



# 3<sup>rd</sup> ANNUAL ASIA PACIFIC DISTRICT COOLING CONFERENCE

26 – 28 AUGUST 2014 | KUALA LUMPUR

## HONORARY ADDRESS



**Y.B. Datuk Seri Panglima Dr. Maximus Johnity Ongkili**, Minister, **Ministry of Energy, Green Technology & Water, Malaysia**

## SPECIAL ADDRESS



**Ith Praing**, Secretary of State Energy, **Ministry of Energy & Mines, Cambodia**

## SPEAKERS

**Y.B. Datuk Seri Panglima Dr. Maximus Johnity Ongkili**, Minister, **Ministry of Energy, Green Technology & Water, Malaysia**

**Dato' Zohari Bin Haji Akob**, Deputy Sec General (Energy), **Ministry of Energy, Green Technology & Water, Malaysia (Invited)**

**Ith Praing**, Secretary of State Energy, **Ministry of Energy & Mines, Cambodia**

**Mohd Sabri Zain**, Managing Director, **Tenaga Nasional Engineering Corporation (TNEC) Malaysia**

**Megan Houghton**, CEO, City Smart Project, **Brisbane City Council, Australia**

**Zakaria Bin Hasan**, General Manager **Gas District Cooling, Malaysia**

**Jimmy Khoo**, Managing Director, **Singapore District Cooling, Singapore**

**Foo Yang Kwang**, General Manager, **Business & System Development, Singapore District Cooling, Singapore**

**Ali Al-Najim**, Deputy Chairman, **Saudi Green Building Council, Saudi Arabia**

**Ahmed Abd El- Ghani Metawie**, Chairman, **Allied Consultants Ltd, Egypt**

**Anand Rohtagi**, Vice President, **Synergy Consulting Infrastructure & Financial Advisory Services Inc, India**

**Anil Vijayachandran**, Associate Director, **Synergy Consulting Infrastructure & Financial Advisory Services Inc, India**

**David Sweet**, CEO, **World Alliance for Decentralized Energy, USA**

**Chua Keng Seng**, Technical Director, **Intrix Renewable Sdn Bhd, Malaysia**

**George Berbari**, CEO, **DC Pro Engineering - UAE**

**Hseih Min Loy**, Associate Director, **Faithful + Gould - Singapore**

**Mohd Elmi Anas**, Director of Energy Management & Industry Development, **Energy Commission, Malaysia**

**Ir Arul Hisham**, Principal, **Ahar Consultants, Malaysia**

**Narilla Hasbullah**, General Manager, **Cyberview Sdn Bhd, Malaysia**

**Sinsike Sakaguchi**, Energy Analyst, **Bloomberg New Energy Finance, Japan (invited)**

**Dr Tin Tai Chow**, Associate Professor of Division of Building Science and Technology, **City University of Hong Kong, Hong Kong (invited)**

## ADVISERS

Professional Industry Adviser, **George Berbari** CEO, **DC Pro Engineering - UAE**

Professional Industry Adviser, **David Sweet** CEO, **World Alliance for Decentralized Energy - USA**

Scientific Adviser, **Emeritus Professor Francis Emile Meunier** - Consultant - Climespace / Director (Cnam) - **Industrial Cooling Institute, Paris - France**

Technical Adviser, **Chua Keng Seng**, Technical Director, **Intrix Renewable Sdn Bhd - Malaysia**



**SITE VISIT: KLIA 2 DISTRICT COOLING PLANT**



**PRE - EVENT NETWORKING SESSION**



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Global Information

It is with pleasure that Fleming Gulf presents the Regions premier event- **3<sup>rd</sup> Annual District Cooling Conference** to be held in **Kuala Lumpur from the 26<sup>th</sup> to 28<sup>th</sup> of August 2014.**

District Cooling has taken Asia and Middle East by storm and is being promoted as a way of addressing energy shortages, energy demand and global warming. In Asia Pacific & Middle East, the shift in the electricity demand and supply balance, has paved the way for deployment of District Cooling which allows the Utilities & Developers to balance power supply and effectively manage usage. According to a recent report by Asia Development Bank (2013) based on the technical structures and potential Malaysia has the potential to triple the scale of its district cooling industry to a built-up capacity of 575,000 tonnes of refrigerants from the current approximates of about 200,000-tonne capacity. ADB currently invests more than US\$2.3bil (RM7.29bil) per year in clean energy projects across Asia. However, there is still a low level of awareness in countries like Thailand and the Philippines that have huge opportunities to develop this further,"The district cooling industry is gaining traction in South-East Asia. It estimated that US\$11bil of investment in end-use efficiency is needed by South-East Asian countries by 2020 to meet their national targets for energy efficiency and greenhouse gas emission reductions.

