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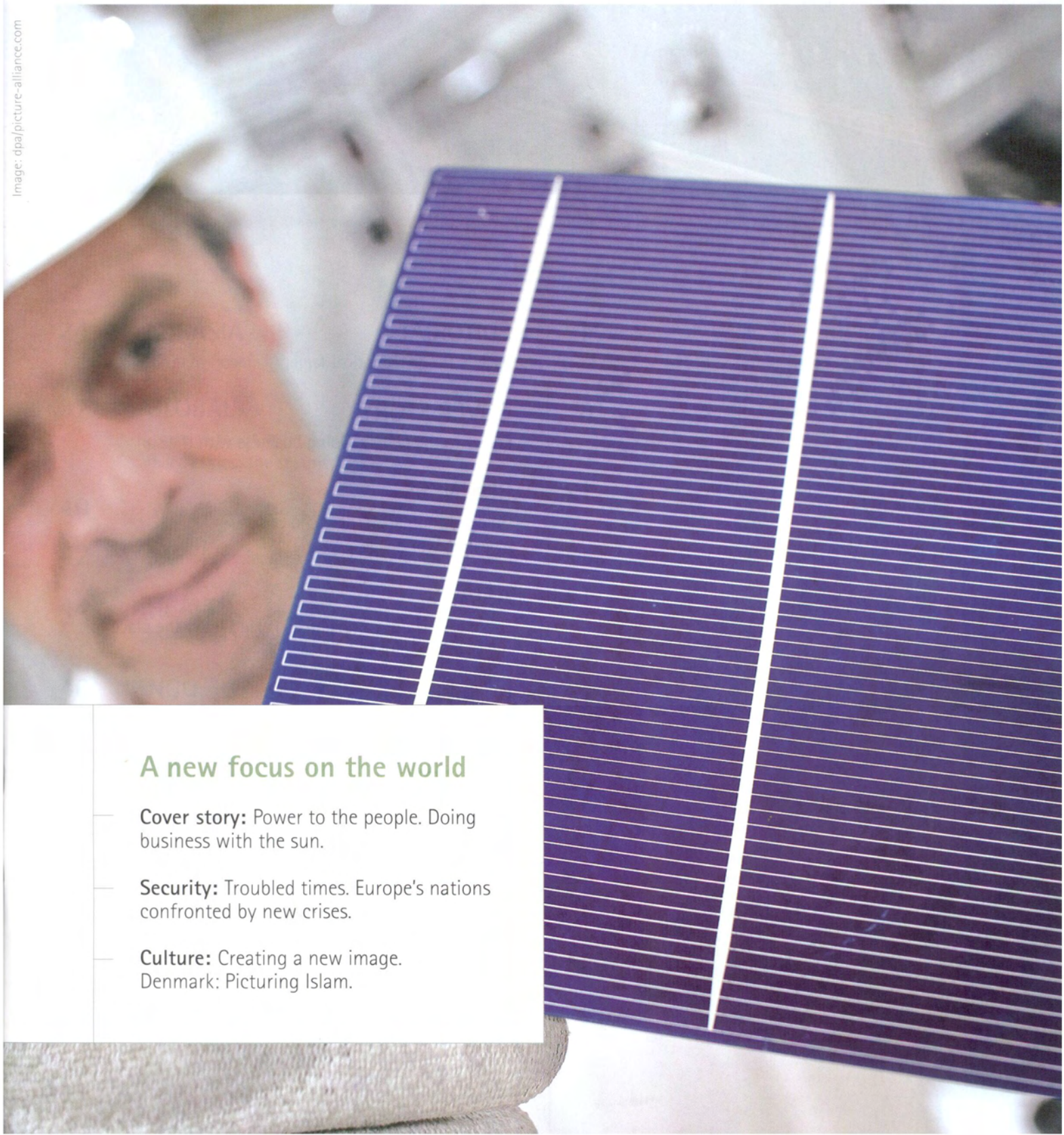

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A new focus on the world

Cover story: Power to the people. Doing business with the sun.

Security: Troubled times. Europe's nations confronted by new crises.

Culture: Creating a new image. Denmark: Picturing Islam.

POWER TO THE PEOPLE

DOING BUSINESS WITH THE SUN

There is no doubt that photovoltaics is already one of the key industries of the 21st century. The whole of Europe has long been hoping for an environmentally sound solution involving the sun, especially since the Chernobyl disaster.

It is a highly attractive prospect, and not only for industrialised countries: given the growing scarcity of energy resources, could solar power be the efficient, eco-friendly energy source of the future? Companies and research scientists are searching anxiously for solutions to the global energy crisis. It is said that by 2030 the world's population will have grown to 9.3 billion. The need for energy, should this forecast hold true, will also continue to rise steeply.

