7th World Congress and Expo on
Green Energy
&
3rd World Congress on
Wind & Renewable Energy
June 24-25, 2019 Barcelona, Spain

Keynote Forum
Day 1

Mietek Bakowski

RISE Acreo, Sweden

Status and prospects of adoption of WBG power devices-Swedish perspective

SiC Power Center was founded in 2012 by RISE Acreo, Swerea KIMAB and the Royal Institute of Technology (KTH) with financial support from Sweden´s Innovation Agency (Vinnova) and Swedish Energy Agency. SiC Power Center is a platform for cooperation between industry, research institutes and academia within the whole value chain from material to systems. Leading industrial companies within automotive, energy systems and power electronics in Sweden and other research institutes have been members of the Center. The center has ambition; (a) to explore the potential of WBG electronics for future applications, increased competitiveness and sustainable development by joining resources, competences and knowledge, (b) to promote the introduction of WBG power electronics in products and applications where high energy efficiency, compactness and higher operation temperature provide significant system advantages and (c) to inspire and involve others. The main objectives are increased adoption of WBG devices in power electronic products and applications for energy savings, environmental gains and competitive advantages for Swedish industry. Since last year the name of the center is WBG Power Center and it has at present 16 companies and research groups as members. RISE Acreo is host of the center. RISE Acreo and WBG (SiC) Power Center organizes yearly conference (ISICPEAW, IWBGPEAW) with focus on power electronic applications of WBG devices. The conference has been organized since 2007 and this year changed name to SCAPE.Overview and highlights of the selected industrial and research projects financed by the Swedish Innovation Agency (Vinnova) and Swedish Energy Authority programs and by SiC Power Center will be presented. The selected examples demonstrate revolutionary gains in energy savings in WBG based power electronic energy conversion systems for a variety of applications. A summary of related projects in the areas of material, technology and device R&D in Sweden, will also be given.

Biography

Mietek Bakowski is a Senior Expert and Manager of WBG Power Center at RISE Acreo. The main focus of his research, development work and teaching has been physics of operation, design, technology, reliability and applications of power semiconductor and MOS devices. He is author and co-author of over 130 publications and 25 US patents. Since 2012, he is a Co-Organizer of ECS Symp. GaN and SiC Power Technologies and was an Associate Editor of a Special Issue of IEEE Trans. Power Electronics and a Special Issue of IEEE Trans. Electron Devices on "Wide Bandgap Power Electronics" published in May 2014 and February 2015, respectively. He is a Member of International Advisory Committee to New National Program, Smart Power Semi-South Korea, 2017-2023, and a Co-Chair of SiC Materials and Devices group for International Technology Roadmap for Wide-bandgap Semiconductors (ITRW) initiated by IEEE Power Electronics Society (PELS) 2015. He is a Lead Organizer of the International Workshop on Applications of WBG Power Electronics, SCAPE.

Notes:

Esam Elsarrag

beGREEN Global, UK

Revealing the development and performance of an innovative, smart solar-enhanced air conditioning system for all climates

The need for moving away from traditional energy sources and to find alternate energy sources is undoubtedly one of the primary objectives for a sustainable progress to humankind. The design and construction of buildings consumes respectful amount of energy that in certain circumstances and regions impacts countries' peak demands. Worldwide, there is a rising concern on the current rate of energy consumption due to air conditioning especially in hot countries such as the Gulf States where the energy consumption due to air conditioning equates to about two thirds of the domestic electrical loads. Considering the wider impacts of carbon emissions on our climate, there is an urgent need to reduce these emissions therefore, effective energy efficiency solutions are crucial in order to achieve this vital goal. This paper presents the impact of climate change on human comfort, the challenges in air conditioning system design, the green features and the performance of a solar enhanced air conditioning system designed for all climates. The smart air conditioning system is fully integrated and can provide comfort for all climates including those with extreme weather conditions. The superefficient air conditioning system can provide can reduce the energy consumption between 30 to 80% of the energy consumption based on the design conditions and the application compared to conventional systems.

Recent Publications

1. Abubaker Y, Elsarrag E, Alhorr A and Onsa M (2018) Characterization of photovoltaic modules under arid environments. Journal of Energy and Power Engineering 12:44-56.
2. Elsarrag E, Elhoweris A and Yousef A (2017) The production of hydrogen as an alternative energy carrier from aluminium wastes. Energy, Sustainability and Society 7(1):9.
3. Elsarrag E, Igobo ON, Alhorr Y and Davies P A (2016) Solar pond powered liquid desiccant evaporative cooling. Renewable and sustainable energy reviews 58:124-140.
4. Abubaker Y, Elsarrag E, Alhorr A and Onsa M (2018) Characterization of photovoltaic modules under arid environments. Journal of Energy and Power Engineering 12:44-56

Biography

Esam Elsarrag is the CEO of beGREEN Global-UK. He has about three decades of experience in higher education and building industry, gained through his work in the Middle East and Europe. In additional to his work as a Consultant, he continues to be active in scientific research in buildings and energy. He has developed sustainability standards to the Gulf Region including unique applications such as air-conditioned stadiums and railways. He has trained thousands of professionals in Sustainable design and standards. He has delivered lots of speeches and invited lectures. He has specialist expertise in sustainable developments standards and design, energy efficiency, renewable energy, energy modelling and building services.