This event brings together distinguished personnel from Utilities/Ministries, Developers, Contractors, District Cooling Providers, Consultants, Master planner developers and technology leaders to discuss and benchmark crucial issues on how to seize new opportunities and make it effective for the region. The agenda is packed with in-depth real life case studies of ongoing and completed projects, keynote presentations and interactive panel discussions.

## BENEFITS OF ATTENDING THIS EVENT

- **Learn** about business collaboration opportunities for District Cooling in Asia Pacific.
- **Get updates** on current projects and challenges/benefits of implementing new technology
- **Benchmark** against regionally successful projects
- **Understand** the requisite technical and policy conditions to create a conducive environment for District Cooling growth
- **De-mystify** the regulatory and contractual requirements,
- **Learn** the latest views and forecasts of key industry speakers along the energy value chain
- **Seize an opportunity** to network with leading industry experts in an appropriate forum

## WHO WILL YOU MEET?

This is a 2014 must attend event for District Cooling Providers, Master Developers, Master Planners Contractors,, Consultants & Government stakeholders.

**JOB TITLES INCLUDE:** CEOs, Project Managers, Directors and Heads of: Infrastructure & Planning, Development, Technical Services, Facilities, District Cooling and Sustainability Heads of Distribution, Heads of Innovation, Asset management, Operational excellence, Senior Technical Advisors, Heads of Electrical Projects.

**THOUGHT LEADERS FROM:** Specialised Research Institutes, International Organisations, Local Governments

**SELECTED TECHNOLOGY VENDORS AND SOLUTION PROVIDERS**

**8:30 Registration and coffee****8:50 Welcome note from Fleming Gulf****8:55 Opening remarks from the Event Chair -  
George Berbari, CEO, DC Pro Engineering, UAE****9:00 Honorary Address**  
**Y.B Datuk Seri Panglima Dr. Maximus Johnity Ongkili, Minister,  
Ministry of Energy, Green Technology & Water, Malaysia****9:15 Special Address**  
**Ith Praing, Secretary of State, Ministry of Energy & Mines,  
Cambodia****OVERVIEW – Government & Regulation**

- 9:30 KEYNOTE PRESENTATION: District Cooling - Growth in DC projects in Asia Pacific**
- Overview of DC growth in Asia Pacific
  - Opportunities and challenges to the government
  - Enabling two-way exchange of information between consumer and utility
  - Outlook of DC market
- Mohd Sabri Zain, Managing Director, Tenaga Nasional Engineering Corporation (TNEC) Malaysia**

**10:00 REGULATION – Open Market Forces or Government Regulated Market**

- Policy changes at national, state & local levels
  - Current political initiatives
  - Creating a 'district cooling' regulatory Structure
  - Role of regulations and standards in implementing a complete DC solution
  - Overcoming the conflict of interest between consumers and DC provider - the role of government in resolving the conflict
- Mohd Elmi Anas, Director of Energy Management and Industry Development, Energy Commission – Malaysia**

**10:30 The Role of Urban Planning in Aiding District Cooling Projects**

- Sustainability & Environment : Malaysia's Challenges & Accomplishments and focus on the Future
- Urban planning infrastructure
- Sustainable land use planning in a changing climate
- Sustainable development

**11:00 STRATEGIST'S PANEL DISCUSSION – District Cooling Regulation & Guidelines – The Role of Government Authorities**

- Existing law and planned changes to aid the development of District Cooling

**11:40 Morning coffee and networking****REGIONAL OVERVIEW - Lessons From Abroad****12:10 District Cooling - Dispelling Fundamental Myths and Misconceptions".**

- What is needed, how to get it and what to do with it?
- Project architecture – Layout & Implementation
- Existing project performance in DC implementation
- Pilot projects
- Lessons learned

**Jimmy Khoo, Managing Director, Singapore  
District Cooling, Singapore****12:40 INTERACTIVE PANEL DISCUSSION - Split A/C and Variable Refrigerant VRV or VRF the biggest competitor to district cooling and have dominant market share of the A/C industry in Asia Pacific**

- What are the reasons?
- What are the future development for Split A/V and VRV? How refrigerant control will impact their usage?
- How can district cooling compete and what are the enabling mechanism such as utility rates, government planning and future visions, laws and regulations, etc.

