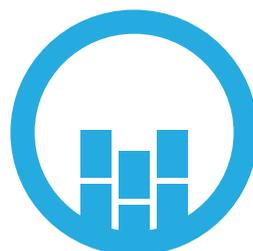


2016 - NUMBER 1

ANALYSIS
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MAGAZINE



Since 2001 CH4, the Italian magazine of gas, has been a point of reference providing information about gas sector also with the issues related about to transportation, distribution and sale, dealing with the current regulatory aspects and development of networks towards interoperability of the IT system and the IT security. It is available, quarterly, as digital format or as hard copy. Each issue is promoted to a mailing list of around 9,000 addresses. Available on subscription only.

Since 2005 the daily news of QE it is a reference point in terms of specialized information of the sector. It has in-depth analysis of oil, gas, electricity, water and environment market; a focus on legislation and tax regulations; an agenda with appointments at the Parliament and a calendar of events relating to energy (more than 10,000 current news every year). Available on subscription only.



**QUOTIDIANO
ENERGIA**



e7 is a weekly magazine about trends of the energy sector. Contains articles, in-depth analyses, video interviews, multimedia content, inquiries and features. It is intended for online and interactive reading on tablet and PC. It is sent out to a mailing list of around 9,000 addresses. Available free.

Canale Energia is a daily centering on business opportunities and new technologies for enterprises and end users who would like to gain specialized knowledge of the energy sector. It has also a monthly newsletter in English "Energy from Italy" and an extract in pdf of the previous thirty days "Il Mensile di Canale Energia" sent out to a mailing list of more than 12,000 addresses. Available free.



canale energia

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PHOTOVOLTAIC, AN INTERNATIONAL METHOD FOR DIFFERENT LOCAL MARKETS

Agnese Cecchini
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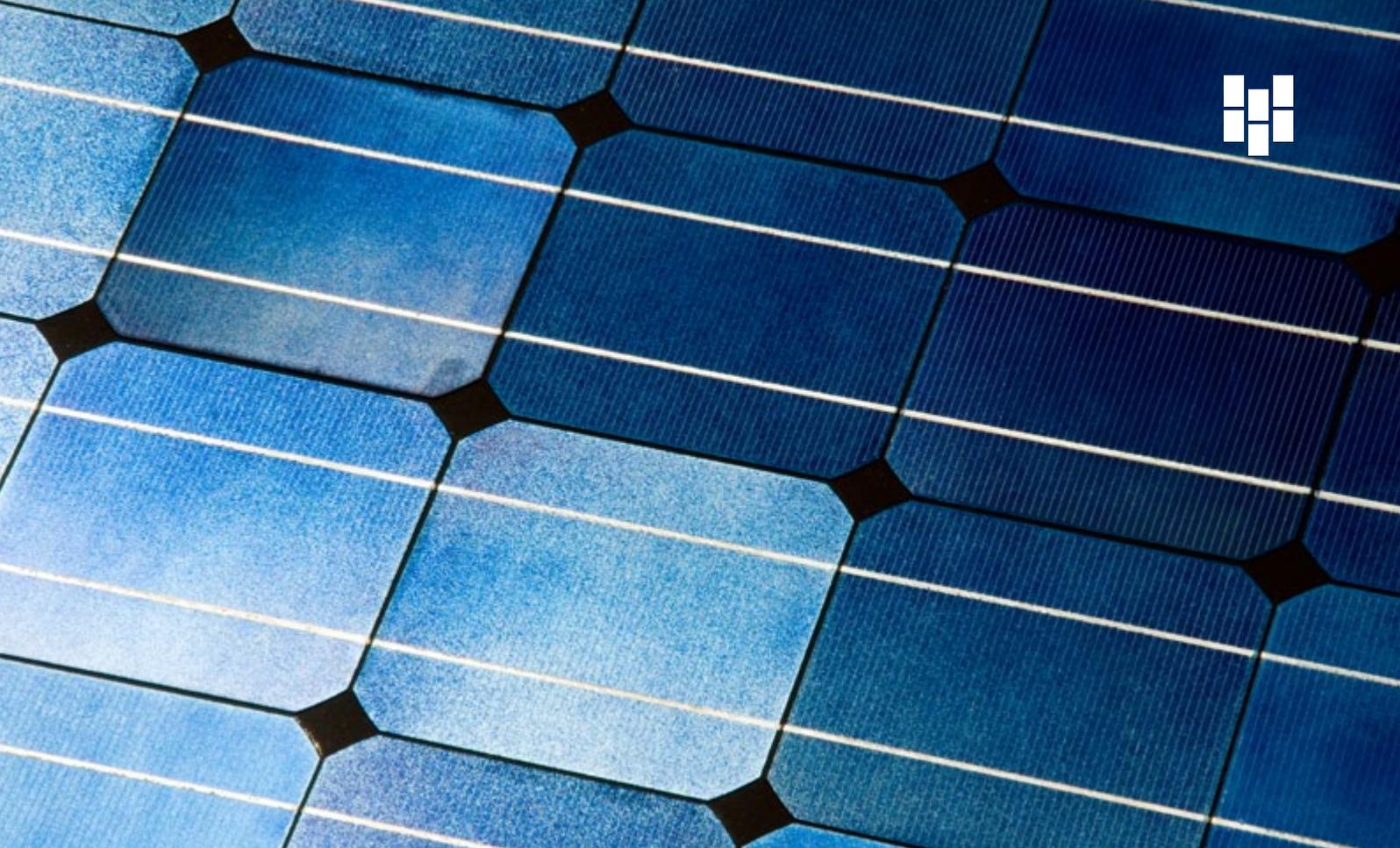
Photovoltaic never ends amazing. Just few months ago the launch of a international area organization: the **Global Solar Council**, assembled by national organizations' delegates composing it.