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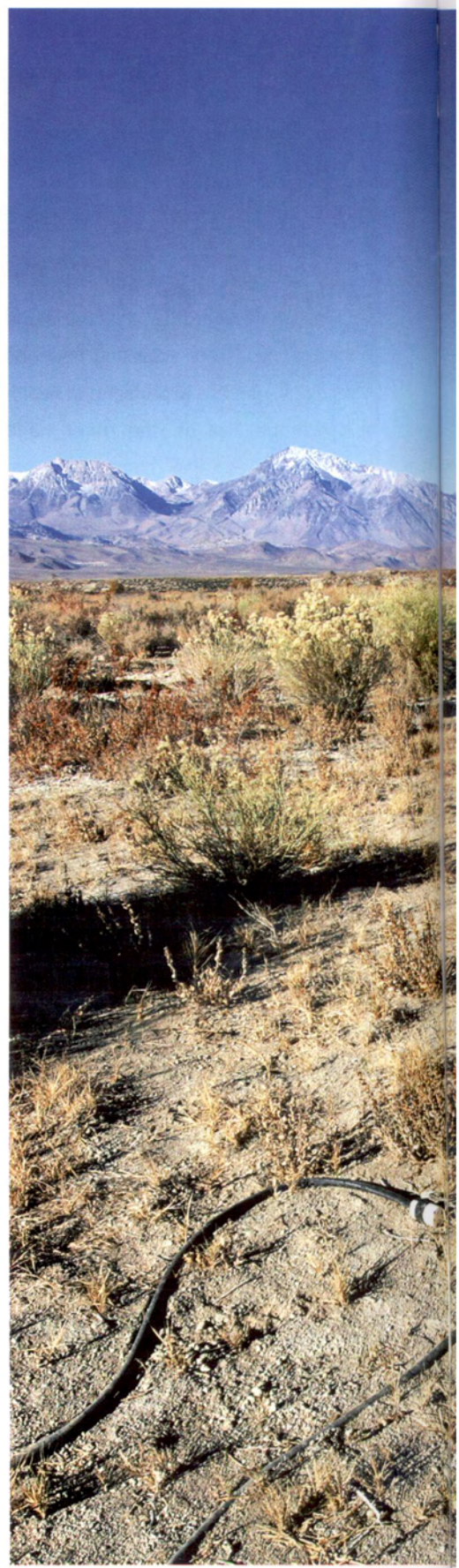
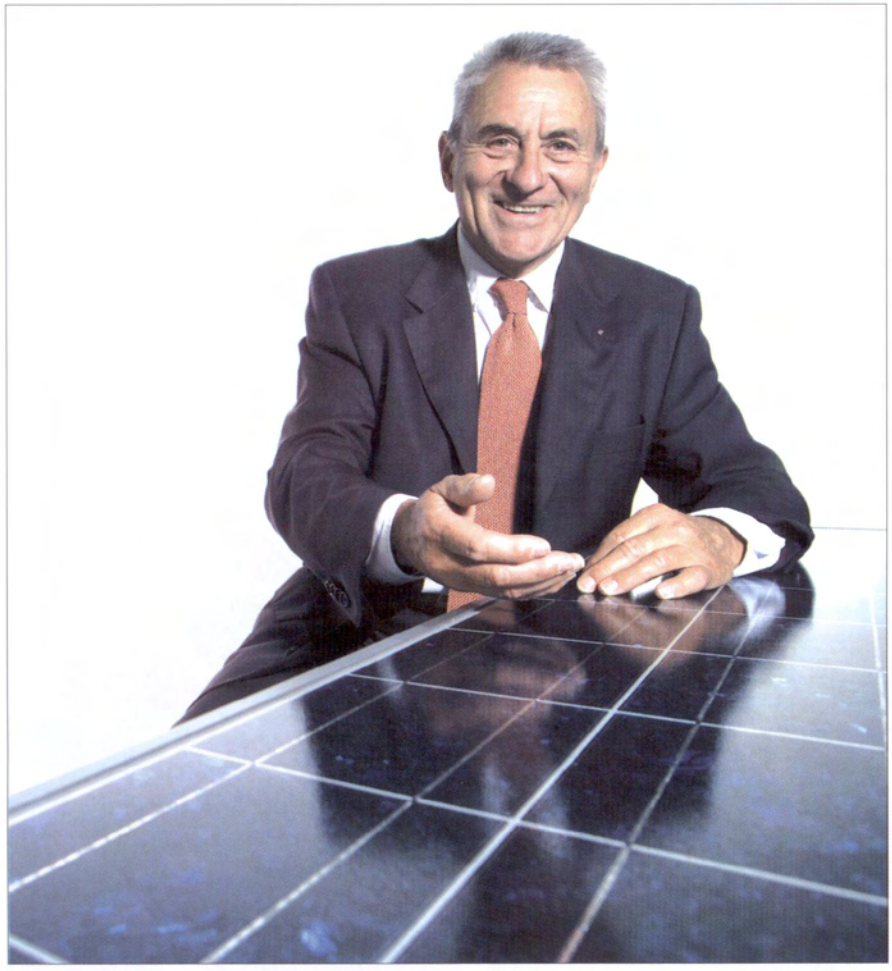
The benefits of solar power are obvious: no emissions, no noise, no waste products – just solar cells quietly soaking up the sun's unlimited rays. Most of these miraculous little cells are currently made from silicon. The modules are almost indestructible, barely need any maintenance, and have a life-span of more than 30 years. And yet hundreds of researchers all over the world are still wondering how to make them even more effective. Solar power systems are not cheap, but if you can finance one you have basically done away with your electricity bills for decades – an attractive concept given the ever-increasing cost of power. Most research institutions predict that solar power generation will be cheaper than other sources of energy almost everywhere in the world by 2020 at the latest.