**MODERATOR : George Berbari, CEO, DC Pro Engineering, UAE****13:10 Prayer Break & Luncheon****COMMERCIAL OVERVIEW****14:10 Exclusive Learnshop: Assessing the Benefits and Limitations of Thermal Energy Storage**

- The value of load shaping
- Net capital cost reduction with TES
- Efficiency and emission benefits of TES
- Strategies to Thermal Storage close to the plant
- Thermal Energy Storage Options : design & practise
- TSE water, shallow geothermal, sea water usage in district cooling
- Thermal storage Stratified chilled water vs ice balls or external ice melt. Benefit and applications.

**Senior Official, Cryogel (Official Thermal Energy Partners)****14:40 JOINT PRESENTATION: Evaluation of District cooling as a Feasible, Affordable and Attractive Option for Private Developers: A Transactional, Commercial and Financial Perspective**

- Commercial drivers of district cooling as an attractive alternative for private developers: Commercial and financial feasibility analysis
- Impact of nature on development on the tariff rates, e.g. geographical area, load ramp up, project type – residential versus mixed land use
- Understanding commercial feasibility and bankability of district cooling projects; structuring the transaction to optimize the tariff rates
- Impact of project financing on tariff and its role in enhancing the attractiveness of district cooling
- Making private developers bankable as concession grantors: structuring transactions with multiple customers as off-takers

**Anand Rohtagi, Vice President, Synergy Consulting Inc – India &  
Anil Vijayachandran, Associate Director, Synergy Consulting Inc, India****15:10 Assessing Risk in New District Cooling Projects**

- Risk Profiling
- Risk Assessment
- Risk Planning
- Loss Prevention

**15:40 Afternoon coffee and networking****LOCAL OVERVIEW****16:10 CASE STUDY : Development of the Malaysia's First Satellite Remote Charging 100,000Rth Chilled Water Storage System at GDC Plant #4 at Lot 4U2, Precinct 4, Putrajaya Core Island**

- Chilled water capacity planning
- Techno-economic solution
- Performance evaluation

**Ir. Arul Hisham bin Abdul Rahim, Principal, AHAR Consultants –Malaysia****16:40 District Cooling from Plant Owners Perspective**

- Strategies to manage demand response
- Exploiting growth opportunities & highlighting cost saving advantages of adopting DC
- Overcoming challenges with pricing structures

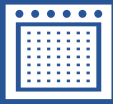
**Zakaria Bin Hasan, General Manager, Gas District Cooling, Malaysia****17:10 District Cooling from Building Owners Perspective – Facility Management Point of View**

- Cost benefit analysis between own chillers and district cooling connection
- Actual Case study – conversion of own chillers operated building to DCS; outlining the actual impact in terms of cost of operation and Life Cycle Costing (LCC)

**Narila Hasbullah, General Manager, Cyberview Sdn Bhd – Malaysia****17:40 INTERACTIVE PANEL DISCUSSION - Exclusive Developers Panel Discussion**

- Issues and challenges in adopting District Cooling
- Review of existing market structures (shortcoming and advantages)

**18:20 SPECIAL INVITATION TO GALA DINNER**

**8:30 Registration and coffee****8:50 Opening remarks from the Event Chair - David Sweet, CEO, World Alliance for Decentralized Energy - USA****SUSTAINABILITY OVERVIEW : "The supreme reality of our time is ...the vulnerability of our planet"****9:00 Is DC Aiding or Destroying Sustainable Asset Management (District Cooling Key Components)**

- The new language of design and infrastructure challenges
- District cooling key components enhancements & adopting criteria suitable for the Asian environment
- Centrifugal water cooled chillers current and future development (Efficiencies, refrigerant, variable speed, etc.)
- Absorption chillers ( ultra-high efficiency Triple effect and high efficiency double effect). Their ability to operate on waste heat or renewable thermal solar and deep geothermals.
- Cooling tower development.
- Soft starters and variable speed drives.
- Automation, instrumentation and SCADA development.