E7 interviewed **Secretary General John Smirnow**, during the **International Photovoltaic Power Generation Conference & Exhibition** in **Shangai** from 23rd to 26th of May. GIE, editor of this newspaper, is PV Compare Magazine, editorial academic project on the sector, partner (with PV Compare, network international company between operators and end customers).

How did you start the idea of an international photovoltaic association, what did you take as enlightenment?

We all arise like national organizations' delegates. Evaluated the photovoltaic branch development, we believed essential start building a international network able to gather branch needs and value beyond the countries' physical limits.

We were born phew months ago and we represent more than 40 countries in the world, that's the reason why we think it's a value.



Considered your privileged observers spot about the photovoltaic specs, which do you think is the geographic area where you can find most development?

The truth is that our organization is made of different kind and appearance companies, that's why I think every country, from our point of view, symbolize a chance, everyone in its specific peculiarities.

Talking about professionalism profile, which positions do you think will lead the branch?

Given that the branch we stand for is substantial, despite of technology young age, I remember when, less than two

weeks ago in New York, we announced that photovoltaic came to represent around 10 millions job roles, with different professional roles.

Surely we'll see a installation and maintenance' increase; It doesn't mean we won't have a production increase, it will be probably different.

Do you think micro network can symbolize a market' chance?

Undoubtedly there will be a mini and micro nets development, but you have to consider that both in the houses and for utilities there's room for this power source. Therefore I think there are really many sector chances, even different around the world and about the different network perspectives.



CHINA PHOTOVOLTAIC (PV) INSTALLS SURGE THE PAST YEAR 50GW MILESTONE

PV Compare

The china newly install the 7.14 GW capacity of the solar power in the 1st quarter of this year, according to the figures to be released through the NEA (National Energy Administration) of the countries. The collective capacity of the solar power in a country is to be now at 50.3GW. The quarterly outline is up to the range of forty percent than the similar period of the last years. The Frank Haugwitz and the Beijing related founder or the inventor of the solar consultancy of Asia Europe Clean Energy (Solar) Advisory Co. Ltd (AECEA) told, there are more and more to come. It cannot be the surprised one like the high number or the huge amount, due to the traditionally Q1 observes the end of the exclusion of the roll at the whole projects in the year 2015.

Since well, in the September month for the last year is to be a food for





the 5.3 GW of the power was to be adding approved & the deadline in addition to meet the requirement for the past years feed in the tariff is at the end of the June month. The Haugwitz said this statement that other 1GW of the project from high specification at the top runner of the program to be working to similar deadline. While there is no official or personal quote or target for the Photovoltaic deployment has to be released for this year, the Haugwitz was to be noted that the vague and unofficial indication or information of the 15GW is to be mention to the people in the country. In the last year 2015, the country is to install the solar power plant at the capacity of the 5.04 in the Q1 part and the 15.3GW for the total solar power generation capacity for the last year. Noe the demand for the solar power on the Q2 part is to mention or to be indicated.

Of course the country has been already

installed or to be fixed the solar power plant for all over the country in this year 2016. The large amount of investment is to be used to install solar power plant for all over the country. The solar power is one of the most popular and easily getting power. This can be comes from the sunlight. Most of the country can implement the solar power plant to the home, business area and also for the several places of the country. The grid limitation is to be predictably increased among a rush of the solar power capacity to be outstripping was to be rapidly of the improvement of the transmission. The proper installation of the solar power plant help to generate more power within the short period of the time. The Xinjiang is to be reached the fifty two percentages and the Gansu reaches the thirty nine percentages compared to the last year levels of the twenty six percentages and the thirty one percentages respectively.



I-Panda Intro

Found in July 2007, I-Panda is a national key high-tech enterprise, specializing in the production of MPPT solar charge controllers, inverters, hybrid MPPT inverters, PV power systems, UPS and other energy products, integrating R&D, production, sale, and service as a whole. It is a leading manufacturer of energy products in China.