7th World Congress and Expo on
Green Energy
&
3rd World Congress on
Wind & Renewable Energy
June 24-25, 2019 Barcelona, Spain

Keynote Forum
Day 2

7th World Congress and Expo on **Green Energy**

&

3rd World Congress on **Wind & Renewable Energy**

June 24-25, 2019 Barcelona, Spain

Manfred Mauntz

cmc Instruments GmbH, Germany

Deep online analysis of dielectric parameters for lubricants with an innovative oil sensor system: Identification of critical operation conditions of industrial gearboxes for reduction of failure rates and live time enhancement

The requirements in the energy sector for large industrial gearboxes as installed in wind turbines or in gas/diesel engines rise. Ever more flexibility at a maximum operational reliability and a long life time are required of them at the same time, so the requirements for the oil and the oil condition monitoring grow correspondingly. This presentation provides information about a novel online oil condition monitoring system to give a solution to the mentioned priorities for the energy sector. The focus is set to industrial gearboxes but the possibilities in monitoring of related applications are also addressed. The online oil sensor system is based on the measurement of the components of the complex impedance of oil, in particular, the components conductivity kappa, the relative permittivity epsilon r and the temperature T, which are acquired independently from each other. Based on a very sensitive measurement method with high accuracy even small changes in the conductivity and dielectric constant of the oil composition can be detected reliably. The new sensor system effectively controls the proper operation conditions of industrial gearboxes and in test rigs for electrical vehicles, where lubrication and isolation of the oil has a double function. 24/7 online monitoring of the asset during operation enables specific preventive and condition based maintenance independent of rigid inspection intervals. Corrective procedures and / or maintenance can be carried out before actual damage occurs.

Biography

Manfred Mauntz received his diploma in Engineering from the University of Kaiserslautern in 1982, earned a doctorate with honors in Engineering from the University of Siegen and is a Professor at the Szent Istvan University (Faculty of Mechanical Engineering) in Hungary. He has worked extensively in the analytical and process instrumentation industry. At AEG AG, Germany he was Head of the Department protection and control. He is the founder, CEO and Head of Development and Research of cmc Instruments GmbH which develops and manufactures analytical and measurement systems.

Abhishek Asthana

Sheffield Hallam University, UK

Techno-economic feasibility study of waste to energy tri-generation plants in developing countries

Under the "Clean India Mission", the Ministry of Urban Development (MoUD) of India is investing US$ 9 Billion to clean up 75 largest cities in India. Waste to Energy (WTE) plants will be a key to its implementation. A new state-of-the-art WTE plant in New Delhi is planned for this purpose to set an example for other cities to follow. Delhi generates 8,400 tons per day (TPD) of Municipal Solid Waste (MSW), which is expected to double in the next 15 years. The current capacity of waste processing plants in Delhi is only 8,000 TPD. It is estimated that by the year 2050, Delhi would require 100 km_2 of landfill area, which is 7% of the total land area of the capital for waste disposal unless a new WTE plant is commissioned. The existing landfill sites in Delhi have dangerously exceeded their capacity already. WTE projects have been running successfully in many countries but have produced only mixed results in India and have often been plagued with controversies. This is due to various technical, financial, environmental, political and social factors involved. Hallam Energy at Sheffield Hallam University was commissioned by the Government of India, to conduct a detailed independent investigation into the techno-economic feasibility of such a WTE project in Delhi. The goals of this study were (i) to make an informed decision on whether the proposed WTE facility for Delhi will be technically and financially viable, and (ii) to gain a reasonable understanding of the costs and resources involved in this investment. This work looks at the various challenges associated in setting up WTE plants in developing countries and address key findings including: The capacity of the plant; The capital cost; The electrical power output; Land area requirement; Site selection for the plant; The choice of processes and pre-processing of the feed; Feasibility of tri-generation or CHP; Choice of technologies and equipment; Financial models; Emissions of pollutants and the lessons learnt from past WTE projects in India.

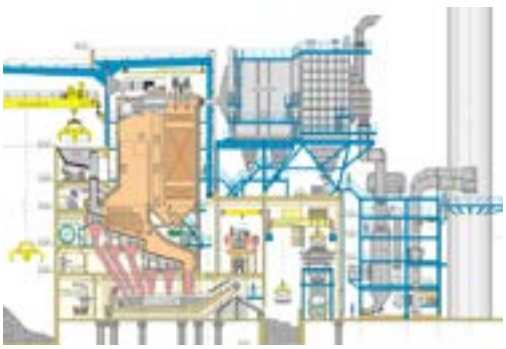

Figure 1: Proposed waste to energy plant

Biography

Abhishek Asthana is the Director of Hallam Energy, the energy research group at Sheffield Hallam University. In 2009, he co-founded Hallam Energy and has led and delivered 55 projects of industrial energy research, consultancy and knowledge transfer. He has won £3.5 million funding for SHU, co-authored 37 scientific papers and 1 book, invented 4 patents and developed 5 commercial software packages. He is the Course Director for BEng Energy Engineering and MEng and BEng Chemical Engineering programs at the university. In 2015, he has established a Doctoral Training Alliance (DTA) in Energy to train PhD students conducting energy research. The DTA has now grown to 120 PhD students and 200 Supervisors across 19 British Universities in the University Alliance, UK, and he is currently the Deputy Director of DTA. He also recently led the alliance to success in winning €6.5 Million funding from the European Commission's Marie Skłodowska-Curie Actions COFUND to further expand the DTA program.

Notes: