



JOIN THE CENTURY OF SOLAR

A Year of Virtual Celebration

SWC50-The Century of Solar Celebration Newsletter – November 2021

This will be the last SWC50 newsletter. It is 12 months on 3rd/4th December since the 50th Anniversary Virtual Conference, called the Solar World Congress at 50 (SWC50). The celebration has continued for 12 months with:

- Monthly newsletters,
- Webinar on Transforming the Air, Sea and Land Freight Transport Sector; and
- Final webinar titled: *Perspectives on Future Power Grids* will be held on 9th December.

Two key outputs of the SWC50 celebration are the online: [ISES SWC50 The Century of Solar Stories and Vision Booklet](#) and the online [ISES Solar Energy Museum – Past, Present and Future](#)

An updated version of the booklet will be released in December 2021 to mark the end of the 12-month celebration of SWC50. Pioneers that have been submitted since December 2020 will be added to the booklet.

The online museum will continue to be managed by an ISES committee and during 2022 it will be updated.

This newsletter includes:

- *The Start of the International Solar Energy Society (ISES)* that was included in the first newsletter in January 2020 and
- A brief look back at the 1970 conference.

Each month these newsletters have included a brief country overview. The information on each country has been obtained from Volume 1 of the two-volume "*Fifty-Year History of ISES*", published in 2005 and edited by Prof. Karl Boer of the University of Delaware. This final newsletter includes the countries in Volume 1 where the local solar society (or similar) which would go onto to becoming an ISES section started pre 1980 and have not been included in any previous newsletter. These are: Japan, Mexico, Sweden and United Kingdom.

Copies of all previous [newsletters](#) are available from the SWC50 website.

What is SWC50 – The Century of Solar?

In 1970 solar research pioneers met at the first International Solar Energy Society (ISES) Conference in Melbourne Australia. ISES commemorated in 2020 this first Solar World Congress with a special 50th Anniversary Virtual Conference, called the Solar World Congress at 50 (SWC50).

During these past 50 years solar energy has grown from being emerging technologies to a vibrant industry. The Century of Solar highlights the transformation in the global energy sector that has taken place since the first Solar World Congress in 1970 and looks forward to the next 50 years when solar energy will be a major cornerstone of the global energy system. While the focus of the Century of Solar is on the evolution of solar energy, the importance of other renewable energy sources working together to reach the 100% renewable energy world goal will be a central theme.

SWC50 - The Century of Solar is about the people: researchers, industry players, policy makers, and leaders of NGOs and Non-profit organizations who have all contributed to make solar energy the fastest growing contributor to new electricity capacity.

SWC50 Webinar: Perspective of Future Power Grids

This will be held at 9pm GMT Thursday 9th December.

Panellists include:

- Ms Debbie Lew, Associate Director, Energy Systems Integration Group (ESIG) (USA)
- Mr Scott Chapman – Group Manager, New Market Services, Australian Energy Market Operator (AEMO) (Australia)
- Dr. Summer Ferreira Manager, Renewable and Distributed Systems Integration Program, SANDIA (USA).
- Dr. Jessica Lau, Group Manager of the Grid Systems Group within the Grid Planning and Analysis Center, NREL

Register for the event [here](#).

The Start of the International Solar Energy Society (ISES)

In the early 1950's a few visionaries believed that it was time to elevate solar energy, the most important source of life on earth, to become the foundational source of all energy consumed by humankind.

One leader of this group of visionaries was Farrington Daniels, who first suggested the need for an organization to promote the development and application of solar energy and create a solar industry. In 1954, three other pioneers, Henry Sargent, Walter Bimson and Frank Snell created the Association for Applied Solar Energy (ASAFE) in Arizona. This organization was formed to show how modern means for solar energy conversion are feasible, and to provide a stimulus for achieving universal acceptance for modern solar energy conversion, replacing conventional sources of energy.

The first public events of AFASE were a Symposium held in Phoenix and a Conference in Tucson in late 1955. In 1963, AFASE changed its name to the Solar Energy Society. Following its first international meeting, held in Melbourne in March 1970, the name was changed to the International Solar Energy Society (ISES), with the Australian and New Zealand Solar Energy Society (ANZSES) and American Solar Energy Society (ASES) becoming its first two Sections. Several other Sections from around the world quickly followed suit, and ISES soon established a global reach.

The solar pioneers who put into motion the creation of AFASE and, ultimately, ISES advocated for more coordinated and accelerated research in solar technologies, which up to this time was often done as a hobby. This was a prophetic recognition that solar development can no longer be an activity of a few enthusiasts but was to become an absolute necessity to meet the energy needs of the future. The recognition was further motivated by Bell Telephone Laboratories, which patented the first commercial solar cell in 1954.

Over the years ISES became an important forum for solar energy scientists and engineers around the world to communicate their work amongst each other, to check their results with each other, to critically analyse all ideas and findings, and to arrive at a constantly increasing wealth of facts that can be followed by armies of entrepreneurs and industries to provide the means for changing over from fossil and nuclear-drive energy technologies to the benign, renewable and profitable solar technologies of the future.

1970 Solar World Congress

SWC50 celebrated the first Solar World Congress, held 2-6 March 1970. Roger Morse, ISES President 1970-1971, was conference chairman and Frank Hogg, ISES Secretary from 1970-1985, was conference organiser.

62 papers were presented at the conference which was attended by 190 people.

The following is the promotional pamphlet that was produced for the event.



The SWC50 organising committee was contacted by Tom Lawand from Canada who had attended the 1970 conference. Here is a summary of his recollections from the conference:

I remember the fact that it was the first international meeting in Australia dealing with renewable energy. I am sure that Australia today is a more cosmopolitan country than what I recall from 1970.

People were invited to come ahead of the conference and some, like myself, did. Others came on the weekend before the event. For those present before the conference, that weekend was eventful. The Australian organisers were new to organising an international event and there were a few issues. In particular, some arriving over the weekend had wrong paperwork etc and some got lost. Fortunately, a number of drivers were available, and things finally got sorted but that weekend still stands out in my memory of the event.

I and others were invited by Roger Morse to have a section on solar distillation of saline or brackish water. However, the solar industry gravitated to a more industrial type of solar heating applications. This was the early days and our deliberations represented the coming of age of the field of solar energy. Today solar energy is a lot more sophisticated and renewable energy is a real contributor to our society.

I remember the cocktail party that Bill Charters and I held for the leaders from the field and those from the developing areas of the world. It felt nice to commemorate the ten years I had been previously attending renewable energy conferences all over the place, and Australia turned out to be the crown jewel.



Photo of Tom Lawand at a Village Power Conference in late 1990's

Unfortunately, none of the conference committee is still alive and no photos from the first conference were located. However, within the ISES highlights there are photos of some of the early presidents and others in Australia which possibly could have been taken during this conference. These people have left an excellent legacy: the ISES Solar World Congress has been held continually every two years since 1970.

Country Overviews

The following section includes brief country overviews based on material in Volume 1 of the two-volume "Fifty-Year History of ISES". Each country sections will include one pre-1980 pioneer and include a list of all the pioneers from that country listed in the SWC50 celebratory booklet: *The Century of Solar-Stories and Visions*.

Japan

After the Solar Energy Conference held in Phoenix, Arizona in 1955, dozens of solar scientists in Japan began dedicating their continued efforts to carry on research in the field of solar water heaters, solar cells, and high-temperature solar furnaces, working as a national part of the Association for Applied Solar Energy, which subsequently became the present International Solar Energy Society via the Solar Energy Society.

Encouraged by the AFASE World Congress in Arizona, USA in 1955, early activity in the field of solar energy application was inaugurated in 1955 by the Solar Energy Application Committee under the Japan Society of Mechanical Engineers. This was modified into the Japan Association for Applied Solar Energy (JAFASE) in 1961, with almost 100 individual members and 20 corporate members. From then most of its efforts were concentrated on the development of domestic solar water heaters, photovoltaic power generation by silicon cells, and high-temperature solar furnace research.

After the announcement of the establishment of National Sections of the ISES in the respective countries by the board of directors meeting of ISES in 1970, Tetsuo Noguchi organized the formation of the Japanese Section in 1970 which became the Japan Solar Energy Society in 1975. Though membership numbers have varied over the years the Japan Solar Energy Society still operates today. (<https://www.jses-solar.jp>)

ISES Solar World Congresses-Japan

The 1989, the Solar World Congress was in Kobe, Japan with the theme: *Clean and Safe Energy Forever*.

Pioneers from Japan

Though Japan was very active within ISES and conducted solar research from the 1950's unfortunately no pioneers were submitted for the booklet.

Mexico

Almost all archaeological sites of ancient Mexican civilizations—Mayans, Aztecs, Teotihuacans, Olmecs, etc.—have great monuments dedicated to the Sun. An example of these is the pyramid of Tenayuca, which was built for solar worship.

Systematic research in Mexico about solar radiation began in 1911 with the actinometrical measures of Dr. Ladislao Gorczyński, which inspired a second period of research sponsored by the Mexican National Meteorological Service between 1923 and 1928. The data from these campaigns consisted of direct solar radiation measurements, carried out with an old pyrliometer with electric-compensation.

Several years after, celebrating the International Geophysical Year, on June 1, 1957, almost three years after the birth of ISES, the Institute of Geophysics of the Autonomous National University of Mexico (UNAM) started uninterrupted observations of solar radiation in Mexico employing five solarimetric stations located at the Iztaxiatl Volcano, near Mexico City; in San Cristobal de Las Casas, State of Chiapas; in the Atlantic port of Veracruz; and in the city of Chihuahua.

Renewed interest in solar energy in Mexico began in the early 1970s when, at the Institute of Engineering and the Institute of Materials various academics began to speak about sustainability and renewable sources of energy.

The Mexican Section of ISES, called Asociación Nacional de Energía Solar (ANES), was formed on the initiative of a small group of enthusiastic colleagues led by Dr. José Luis Fernández Zayas, Manuel Martínez Fernández, Gustavo Best Brown, Enrique Caldera Muñoz, and Alfredo Sánchez Flores, among others academicians. This small nucleus was formed in 1976 and developed into a Section of ISES in the year 1981.

Since 1977, ANES (<https://anes.org.mx>) has continually promoted renewable energy and each year has held their annual conference known as Semanas Nacionales de Energía Solar.

ISES Solar World Congresses-Mexico

The 2013 Solar World Congress was in Cancun, Mexico with the theme: *Clean and Safe Energy Forever.*

Pioneers from Mexico

From the current edition of the booklet others from Mexico listed in the pioneer's sections include:

Name	Year Started	Research or Industry
Arturo Morales-Acevedo	1985	Research
Eduardo Armando Rincón-Mejía	1987	Research

Sweden

Interest in renewable energy was very high in Sweden in the middle of the 1970s and some researchers working for the Swedish Council for Building Research (BFR) proposed the formation of a solar society and contacted the newly formed ISES Section for UK to find out their experience. These contacts evolved into the formation of a Scandinavian section in 1978. The Swedish section was formally recognized first in 1995.

The Scandinavian section was known as the Solar Energy Association of Scandinavia—SEAS, with national branches in Sweden, Norway, and Denmark. The initial Swedish representatives on the SEAS board were Prof. Bengt Hidemark, Arch. M.Sc. Lars Engström, Prof. Ingemar Höglund, Prof. Eric Ingelstam and Chief Engineer Peter Margen. The secretariat of the Swedish Society of Heating and Ventilating Engineers (VVS-tekniska föreningen or Swedevac in English) accepted to act as the secretariat for SEAS and Manager Ph.D. Ulf Rengholt was the first secretary.

In parallel, a number of Swedish industry representatives formed Svenska Solenergiföreningen—SISOL to act as an industrial trade organisation with Mr. Rolf Mårtensson, technical manager at Philips, as chairman. However, after only a few years the interest was not sufficient to pay for and maintain the

combined secretariat of SEAS or to keep SISOL on track, and the activities of both Swedish organizations faded. In Denmark and Norway, however, the activities continued in national organizations.

In 1986, representatives for the emerging solar energy industry reactivated Svenska Solenergiföreningen—SISOL with M.Sc. Lars Åstrand, managing director of Uppsala Energi, as chairman and Dr. Heimo Zinko, Studsvik Energy, as secretary. In 1987, a new organization, the Solar Energy Association of Sweden - SEAS was formed by a number of university researchers and consulting engineers, using the same abbreviation as the Scandinavian organisation formed in 1978. M.Sc. Arne Boysen, formerly with the Swedish Council for Building Research, was elected as the first chairman.

SEAS is still active today (<https://svensksolenergi.se>).

ISES Solar World Congresses-Sweden

The 2003, the Solar World Congress was in Göteborg, Sweden with the theme: *Solar Energy for the Built Environment*.

