Nebbia, Pier Paolo Poggio and Margherita Martelli. Most grateful thanks to the heirs of Giovanni Francia, Ferruccio Grassi and Gaetano Vinaccia for their courtesy in making their archives available to me.

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Photo gallery of Speklon 2007: http://picasaweb.google.it/speklon/2007 Video clip on Genoa Exhibition: http://www.gses.it/conases/genova.php