Our Services

Professional technical team provide solution and technical support
Provide OEM and ODM to branded compan

Contact us

Website: www.solarcontroller-inverter.com
www.wipanda.com
Sales: info@wipanda.com Tel: + 86-755-23091101



Solar Charge Controller

- Smart1 12V/24V/48V/96V 20A-60A
- Smart2 12V/24V/48V 20A-60A
- eSmart 12V/24V/48V 15A-40A
- Master 12V/24V/48V 70A -100A



Solar Inverter

- Pure sine wave inverter with battery charge & UPS 350W-20KW
- High frequency pure sine wave inverter 300W-6000W



- 35.000 photovoltaic system's outputs
- 200 subscribed companies
- Hundred thousands users all over the world
- Comparison based on real pv-outputs
- Geolocalization of your potential clients
- Hundreds of reviews
- Articles about your company
- Company card
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THE STRATEGIC IMPORTANCE OF METEOROLOGICAL FORECASTS AND THE EFFECT ON THE WORLDWIDE MARKET

Ciro Borrelli,

Account Manager Energy Italy MeteoGroup

Hardly any economic sector is more affected by the weather than the energy industry – it plays an important role in all areas, from construction and operation to power distribution and supply. Due to the high share of renewable energy involved, weather has a significant effect on availability and price. To some weather is a driver; to others it carries a certain risk. A temperature difference of just one degree Celsius can vastly impact energy consumption, affecting generation needs. Accurate and up-to-the-minute weather analyses are vital for day-to-day operations. Throughout the European summer and winter approximately 70% of the time the weather is influenced by the Atlantic.

This often involves a depression over the Norwegian Sea, the North Atlantic Ocean and the well-known Azores High. The temperature difference is higher across Europe in autumn and winter when storms are more frequent, and extreme temperatures are more likely if the weather has not been directly influenced by the Atlantic.

Westerly weather patterns are easier to forecast as numerical weather models are much more familiar with them. However, in recent years an increase in non-Atlantic dominated weather patterns has created challenges for numerical weather models. Only 25 percent of weather conditions are affected by the Atlantic meaning the



models are not as reliable in predicting these patterns. Therefore a case-by-case meteorological consultancy and long-term experience with atypical weather conditions is very important.

EFFECTS ON THE ENERGY INDUSTRY

The impact of the weather on electricity generation is increasing with the growing use of renewable energy. During winter and summer, temperature is of essential interest and can have a major impact on prices. Wind strength, degree of coverage

and global radiation also play key roles all year round.

In the past, power stations had to generate additional energy to keep up with higher demand during the middle of the day. With direct sunlight this peak can almost be completely covered with solar power, and totally covered in off-peak times.

Renewable electricity generation is dependent on the weather. Weather service companies like MeteoGroup provide a range of forecast solutions for the wind and solar power output of individual farms, portfolios or entire regions, enabling direct



marketing of electricity, a secure network operation and electricity trading.

PAN-EUROPEAN VIEW

The effect the weather has on energy markets also has to be assessed from a pan-European perspective. For example if it is extremely cold in South-Europe, an increase in the use of electric heaters can lead to a sharp rise in electricity demand. Additional energy then has to be purchased and in some cases may not even be available. On the other hand heavy precipitation in Scandinavia can result in hydro power plants running full blast and generating a surplus of energy. Keeping a close eye on weather developments in Europe is extremely important for the early stages of price development in trading activities in Germany for example.

FORECAST QUALITY

Forecast quality has improved significantly over the past few decades due to greater availability of computer power and investment into research and development. Nowadays, MeteoGroup's short-term forecasts (1 to 3 days ahead) are accurate more than 90% of the time. MeteoGroup offers trend forecasts for professional use, such as energy trading. 100% accuracy cannot be guaranteed with these forecasts (up to four weeks in advance) as they are dependent on particular atmospheric and oceanographic conditions. Probability forecasts help clients to understand the confidence in the forecast, but this requires professional training so that the right conclusions can be drawn from the information.

Any forecast over six months in advance is uncertain, but long-term temperature forecast trends up to six months ahead are possible and experienced energy meteorologists are able to evaluate the weather situations and statistics. Ensemble forecasts facilitate the evaluation of the probability of an event occurring and medium term forecasts (up to 15 days ahead) are relatively reliable. The experience and expertise of meteorologists is absolutely key.

The meteorological forecast: How much is strategic for the renewable and distribution sector? How do different markets handle meteorological forecasts? Do you receive more requests from some countries, which are the typical customers?

Weather forecasts are the basis of the energy industry's daily business; forecasts enable preparation of market analyses and trends. Energy companies want to know how much wind and solar power will be generated in the coming weeks, Transmission and Distribution System Operators need to know the amount of electricity that will be fed into the grid and public utility companies want to know approximate gas quantities required by their clients.