The solar industry is currently experiencing some remarkable growth. The past three years have seen a doubling of the combined installed power of the world's commercial solar power stations with nominal power ratings of at least 200 kilowatts. The European Photovoltaic Industry Association (EPIA) predicted at the end of 2007 that the global market for solar power systems of all varieties (large-scale photovoltaic plants, private solar power systems and mains-independent systems) would grow by around 40 per cent annually, meaning new installations amounting to around 2.3 gigawatts. In terms of power output, 80 per cent of all large-scale commercial solar power plants today are to be found in Europe.

Its innovative solar power industry has secured the German economy a top position in the international solar rankings, and over





☐ Udo Möhrstedt is one of the veterans of the photovoltaics industry.

recent years has created thousands of jobs. Seventy five German companies with more than 40,000 employees are now producing solar modules, and the industry's turnover of five billion euros exceeded that of the nation's bioenergy industry by more than three billion euros. By 2010 the solar power industry hopes to be exporting much of its output and turning over more than 10 billion euros. And of course, Germany is hoping to maintain its technological lead on a permanent basis.

The German state has supported policies that have helped give this new technology a decisive boost in recent years. One German law guaranteed subsidised, secure purchase prices for a period of twenty years for any solar power producer who feeds electricity into the German grid. The scheme led to numerous investment programmes and funds investing in solar manufacturers. However, the subsidies are to be cut back next year. The industry is now planning new solar power stations, especially in southern Europe, and possibly in other sun-rich regions of the world. In the German solar industry of the future, increasingly fierce competition will lead to hostile takeovers and new joint ventures.

One obvious lead for German solar pioneers is to consider the sun-rich Gulf region as a large future market. The physicist Udo Möhrstedt, for example, recognised the global potential for solar technology right back in 1982. Today, espousing a philosophy of "think global, act global", he heads the Bavarian company IBC Solar AG, which generated sales of almost 600 million euros in 2007. IBC has already installed tens of thousands of turnkey photovoltaics systems all over the world, including large-scale power stations as well as smaller systems for supplying local power to facilities ranging from hospitals to schools and ophanages – and a system for the *Friedenshaus* in Kabul, an orphanage in the Afghan capital.

Asked about the potential for solar power in the Gulf Region, the quick-witted entrepreneur is at first dismissive: "Sadly there has been little movement in the Arab lands." But Möhrstedt does of course see the enormous long-term potential. He describes, for instance, how solar modules on roofs in the Gulf could afford perfect shade while also generating electricity. "Building-integrated photovoltaics," says Möhrstedt, "will have to take root there sooner or later."

Möhrstedt has had contacts in the Islamic world for many years, having travelled in particular in Indonesia and Malaysia. He went on an extended tour of Asia with Otto Wiesheu, then Bavaria's economics minister, meeting Indonesia's Minister of Technology along the way. Before the big Asian financial crash of the 1990s, Indonesia and its responsible minister, Habibi, were willing to develop photovoltaics on a large scale. Today Möhrstedt still speaks with enthusiasm about the idea of creating an effective symbiosis between corporate spirit, high technology and development aid.

And the project was not entirely a failure. His company, together with a number of

collaborators, did supply 100 PV systems to the Surabaya region in the 90s. The Indonesian government had a simple but effective concept which they called "Yan San". For people with a monthly income of 60 dollars they built fish-ponds measuring 80 by 80 metres in size. A jetty was constructed, and a 6 x 12 metre chicken coop was then built on it. In spring the pond was irrigated and planted with rice. After harvesting, the pond was filled again with water containing fry. The chicken waste, which is very rich in protein, fell into the pond and served as a nutrient for the fish, which grew. The smallholders therefore produced chickens, eggs, fish and rice from the concept, and around the banks they planted perennial bananas. A family with four ponds could earn 1,000 dollars a month that way.

