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Renewable Energies Partner Israel

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by Hanna Takeuchi and Mirko Macke



On September 25, 2008, the German Near and Middle East Association (NUMOV) – in close cooperation with the German Technion

University. Also present was **Professor Yuval Shoham** from the Technion's biotechnology department, as well as **Professor Aviv Rosen**



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Society organised an economic conference on the future of German-Israeli cooperation in the field of renewable energies. "Renewable Energies – Partner Israel", organised by NUMOV on behalf of the Federal Ministry of Economics and Technology, was held in the very heart of Berlin in the spacious rooms of Haus der Commerzbank overlooking Pariser Platz and directly adjacent to the Brandenburger Gate.

For the conference, NUMOV invited four scientists from Israel, mainly but not only from the Technion University in Haifa. Among them was **Professor David Faiman**. Coming from the field of theoretical physics but with more than 30 years of expertise in the field of solar energy, Professor Faiman is now the director of the National Solar Energy Center of Ben-Gurion

from the Technion's faculty of aerospace. Last but not least, NUMOV also invited **Doctor Yoed Tsur**, head of the Technion's laboratory for electroceramics and nanotechnology.

After a general introduction to the event and some warm words of special welcome for the four Israeli guest lecturers, **Hansgeorg Hauser**, Advisor to the Board of the Commerzbank AG, handed over the chairing of the day's proceedings to **Jochen Feilcke**, Vice-President of the German-Israeli Association and Chairman of the German-Israeli Association, Berlin and Potsdam section.

The first two speakers, **Dr. Rudolf Gridl**, Deputy Head of Division North Africa, Near and Middle

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Renewable Energies Partner Israel

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East at the Federal Ministry of Economics and Technology, and **André Eid**, Commercial Officer at the Israel Trade Center, offered participants a comprehensive overview of the economic framework for business relations with Israel. Dr. Gridl's presentation focused on the state of the Israeli economy and the current state of German-Israeli economic relations. He concluded with the remark that it was imperative for both nations, Israel and Germany, to find a new energy mix and that there could be no better basis for this than the current already strong business contacts between Israel and Germany. For his part, Mr. Eid provided his listeners with some more information on Israeli business culture and how to enter the Israeli renewable energy market. Although almost 70% of Israeli companies in the area of clean technology deal in water purification and other related technologies, Mr. Eid assured the audience that other sectors, in particular solar energy and energy



f.l.t.r.: Hansgeorg Hauser, Advisor to the Board of the Commerzbank AG, Dr. Rudolf Gridl, Deputy Head of Division North Africa, Near and Middle East at the Federal Ministry of Economics and Technology and Jochen Feilcke, Vice-President of the German-Israeli Association and Chairman of the German-Israeli Association

preservation, were expanding fast. One particularly innovative scheme presented was that of the "Better Place" project, which aims to design a nationwide charging grid for electric vehicles. The scheme is intended to initially give people free access to electric cars, which they can then pay for over a series of months in a model akin to the contractual payment system widespread for cell

phones. The costs of charging the cars are supposed not to exceed the average user's monthly gasoline costs. So far both the Israeli and Danish governments have signed agreements to implement the scheme.