Pioneers from Sweden

From the current edition of the booklet others from Sweden listed in the pioneer's sections include:

Name	Year Started	Research or Industry
Lars Broman	1983	Research
Stefan Larsson-Mastonstråle	1986	Industry
Jans-Olof Dalenbäck	1987	Research

United Kingdom

Prior to July 1973, there were eight individual members of ISES in the United Kingdom (UK). At the UNESCO "Sun in the Service of Mankind" Conference in Paris in 1973 there were over forty UK delegates, including Mary Archer and John Page. Mary Archer noted that they were struck by the fact that nobody knew each other. At a business meeting of ISES one evening, she got the approval from the board to form a UK Section. At the time, Mary Archer was undertaking research in photoelectrochemistry at the Royal Institution. She made time to deal with forming the Section and corresponding with a rapidly growing number of enthusiasts. The Preparatory Committee was comprised of John Page (chairman), Derek Bryce-Smith (vice chairman), Mary Archer (Hon. secretary), Ted Jefferies (hon. treasurer), Harry Brown, David Hall, Cleland McVeigh, Dickie Richards, and Steve Szokolay.

The Inaugural Meeting was on the evening of 24 January 1974. By this time there were about 100 UK members of ISES. The section grew throughout the 1970's and possibly peaked in membership in 1981 when the ISES SWC was held in Brighton.

During the period 1982 to 1993 membership in the section decreased but it resurrected again after 1993.

The UK Solar Energy Society still exists (<https://www.uk-ises.org>). The Society provides a forum for all those interested in renewable energy technologies and its membership is drawn from industry, government, academic institutions, architectural and engineering practices and the general public.

ISES Solar World Congresses-UK

The 1981 Solar World Congress was in Brighton, UK with the theme: *Solar Technology in the Eighties*.

Pioneer from UK Pre-1980

This is just one example of a solar pioneer from the UK pre-1980 included in the booklet.

John Page

John Page's career was devoted to developing climate knowledge bridges, believing these bridges had to span between the basic work of meteorological observers and applied work of designers located in global design offices. John, who became Emeritus Professor of Building Science at the University of Sheffield, attended the 1955 International Symposium on Applied Solar Energy in Phoenix, organised by ISES fore-runner, the Association for Applied Solar Energy; John became their first UK member. July 1973 - UNESCO hosted the 'Sun in the service of Mankind'. Forty Brits attended, including John and Dr.

Mary Archer; the idea grew of forming a UK section of ISES, and was launched 24th January 1974 with John as first Chairman. John received the ISES Farrington Daniels Award at the Kobe Congress in 1989 and was active within UK-ISES until his death in 2019.

From the current edition of the booklet others from UK listed in the pioneer's sections include:

Name	Year Started	Research or Industry
John Page	1955	Research
Fred Treble	1959	Industry
David Hall	1963	Research
Ali Sayigh	1969	Research
Robert (Bob) Hill	1971	Research
Bernard McNelis	1973	Industry
John Twidell	1976	Research
Nicola Pearsall	1985	Research
Dipesh Saha	1991	Industry
Eric Hawkins	1995	Industry

Partners of SWC50

ISES acknowledges and is very thankful the support provided by the Platinum Partners: GSES from Australia and NREL from USA; Gold Partner: Smart Energy from Turkey.



Acknowledgements

Undertaking the planning of any conference takes the commitment of many individuals and *SWC50-The Century of Solar* was no exception. The people listed below have all provided their time, skills and knowledge in the development of the booklet, the virtual museum, the virtual conference held on 3rd and 4th December 2020 and the two workshops during 2021. Without them this celebration will not have been a success. As chair of the committee, I thank them all very much and appreciate their contributions.

Planning for SWC50 commenced in 2018 with the formation of the international organising committee:

Arabella Liehr
 Jenny McIntosh
 Paulette Middleton
 Fred Morse
 Monica Oliphant
 Dave Renné
 Geoff Stapleton
 Eicke Weber

In early 2020 Lawrence Kazmerski and Bernard McNelis were invited to join the committee to assist in planning the museum.

Originally the conference was to be held in Melbourne. Although the decision for the conference to be virtual was in March 2020, we still relied on important advice from the local committee:

Steve Blume
 Geoff Bragg
 Brian England
 Renate Egan
 Jenniy Gregory
 Ken Guthrie

Linda Koschier
Monica Oliphant
Kathleen Ryan
Geoff Stapleton

Lastly, I would like to thank all those people who contributed to the booklet and submitted either themselves or others as pioneers.

Geoff Stapleton (Chair of Committee)