**George Berbari, CEO, DC Pro Engineering - UAE****9:30 Do Green Buildings Compliment DC ? What is the Way Forward for Next Generation Development?**

- District cooling as a key element in green developments
- The growth of smart cities and DC
- Smart growth and sustainability for economic success
- Ensuring that design is both economical and green

**10:00 A move Towards Integration of RE Sources - Balancing Energy Demand & Energy Supply**

- Review of existing RE and suitability to energy grid
- What sources may be used in Asia Pacific, wind, solar, geothermal or biomass?
- What will the relationship be between renewable energy and district cooling ?
- Two separated industries as it is today or is district cooling capable to integrate renewable and storage technologies?.

**10:30 Integrating Water Treatment Plant to DC Systems**

- Integrated DC plants – project architecture and commercial benefits
- Modelling of Integrated Urban Waste water System
- Assessing the challenges associated with developing an integrated modelling approach for predicting & monitoring water quality & quantity

**11:00 Morning coffee and networking****11:30 Evaluating the Benefits of Co generation and Tri generation**

- Conditions suitable for adoption
- Strategies to optimise use of generation products
- Natural gas or bio mass as fuel source
- Co2 emissions with co- gen and tri- gen

**12:00 INTERACTIVE PANEL DISCUSSION : District Cooling Operators Challenge**

- Attracting & retaining key human capital for District Cooling operations
- Assessing the various pricing mechanisms
- Strategies to remain attractive, competitive and profitable

**12:40 Prayer Break & Luncheon****13:40 The Need for District Cooling in Future Urban Planning**

- Benefits of District cooling systems in displacing / Reducing peak electric power demand
- District cooling as a key element in green developments
- District cooling is becoming an essential part of urban development, as the demand for cooling and energy-efficient solutions is growing

**Ali Al-Najim, Deputy Chairman - Saudi Green Building Council - Saudi Arabia****14:10 The Selection and Operation of Heat Exchangers for the District Cooling System**

- Plate Heat Exchangers
- Possibilities in material selection
- Details for successful construction
- Optimising heat exchanger efficiency

**14:40 Triple Effect Technology**

- Assessing the economic viability of adopting Triple effect Technology
- Evaluating the effect of availability of gas and gas pricing to project excellence

**David Sweet, CEO, World Alliance for Decentralized Energy - USA****15:10 Afternoon coffee and networking****15:30 EXCLUSIVE LEARNSHOP: In Depth Understanding of Delta T Issues in Relation to Air- Side System design & Performance**

- Fundamentals of Energy Transportation and Energy Transfer.
- The two important perspectives of the Energy Equation: DC Provider's & End Users'
- The Performance of the Heat Exchangers
- The Performance of the Cooling Coils and how they affect Delta-T
- The importance of flow control in End Users' buildings
- The Psychometrics of achieving designed Room Conditions
- Air-side Systems that are favourable/unfavourable for District Cooling Plants

**Chua Keng Seng, Technical Director, Intrix Renewable Sdn Bhd - Malaysia****18:00 Closing remarks from the Event chair**



## Anand Rohtagi, Vice President, Synergy Consulting Inc, India

Anand has worked extensively across the Middle East, South and South-East Asia on project and structured financing, corporate financing, private placement, management consulting and M&A for infrastructure sector projects ranging from IPPs, IWPPs, IWSPPs, airport concessions, renewables and district cooling and heating. Over the previous nine years, he has worked on more than 40 assignments of gross transaction value in excess of US\$ 27 billion. Anand's district cooling experience spans across more than 30 transactions which have involved raising debt in excess of US\$ 1 billion in aggregate, among other mandates. He led the team that closed the first ever non-recourse district cooling project finance transaction in the GCC region. Over the last 5 years, he has built the largest district cooling focused financial advisory team in the region, composed of 8 highly accomplished professionals with extensive experience in fundraising, negotiating contracts and providing acquisition support. He has also been invited for multiple industry conferences as speaker, has conducted workshops during these conferences and has been invited by key industry participants to conduct trainings and workshops for internal teams. He is currently Senior Vice President at Synergy Consulting Inc., an international financial advisory firm focussed on providing transaction advisory services for infrastructure sector. He is an MBA (Finance) and Engineer (B. Engg. in Electrical Engineering).