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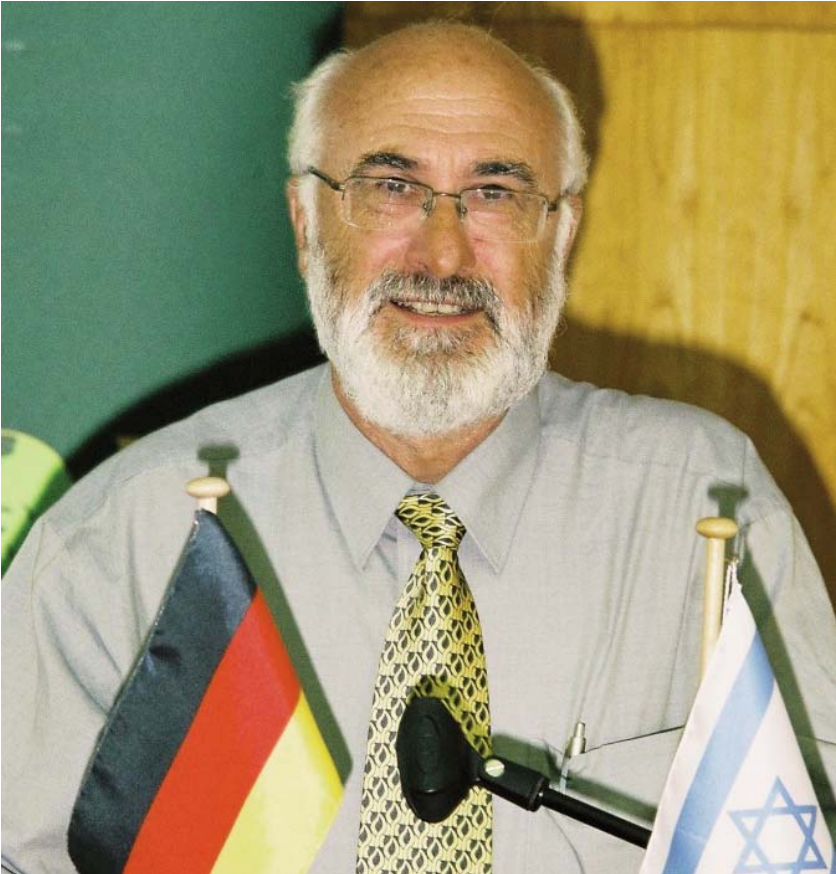
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Prof. David Faiman, Director of the National Solar Energy Centre of Ben-Gurion University

Then, the focus of the speakers shifted from business to the research behind the new technologies coming onto the market. **Mareike Welke** of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), gave an informative presentation on German-Israeli cooperation in the field of energy research. She presented a BMU scheme to finance a series of joint research projects based on cooperation between German and Israeli research institutes and universities. The projects usually run over a period of three years and the next date for interested parties to tender proposals is expected to be 2010. Current projects include a trilateral project involving Israel, Jordan and Germany in research in the field of desalination technology and a cooperative project between Stuttgart and Tel Aviv universities to optimise the performance of wind turbine blades.

Dr. Tsur's presentation, which followed Ms. Welke's, offered eminent proof of the importance of innovative research in a

wide range of areas. Dr. Tsur presented fuel cells as a future integral component in the diverse portfolio of environmentally friendly energy sources needed to face the planet's impending energy crisis. The advantages of using fuel cells are

numerous: they are both more efficient and infinitely less polluting than diesel generators or regular combustion engines in cars. In the even longer term, use of fuel cells would probably resolve the difficulties of energy storage at times of low sunlight and night-time and the consequent need for a liquid energy carrier able to store energy. Professor Tsur's department at the Technion University in Haifa, which is older than the state of Israel itself, having opened its doors in 1924, is currently engaged in research on improving the design of fuel cells to optimise their efficiency. Graduates of the Technion University comprise 70% of Israeli engineers.

The presentation of **Professor David Faiman**, Director of the National Solar Energy Centre of Ben-Gurion University, was an important reminder of the vital importance of effectively combining the two main elements featured in the previous presentations: the role of business and the role of research. Professor Faiman, made the refreshingly frank remark that until renewable energy is as cheap as fossil fuels much talk about it remains mere good-will. He opened his speech with a poignant and far-sighted quote from **David Ben Gurion**, the founder of the state of Israel: "The largest and most impressive source of energy in our world, the source of life for every plant and animal, yet a source so little used by



Dr. Rudolf Gridl, Deputy Head of Division North Africa, Near and Middle East at the Federal Ministry of Economics and Technology



Mareike Welke of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

mankind today is the sun... even after the exhaustion of all the uranium and thorium deposits from the face of the earth, solar energy will continue to flow towards us almost indefinitely." That business and research must work hand in hand to make renewable energy cost-effective and marketable emerged as Professor Faiman's central message. His specific proposal of a technology that may contribute to this admirable goal is the further development of Concentrated Photo-Voltaics (CPV), a technology whereby a relatively low-cost collector is used to collect large amounts of solar energy and the rays are then concentrated onto a small photovoltaic converter. This process means that the sunlight reaches the converter in highly concentrated form so that each photovoltaic cell can produce far more energy than in a conventional photovoltaic system. This vast improvement in the output of each individual PV cell may provide a way to lower costs and improve the efficiency of the process as a whole.