A considerable number of these set-ups were established. The watchman's huts and chicken coops were lit using the German company's photovoltaics, and this encouraged the chickens to lay more eggs. In a similar project in Indonesia, German experts helped to equip fishing boats with flexible modules which allowed the fishermen to remain at sea for seven days and thus triple their catch.

Personal contacts were built up during this pioneering period which led to the establishment of a successful subsidiary in Malaysia. It is perhaps precisely this kind of personal contact that is lacking in the Gulf states – especially for small and medium sized German companies. "But," claims Möhrstedt confidently, "solar power systems are suited to Muslim investors anywhere on earth." Solar funds, says Möhrstedt, are also open to investment by Muslims all over the world.

Self-contained solar power systems are

THE INESCAPABLE ARGUMENT

"WE DON'T ACTUALLY HAVE ANY CHOICE"

"We don't actually have any choice in the matter." Dr. Ahmet Lokurlu states the simplest argument in favour of solar power. Several years ago the multiple award-winning researcher left the rarified world of academia to found a company called Solitem. Now, together with his 40 employees, Lokurlu is working enthusiastically on the building of new energy systems. "As a businessman I am of course concerned about profits and earnings," explains Lokurlu, "but what really interests me is making a viable contribution towards solving one of the most pressing problems of our time."

Before he entered big business, the scientist, who is of Turkish origin, worked at the Jülich Research Centre. His area of specialisation is solar power operated systems that generate heat or cold according to demand. The parabolic trough collectors developed and patented by Solitem collect and store solar power. They can be used to heat or cool whole building complexes, hotels, production halls and warehouses. The benefits are not hard to understand. The system not only makes an active contribution towards the preservation of natural resources and the reduction of greenhouse gases, it is also economically attractive.

Now that Lokurlu has left the world of academic research he knows that these alternative systems will only assert themselves if they make economic sense. After some initial sleepless nights, business is now running well. Today many pioneers of solar technology are profiting from the global trend towards renewable energies. Lokurlu is all too aware of the inescapable facts: CO_2 emissions have risen by a massive 15 billion tonnes over the past 15 years. Time is short. The Kyoto Protocol, which aims to limit greenhouse gas emissions, was not even signed by the USA, which is the world's biggest CO_2 emitter. The new superpower, China, does not want to limit its fast-growing CO_2 emissions until it can keep economic pace with the West. "That might already be too late," worries Lokurlu.

New wars are looming over dwindling resources. Now that the summit of oil production has passed, conflict over resources can only increase, Lokurlu claims. But solar power and other renewable energies offer local approaches to the supply of power at last. Lokurlu hopes that a new generation in the Gulf states and Turkey will recognise the industry's potential. "Masdar City, the new eco-city in Abu Dhabi, is a fascinating project," says Lokurlu. Masdar City is intended as part of a wide-ranging renewable energies initiative, and Abu Dhabi will be investing at least 15 billion dollars in it. The idea behind Masdar City is to help renewable energy technologies towards a global breakthrough.

All in all, according to Lokurlu, the cost-to-benefit equation adds up the same way all over the world. Doing business with the sun is worthwhile for everyone.

already assisting people everywhere to survive economically. Known as "island systems", they are sought after in places without mains power – be it the desert, the tropics or the open ocean – or simply where mobility is required. These small, mobile systems can be combined with hydroelectric, wind or diesel generators. In Africa, for example, IBC has developed small solar power systems for houses in rural areas, and photovoltaic pump systems are also used to irrigate fields.

Another example of the solar industry creating global relationships is the Munich-based company KAITO. Unlike other energy resources used on a world scale (such as nuclear power), solar power naturally enables people to build up localised economic cycles. KAITO Energie AG functions as a kind of private power supply company for African countries. It specialises in designing island systems adapted to the particular conditions of rural environments. All of its systems operate using renewable energy.

As well as planning, delivering and operating the systems, the company also runs training courses. KAITO Energie AG's range includes solar charging stations for loan-lamps and mobile phones, and mains-independent village power supply systems. Senegal is home to one of their pilot projects, and they are out to raise interest among local people there but also among investors.

So it is that the solar industry is continuously developing new models that are adapted to the needs of the market. The acute electricity shortage in South Africa has inspired IBC's engineers to develop systems that switch on whenever power is temporarily in short supply. When there is power from the mains, customers can use it – otherwise the solar power generator kicks in. This technology is the latest project from the Bavarian high-tech firm. "We have high hopes for this system," says Möhrstedt, who is already planning his next trip to Africa's sunny southernmost nation.

■ Text Abu Bakr Rieger