We receive significant interest from the following regions:

- Germany (temperature, wind and solar)
- France (temperature, wind, solar)
- Spain (temperature, wind, solar and hydro)
- UK (temperature, wind, solar and hydro)



- Nordic (hydro)
- Italy (temperature, wind and hydro)
- Balkans (temperature, wind and hydro)

Transmission capacity of overhead power lines is dependent on cooling capacity, which is heavily influenced by the weather. MeteoGroup's Dynamic Line Rating (DLR) enables Transmission and Distribution System Operators to stabilise their systems by avoiding and managing congestion. The DLR model is the first of its kind to be powered by a dedicated operational weather forecast model. Several years of development has resulted in a model capable of assessing the probability of weather circumstances along the total length of a power line, and translating this probability into relative line capacity.

How reliable is a meteorological forecast and in which regions is it most accurate?

The reliability of the forecast varies throughout the year, but the forecast skill (with lead times of 2 weeks to 1 month ahead at least) is typically higher in winter and lowest in spring/early summer.

When the weather pattern is either in a persistent 'blocked' pattern (with large high pressure ridges and troughs locked into the same position for at least 1 week) or in a progressive westerly flow with a strong jet stream, the forecast skill is higher. When the large scale weather pattern changes from a 'blocked' pattern to a more progressive state (or vice versa) the forecast skill decreases (for example: the breakdown of a persistent mid-winter cold spell to milder weather can often be difficult to predict in detail with lead times

of >1 week).

Weather forecasts are the best possible way of predicting the future state of the atmosphere, as 100% accurate calculations are not possible. Short-term forecasts (1-3 days ahead) are accurate over 90% of the time; the first forecast week data is very reliable, while the second week should be interpreted as a trend.

Is a forecast realistic or not?

MeteoGroup's forecast consultancy products range from 1-15 day forecasts, to Sub-Seasonal (month ahead) and Seasonal (3 months ahead). They assess the confidence and risk of the forecast and identify regions in Europe where confidence is lowest and where an alternative scenario could emerge. Our forecast reports enlighten users and demonstrate how likely it is that the situation will occur.

For energy traders it is important to understand the meteorologist's individual opinion, as their experience can offer important information which is not apparent from the data. Automatically calculated forecasts merely give from-and-to indications, experienced meteorologists on the other hand can spot details in the overall weather picture that allow them to make more precise judgements.

What are the three rules for a good Meteorologist?

1. Ability to quickly select the most relevant and useful pieces of meteorological data from a large array of graphs, ensembles, charts and tables and make relevant conclusions.
2. Have a good memory for previous



weather events and knowledge of the strengths and weaknesses in the forecast models for certain situations and lead times.

3. Have a thorough understanding of how atmospheric processes work and how they can impact weather patterns over the forecast region.

(Answers above provided by Matthew Dobson (MSc RMet), Senior Meteorologist /Energy Meteorologist at MeteoGroup and Friedrich Föst, Energy Meteorologist at MeteoGroup)

WEATHER SOLUTIONS FOR THE LIFE CYCLE OF RENEWABLE ENERGY INSTALLATIONS

The quality and reliability of weather forecasting determines the profitability and effectiveness of any renewable energy project. MeteoGroup provides the most accurate, up-to-the-minute weather analyses, ensuring output efficiency and cost management are optimised.

MeteoGroup's wind power forecasts are individually tailored to the needs of power generation companies, grid operators and traders, and can be produced for individual wind farms, portfolios or entire regions.

To optimize power forecasts, MeteoGroup include client information such as LIDAR or SCADA, taking into account downtime, for example when a turbine is undergoing maintenance and is not working at full capacity. Our site-specific forecasts at ground and hub height level and our severe weather warnings ensure safety is maintained at all



times. With over 25 years of experience in marine weather forecasting, MeteoGroup has gained in-depth knowledge of the market, enabling us to develop forecasting solutions that respond directly to the industry's needs.

As Europe's largest private weather service, MeteoGroup invests in the world's leading weather models and our own in-house meteorological research and development ensures we provide the highest level of excellence in forecasting.

MeteoGroup is one of the world's leading global full-service B2B weather solutions businesses, operating across all sectors where weather impacts business decision making. The company provides innovative tools and support to assist our customers in making critical decisions more effectively to create value, save costs, minimize risk and manage environmental impact. Its team of expert and experienced meteorologists is available 24/7 to deliver the highest quality analysis and advice. With over 450 employees operating in 17 offices across the world, MeteoGroup is in an ideal position to provide local services to a global audience.



NEW SCENARIOS ABOUT PHOTOVOLTAIC THIRD GENERATION

Technological transfer action of the CHOSE

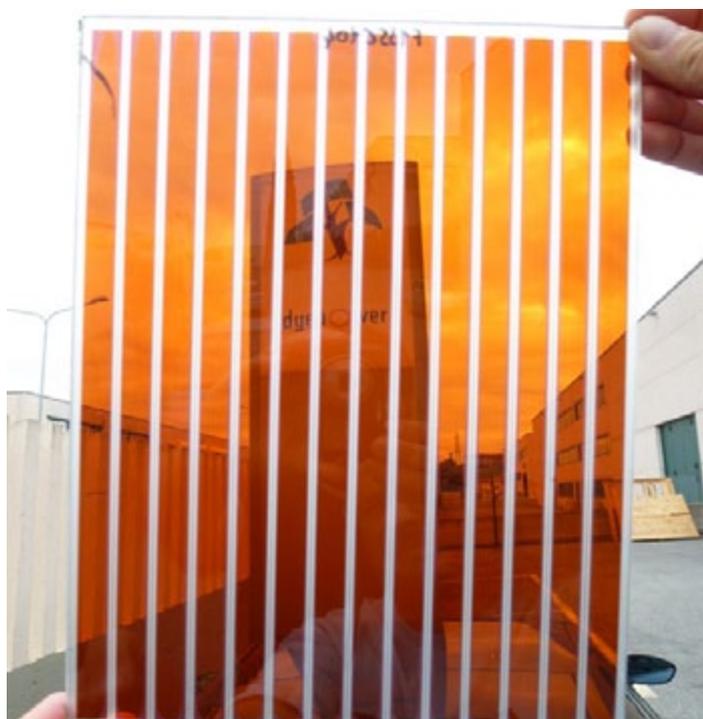
Andrea Reale e Sabina Simeone

CHOSE - Center for Hybrid and Organic Solar Energy

Department of Electronic Engineering

University of Roma Tor Vergata

The CHOSE was created in Rome by the University of Tor Vergata cooperating with the Lazio region in 2006. This major center brings researches about photovoltaic technology handling with printing typical techniques. CHOSE takes care about Dye Sensitized Solar Cell [DS(S)C], solar polymer cell (Organic PV – OPV) and especially about Perovskite solar cell, whom are the most advanced frontier of the third generation photovoltaic. CHOSE seeks to increase the efficiency, the stability and the duration of these technologies in addition to develop industrialization method doable. Process material in the form of answers can be printed with





different procedures (silk-screen printing, spreadable, spray, ink-jet, etc), on different kind of surfaces like glass, plastic or metal, both flat surface and bend, whether firm or pliable. Using nanostructure material allows to achieve optimized performances for the most different applications, from the integrated photovoltaic in architecture (Building Integrated PV - BIPV) to plastic upholstery for greenhouses, to indoor home automation applications and the Internet of Things – IoT. It's possible to obtain high efficiency whether or not solar bearing and weather trend of light both

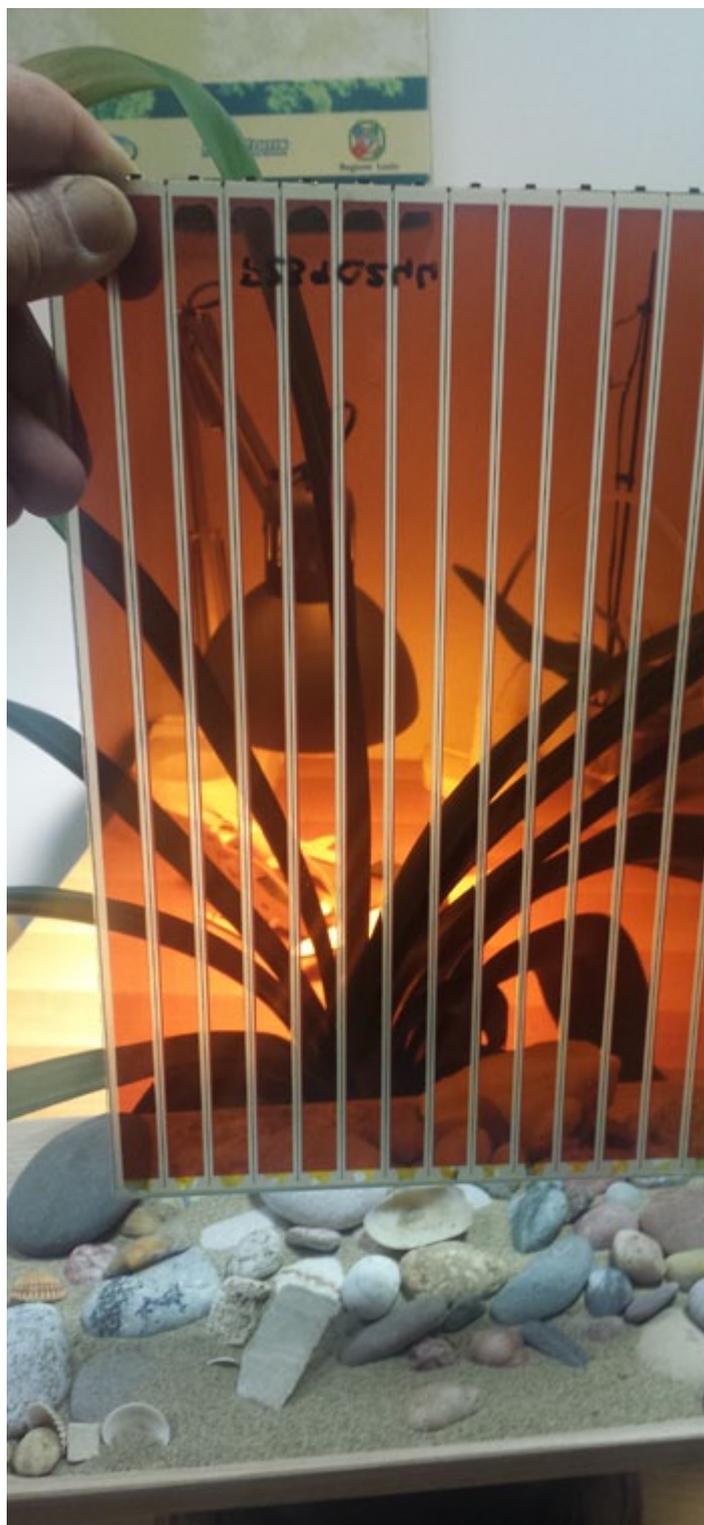
direct or scattered, interior space and even with artificial light. The materials' low price, the eco-sustainability, the methods and materials' choice for the industrial competitiveness and the easy use through printing technique, make these technologies potentially shattering for an extended product of photovoltaic selection.

Talking about DSC technology: “architectural world showed to understand the huge potentiality of the original photovoltaic technology evolved by CHOSE – comment Andrea Reale, Electronic

Engineering department of Roma Tor Vergata University – Our University is in the game to show how applied research can find the relationship points with the community, following the leader lines of the so called university’ third mission, after didactics and research”.

“La Vie en Rose” project made by LPA-Lazzarini Pickering Architetti office in Rome, shown at the exhibition “Rooms. Other inhabit philosophy”, at Furniture Fair, inside the XXI Milano’s Triennial, in effect offers sustainability’ topic and perform technical and planning photovoltaic DSC chances. Architects describe their project this way: ” Glass sheets from pink to Bordeaux red define the least living cell walls that examines the architectural, technique, appearance and ethical potentiality of the new systematic photovoltaic. Print surfaces with a deep red photovoltaic ink produce energy if displayed to direct, indirect or artificial light’s sources, activating a virtuous loop between use and energetic production”.

The DSC are photovoltaic cells pigment’s sensitized, whom are plants’ photosynthesis process inspired. The organic photovoltaic cell uses a mix of materials where a pigment absorbs solar radiations and the others pull out the charge to produce electricity. So named Dye Sensitized





Solar Cell was created in 1991 at Losanna's Polytechnic University by professor Michael Gratzel using a photosensitive pigment of chemical synthesis. It's also possible to obtain pigments from blueberries, the anthocyanins, and more pigments have been created lately from the eggplant's rind, red orange, spinach and seaweed too.

Andrea Reale carries on saying: "CHOSE brought DSC technology to industrial pilot's line by the Dyepower university-industry consortium. Third generation photovoltaic (after the crystalline Silicon and the thin film FV) shows huge innovation basics, both for the chance to use production's methods used by the printing industry, and using it in high surplus value context (BIPV, indoor, greenhouses, portable electronics, etc)".

CHOSE drives forward international research, participating the most important European projects about the new materials for the FV, like the Perovskite and the Graphene, taking part the Graphene Flagship, one of the most important ventures of the UE in technological area. The peculiarity of the research made in Tor Vergata is the wide area engineering, and CHOSE holds the efficiency world record for wide area modules based on Perovskite. One more important CHOSE' know how tile is the spray technology for the organic polymer photovoltaic (OPV).



FURTHER THAI FOSSIL FUELS CASH INVESTED IN THE ASIA AMONG BANPU 75.8MW CHINA PURCHASE

PV Compare

The Thai fossil fuel corporation, Banpu said that it has acquired 75.8MW of the Solar Photovoltaic (PV) plants in the China as the company track the goal of creating the renewable resource for twenty percent of its power making business by the 2024. The report for the 1st quarter financial status, Banpu in the 2016 that was the coal removal as its business said that it was creating its 1st investment in the China's Photovoltaic (PV) market. The Subordinate Banpu Power Public Company (BPPC) has to be signed purchase and sales rights bods for the 4 projects which is linked upon to 75.8MW of the total power generation between them. The projects in the Shandong, Eastern border YS (Yellow Sea) between the Korea and China. The Banpu have to be operated the coal fired

linked power plant and heat of that its own seventy percent on the region as 2006. The 4 Photovoltaic plants in the Shandong have to be financed with the combination of the debate and an equity, calculated to the cost of US\$93 million (RMB604 million).

