



# Silicon in plenty, some metals scarce

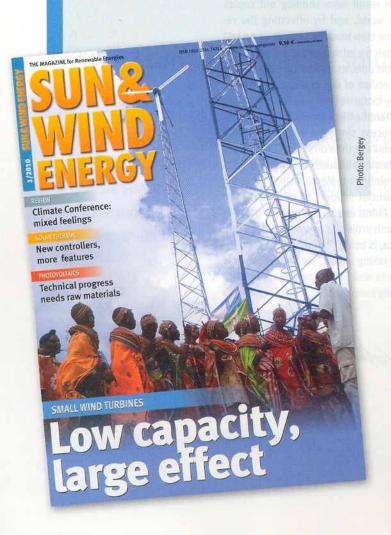
The focus of the public eye concentrates on the technical developments and spectacular concepts of photovoltaics. On the other hand, technical progress is meaningless if decisive raw materials are missing.

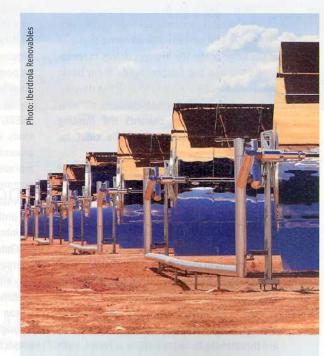
Page 72

# Small turbines with big potential

The market for small wind turbines is characterised by a vast number of manufacturers and products. This puts the focus all the more on quality issues. SUN & WIND ENERGY provides its readers with an overview.

Page 108

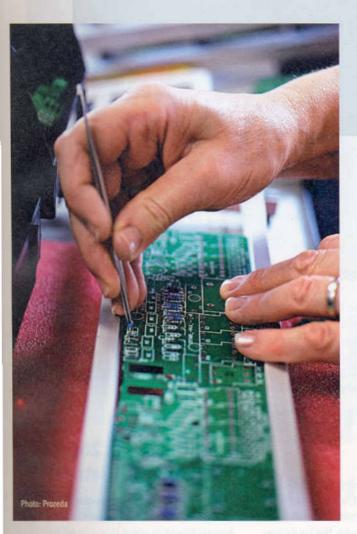




# Country Special Spain: between confidence and standstill

Slow macroeconomic development and the introduction of new legislative initiatives have provoked a dark mood in Spain's renewable energy sector and brought a lot of reservation. But the majority of industry players is meanwhile regaining confidence.

Page 36



# Controllers: more than solar

Solar controller manufacturers have once again been hard at work developing new products this year. The focus was on system controllers that regulate not only complex solar equipment, but also heating circuits, boilers and domestic hot water distribution in multifamily dwellings.

Page 40

# Green energy for the Golden State

The US and the Californian government encourage companies to use waste and waste water for biogas production. Electricity and ethanol from waste are getting popular in the Golden State.

Page 130



## REVIEW

- 6 International news
- Chilly reception at the climate summit
- The Sarasin solar industry report
- 24 Energy Watch Group: growth of renewables
- Intersolar India: premier PV event
- New PV incentives in Greece
- 32 Incentive schemes worldwide
- 34 Solar thermal incentives in California
- 136 International fairs

# COUNTRY SPECIAL

36 Spain: between confidence and standstill

#### SOLAR THERMAL

- 40 Controllers: more than solar
- 54 Market overview drain-back systems
- 62 Ecodesign for heat producers
- SOLTRAIN project in Africa
- Solar thermal products

# CSP

- 68 CSP Industry Report 2010-2011
- 71 Siemens' activities in the CSP sector

## PHOTOVOLTAICS

- 72 Raw materials: silicon in plenty, some metals scarce
- \$\frac{1}{4}78 \quad \text{Overview of lamination and films}
  - 88 Vacuum systems: a controlled nothingness
  - 96 Report on the EPIA Thin Film Conference
  - 100 What's new in thin film
  - 106 New balance of system components

#### WIND ENERGY

- 108 Small turbines with big potential
- 116 New layers for gearboxes
- 118 Superconductors: ice-cold physics
- 120 Interview with Jens Müller, Zenergy Power
- 122 Turkey is waiting for decisions
- 126 CanWEA's ambitious plans

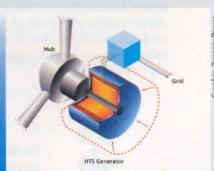
# BIOMASS

- 128 Sustainability of pellet production
- 130 Green energy for the Golden State
- 134 Bioethanol: waste to value

= manufacturing technology feature

## DEPARTMENT

- 131 Order a free copy
- 139 Directory
- 146 Preview and impri



### Ice-cold physics

High-temperature superconductors (HTS) are well on the way to revolutionizing wind and water power utilization. The ultrathin wires conduct electricity entirely resistance-free and with no heat losses. In comparison to copper, they are as light as a feather.

**Page 118** 

Sun & Wind Energy 1/2010 5