The pre-lunch session concluded with a presentation by the Relationship Manager of the Center of Competence Renewable Energies, Commerzbank AG, **Björn Schilling**, in which he outlined the bank's 20 year successful track record in the renewable energy sector. He attributed

this success to the bank's wide-ranging experience in three key areas of project finance: cash-flow modelling, the procurement of equity investors and obtaining accurate knowledge of the legal framework for investments. In response to a question about debt-equity ratios and many banks' reluctance to invest in slow-return renewable energy schemes, Mr. Schilling reassured his questioner that the Commerzbank's thorough preliminary research and consultation structures for schemes meant that it would always be glad to consider proposals from reliable players with innovative plans and satisfactory insurance cover. Although wind energy is the main area for which

the bank has hitherto been asked to provide credits, Mr. Schilling expressed his confidence that the solar sector, of particular interest for Israel, would see major growth in the course of the next two years. It was clear that although the Commerzbank has not yet been approached with a request for financing schemes in Israel, there certainly exists an interest for such a scheme.

After a buffet, where participants enjoyed the opportunity to continue the morning's discussions and approach the speakers with questions in a more direct way, a series of interesting panel discussions on solar, wind and bio energy followed in the afternoon.

The first discussion group, chaired by Professor Faiman, considered issues related to solar energy. Once the session was opened to questions from the floor the debate quickly turned to quite revolutionary new approaches for producing energy. This radical turn of affairs was prompted by Professor Faiman's opening remark that if China were to freeze its level of fossil fuel consumption at current levels and cover increases in demand by renewable energy sources, it would need to build a solar power plant with a capacity of 1 GW each week. This sobering, or perhaps rather frightening, calculation prompted Professor Faiman to invite the audience to consider the possibility of giant solar power plants in space. On a more down-to-earth level, Professor Faiman stressed



André Eid, Commercial Officer at the Israel Trade Center



Björn Schilling, Relationship Manager of the Center of Competence Renewable Energies, Commerzbank AG

his calculations that a new form of generating solar power – concentrated PV – will be the future of renewable energies.

The session on wind energy began with a presentation by Professor Aviv Rosen from Technion's faculty of aerospace. Very conservative estimates of wind

energy potential in Israel put current capacities at a level of some 600 – 700 MW, but more generous figures range from 1200 to 2000 MW. There are several potential sites for wind farms in the north and south of the country, even though the only currently existing wind farm in Israel is in the Golan Heights, which has a capacity of 6 MW. There are, however,

plans to increase its capacity to 15 – 20 MW. Also, Professor Rosen indicated that there is plenty of interest among Israeli investors in involvement in funding wind energy projects abroad.

The day's seminars closed with a presentation by Professor Yuval Shoham of Technion's department of biotechnology. Although production of bio energy is not all that viable an option in Israel because of the insufficient availability of bio mass, Professor Shoham's presentation clearly illustrated that there are enormous resources of modern technological know-how in this field, which would make this area an extremely profitable one for future German-Israeli cooperation. Professor Shoham's research, for example, focuses on the consolidation of the process for cellulosic ethanol production through the synchronisation of saccharification and cofermentation cellulosic ethanol production.

In the evening, the scientific delegation from Israel was invited to a reception in the permanent state representation of Thuringia in Berlin. There, the group of scientists, accompanied by interested



participants



participants and lecturers in vivid discussion

entrepreneurs from the day's conference as well as by staff from NUMOV, were treated to a warm welcome by Thuringia's state secretary with the ministry of economics, technology and labour, **Prof. Dr. Christian C. Juckenack**.

Prof. Dr. Juckenack used the opportunity to highlight Thuringia's excellent position as a high-tech state within Germany. With a population of approximately 2.2 million, Thuringia is one of Germany's main agrarian federal states, Prof. Dr.


Juckenack remarked. He added, that Thuringia's economically and scientifically potent cities like Jena, Erfurt and Weimar have turned Thuringia into an economic powerhouse within eastern Germany. It comes as no surprise that already now, 15% of Thuringia's energy needs are fed by renewable energies and a major share of Germany's renewable energies industry is located in Thuringia. Thuringia's higher education sector has a high profile of courses not only in general engineering but also in

specialized courses directly aimed at training engineers in the field of renewable energies. In fact, an economic delegation trip from Thuringia to Israel, headed by **H.E. Dieter Althaus**, prime minister of the state of Thuringia, will take place in October 2008 as Prof. Dr. Juckenack explained. Particularly significant is the fact that the focus of the delegation will be on renewable energies. Prime Minister Althaus' delegation trip will accordingly add to the ever-growing ties between Germany and Israel. With the expertise abundantly available in Thuringia as well as the brainpower and



Dr. Yoed Tsur, head of the Technion's laboratory for electroceramics and nanotechnology

economic necessities existing in Israel, both countries will very likely benefit from a cooperation in the field of renewable energies. Professor David Faiman will receive Thuringia's prime minister Dieter Althaus on the testing grounds of Ben-Gurion University in the Negev desert, where there will be additional opportunity to discuss the future of solar energy and its possible transformation into an even more sustainable field of technology.

One thing should be clear, as Prof. Faiman remarked. As long as there is no commercial alternative to oil, solutions in the renewable energy sector will be futile. In that sense, the economic conference "Renewable Energies – Partner Israel" has helped participants to come to a clearer understanding of the current problem while offering new possibilities in many fields of renewable energies, in particular the promising idea of concentrated photovoltaics. 



f.l.t.r.: Marianne Krüger-Jungnickel, Managing Director of Deutsche Technion-Gesellschaft; Helene Rang, CEO of NUMOV and Prof. Dr. Christian C. Juckenack, Thuringia's state secretary with the ministry of economics, technology and labour



Participants of the evening reception at the permanent representation of the Federal State of Thuringia

Spotlight on: Technion – Israel Institute of Technology

Originally founded in 1912, the Technion in Haifa is Israel's oldest and most renowned university. The full name of the technical university is Technion – Israel Institute of Technology. It started fully operating in 1924 and is thus older than the state of Israel. It is situated on Mount Carmel in Haifa. The Technion can be seen as the academic think tank of the country, providing more than 70 per cent of Israel's founders and managers of high-tech industries. Technion's expertise in higher technical education has led to Israel having the second largest concentration of high-tech start up companies in the world right after California's Silicon Valley. Israel, due to its scarcity in natural resources, has a healthy and strong industrial sector, responsible for 26 per cent of its exports, while the larger part of this is made up of high-tech industrial products.

Originally, funding for the Technion came from the German Technion Society, which itself had been founded in 1923 under the name German Committee for the Technical Institute in Haifa. Its first president was Albert Einstein.

A first internal debate at the Technion focused on whether Hebrew or German should be the language used in the lecture halls and laboratories. However, to further bolster an emerging national identity, Hebrew was chosen as the official language of instruction.

Of course, the title of the Technion alludes to the technical orientation of the university, with an original focus strongly on natural sciences; however, engineering, architecture and medicine have all been added.

The Faculty of Medicine was founded in 1969 with a focus on anatomy, biochemistry, biophysics, immunology, microbiology, physiology and pharmacology. However, it is the Faculty of Engineering and Management that was the first faculty of the Technion. Founded in 1958, the approach of the department has been an interdisciplinary one from the onset, combining industrial engineering with management and covering a wide field of activities, as for example economics, behavioural sciences, operations research and statistics.

Now, the Technion is positioning itself on the global map of higher learning institutions by introducing an all-English master course in business administration. Course materials, drills, seminars, slides and documents will all be in English. This was done not only to prepare Israeli students better for the international market, but also to attract foreign students from abroad. In 2008, the overall number of students currently enrolled in undergraduate studies, master degrees and doctoral degrees amounts to 12.132. Today, the Technion boasts 86 buildings and hosts 18 faculties. Accordingly, the list of undergraduate and graduate studies at the Technion includes: electrical engineering, civil and environmental engineering, mechanical engineering, biomedical engineering, chemical engineering, food engineering and biotechnology, agricultural engineering, aerospace engineering, industrial engineering and management, computer science, mathematics, physics, chemistry, biology, architecture and urban planning, science education and technology education, medicine and materials science.

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