The agreement ruins the subject to the successful connection to the grid by the center of the 2016 year. The Chief Executive Officer of the Banpu Mr. Somruedee Chaimongkol told this statement that the entry of the solar market of the China was to be a part of the company conditions to invest or spend in the marketplace with the attractive growth of the full government support and the fundamentals. The Chaimongkol that the project to be built on the recent experience



of the Banpu in the Photovoltaic market in the Japan. Where the corporation is the reportedly considering the further or additional investment of the US\$170 million and in the China's conservative power sector. The Banpu and the other main Thai fossil fuel corporation has to be mainly concentrated on the increase of their interest of the Photovoltaic market of the Japan in the past years. Last year 2015 June the Banpu pledged to spend 200MW of the renewable resources for five years. With the adding of the solar system in the Shandong & the conclusion of Shanxi Lu Guang project of 1,320MW in the year 2017. The Banpu is to track its generation capacity of the power to the 4,300MWe by the year 2025, which around twenty percent could be the renewable energy based told by Chaimongkol.

COAL MARKETPLACE CONDITIONS DISPIRIT PERFORMANCE AS POWER GENERATION IS ON A RISE

An unfavorable coal marketplace conditions in the global to be crashed the financial result of the Banpu's in the Q1, the corporation said. The (Earnings Before Interest, Taxes, Depreciation And Amortisation) EBITDA for a quarter was to be down for the twenty one percent on equivalent time of the last year because of the less price of the coal and it was to be flat quarter on quarter. The EBITDA power generation is same as the last year percentage. The income of the fossil fuel is an increase the future years in the US and the company also provide the shareholders to purchase the stock from May 23.

Canale Energia

Canale Energia is the free daily web site of Gruppo Italia Energia focused on smart city, energy efficiency, sustainability and green architecture addressed to industry specialists and users who are approaching the world of energy. The web site is structured in text and video interviews, news, analysis and different sections made by the partners of the sector such as trade associations and consulting firms. It's also a media partner of several European initiatives and international events, so is developing an english section of his publication.



Newsletter

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PHOTOVOLTAIC, HOW TO TAKE CARE OF THE UNDERPRODUCTION OF THE INSTALLATIONS

Agnese Cecchini
canaleenergia.com

Photovoltaic is an industrial sector that has seen Italy and EU together in a deep revolution about networks. By now this branch is mature and is looking to its position in the market. We talk about it with the **Eng. Eleonora Denna, Product Marketing Manager Omron**.



*Eng. Eleonora Denna,
Product Marketing Manager Omron*

In EU most of the business associated with the photovoltaic is connected to operation & maintenance enterprises; do you think the technological up-grading can make the difference about that?

Today in EU the operation&maintenance holds a big part of the photovoltaic market. The topic is important because the installations are older and have problems with productivity through the years. This phenomenon is basic even in Italy, where they followed “the rush to the installations”, considering less important the quality of the parts. That produces a phenomenon, that happens even in Italy, called the under performance production dued to PID. We are dealing with a decline generated by the potential and it hits straight the photovoltaic system modules. It’s about a enough devious phenomenon that appears after several years and reduces the performances



very deeply: by the Fraunhofer Institute may reach even the 70% It all starts with a minimal reduction, about the 20-30% and, once started, it grows gradually. This phenomenon is often untold because we have not yet a watchful body about that and because frequently the PID's cases are covered by legal nature confidential regimes.

Is it possible to avoid this phenomenon?

Yes, it's necessary to install on the basis of some shrewdness the system, taking measures about the system respect for the potential. De facto installing modules serially, the potential difference of each added. In this way the working point is chosen by the inverter. Usually we find inverter without transformers, therefore the heart point in the string is halfway and has a part of modules with negative

potential applied and a part with positive potential. Someone noticed that the part of the negative potential's string degrades faster compared with the positive potential. This structure is made like this to simplify the inverter's work, that transforms the entering energy to put it in the network.

To prevent this structural degeneration is possible to install all the panels' string in positive and put on the floor the negative pole. To realize this structure we studied a non inserted transformer system. The technology we use is participating in our inverter and has been developed in our research center in Japan (zig zag connecting chopper converter) and allowed us to avoid that the described phenomenon, exactly the PID, activates, but not only. In fact, with this technology



with a PID box added we can stop the degradation and “to treat” the panel’s electrons leak. At the end of the treatment and with our inverter we refresh a total efficiency of the system that will work productively without the help of the “PID box”.

Consider that sometimes the substitution of the inverter inside the system with our inverter isn’t affordable for the economy of the system, because we work on 10KW; in this event we suggest to install the PID box, that will stay everlastingly, because we can’t install the inverter with a exhaust on the floor for the negative pole, thus to correct and stop the system’s decay.

Is there any efficiency’s drop inserting this kind of inverter?

The transformation’s efficiency is 97,5% while the typical efficiency of the inverter with a transformer is around 94%-95%

How can we verify the system’s situation and understand that is “healed”?

The plant’s heart is the inverter: it has the intellect to ensure that the flow is always under control and it’s supervised to measure in real time the production of energy.





PHOTOVOLTAIC MOBILE: AN ANSWER TO “OFF GRID PEOPLE” NEEDS

Prof. G.Ravagnan

Ordinario f.r. di Microbiologia

Università Ca' Foscari - Venezia

The technological evolution of sustainable energy production' system from photovoltaic configures like an epochal event in lacking or deficit electric production areas, where only small, polluting fossil fuel's electrical generator satisfy basic needs, both residential and farming-handcrafted production.

The technological evolution consists in using light (1,5 kilos/sm instead of 10 kilos/sm) photovoltaic panels on polymeric supports easily transportable (folding) and performing accumulators with batteries coming from electric vehicles development: this is the way to use the collected energy with low voltage, allowing use of alternating current's utensils and in the night hours, with lots of benefits in life quality of small (families) or medium communities groups (villages,

schools, health facilities, etc.).

The widespread supply of electric energy allows, moreover, to treat the water and sterilize it with ultra filtration systems and make it suitable for sanitary (for cooking, for hygienic, for agriculture, etc.) without risk of polluted water use related disease; now are available qualified, small and affordable systems.

Making available permanently for 24 hours discontinuous solar energy and satisfying basic needs with small sustainable systems may be a revolution that will develop microeconomics without environmental impacts due to fossil fuel power unit massive' spread.

About these chances we shall do a cultural concentration and let people



understand that cost of photovoltaic system with storage devices, called Sun Cube (SUN), are fully repaid by the avoided cost of buying fossil fuel - 1.5 ton/year/kw – saving more than 2 tons/year of CO₂ emission; the “off grid people” size – over 1.500 million people - is so big that’s easy to understand both economic and environmental global advantages for these peoples’ sustainable development, and they have drinking water and energy – to communicate too – as essential needs.

Carbon Finance, with NGOs for development, have to look for and demand support tools to broadcast these technologies that may, besides, create a professional satellite activities for selling and maintain Sun Cube devices; widespread renewable energies willingness may be one of the chances to make economically supportable agricultural projects that may have, with traditional energetic price, an objective limit for their total fulfillment, consistent with Paris COP21 EU directives.



SUN CUBE in operating mode thru Solar Panels



ALICE SPRINGS: THE SOLAR CITY AT CENTER OF THE FOSSIL FUEL DISPUTATION

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The Renewables has been incorrectly blamed for the number of faint in the Australia, which was really a result of damaging of the generator of the fossil fuel and network equipments. In January, in a middle of the heat wave, a light wave went out Alice springs city, in a red center of the Australia. Like the small blackout in the South Australia 2 months before, the power loss was primarily blamed on the Renewables. In the South Australia country, it was to be deemed by anti-renewable entrance hall to be a fault of excessively or lesser amount of the wind power. In the Alice springs, a finger was to be pointed at the heavy penetration of the solar power, according to the TGCE (Territory Generation Chief Executive) Tim Duignan quantity to the 10.6MW or 40% of the average yearly demand, the heaviest of the all grid areas in the Australia.

At the end of the result not wind either solar was to be blamed. The collapse was faults of the failing network tool or equipment & their extensive duration was a fault of the generators of the fossil fuel is to be fixed upon to restart. Even though the argument in the Alice spring was not to be ended. Within the week of the collapse, the monopoly supplier, Territory Generation announce it should spend the \$75 million for replacing the whole capacity of the aged Ron Goodin Power Station among there is no longer term energy ideas or plans, no consultation and there is no consideration of the renewable. The alternative choice like battery storage. The debate mainly highlights there are lots of wrongs in the energy policy and embedded prejudices of an incumbent. The local service started off said that local area network cannot support the raising of the solar power, in



spite of the federal government report that explains perfectly opposite.

The Tollner in Germany said that the increasing of the renewable energy resource share to forty percent, is one of the unstable system in the Europe. The opposite will be true, since the graph shows the grid consistency in the Germany is much higher compared to the other type of countries. The real fact among the increase in the Renewable. The Tollner asserted that among the twenty percent of the renewable input is to be ruled of the sum.

This can handle among the experienced and the professional technicians maintain the with it for 24 hours in a day and seven days in a week. The Alice Spring solar city, which is extensively pompous thing for a city. There are 2 rooftop network to the seven hundred at the result of the program of the solar city. Now there are 1100 will be there. The local area grid now has 4.1MW from solar power station of the Uterne and approximately 1MW for a local area airport. The solution to a budget crippling subsidy salaried to agree the large amount of the fossil fuel related grid.



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