## Anil Vijayachandran, Associate Director Synergy Consulting Inc, India

Anil Vijayachandran has extensive experience providing bid financial advisory and infrastructure project development support to clients in the Middle East, Africa and South / South-East Asia. He has been providing IPP project development support for developers across Asia and Africa, bid advisory for various infrastructure projects in the Middle East including IPP and airport bids, financing and securitization of gas field development and processing projects, transaction support for asset privatizations and due-diligence and valuation of multiple infrastructure assets around the world. He has been working for USAID and Nexant as financial expert, conducting comprehensive gas sector modelling of industry dynamics, studying various structuring and policy options available to the Government of Ghana and financial implications in terms of sector outcomes and need for government credit support. He has also provided M&A support for transactions in Europe and the Middle-East and have conducted training programs on PPP and project financing. Key competencies include project financing, financial modelling, transaction structuring, credit enhancement mechanisms and contract analysis. He is currently Associate Director at Synergy Consulting Inc., an international financial advisory firm focussed on providing transaction advisory services for infrastructure sector. He is an MBA (Finance) and Engineer (B. Engg. in Electronics Engineering).

## Eng Ali Uthman Al-Najim :

- Deputy chairman/Founder member – Saudi Green Building Council (SGBC)
- Deputy chairman Architecture - Saudi Council of Engineers in EP, Senior Energy Consultant -ASA Consultant.
- Registered Consultant Engineer (CE-SCE) by Saudi Council for Engineers.
- Master in Architecture-King Faisal University .BS in Architecture Engineer-King Fahad University of Petroleum & Minerals .
- Published More than ( 100) papers and articles , in addition to four (4) books in sustainable architecture and energy.
- Membership: Member of the Saudi Umran Society, Member of the Classification Committee of the Arbitrators, Member of Inter. Association for Energy Economics (IAEE)&Member of Saudi Association for Energy Economics(SAEE)

## Ir. Arul Hisham bin Abdul Rahim, Principal, AHAR Consultants

Ir. Arul Hisham graduated from the University of Texas, USA in 1987. He has been a professional engineer for more than 20 years and is a fellow of the Institution of Engineers Malaysia. Currently, he is the principal of AHAR Consultants, a M&E consultancy practice specializing in district cooling system design, building M&E and sustainable designs. He has wide experience in the design, construction of various buildings' mechanical & electrical systems as well as project management. He was involved in the master planning of the Cyberjaya district cooling system and was the lead consultant for the construction of the DCS Phase 1 plant in Cyberjaya in 1998. He was also responsible in the detailed design and construction of numerous Thermal Energy Storage and District Cooling Systems such as the University Technology MARA Engineering Faculty in Shah Alam (4,000RT; 10,000RTh Ice storage), Universiti Sains Islam Malaysia in Nilai (4,000RT; 8,000 RTh Ice storage) and Hospital for Universiti Kebangsaan Malaysia (2,000 RT, 12,000 RTh ES). Currently, Ir Arul has just completed GDC Plant #4 in Putrajaya (100,000 RTh capacity chilled water storage) and KL Sentral Phase 2 (12,000 RT; 30,000 RTh Ice Storage) district cooling plants.

## IrChua Keng Seng, Technical Director, Intrix Renewable Sdn Bhd

Ir. Chua Keng Seng is the Technical Director of Thermo Renewable Sdn Bhd. He graduated in Mechanical Engineering from the University of Malaya in 1974. Ir. Chua had been in the HVAC industry for 40 years specializing in District Cooling Systems; industrial cooling, heating and dehumidification systems; health care HVAC and Clean Rooms; Energy Savings and Green Building Technologies. His experience includes operating a design-and-build business for 25 years; appointed as the in-house Specialist Consultant for OGP Technical Services Sdn Bhd, a Petronas subsidiary which designed and implemented the Putrajaya Precinct 2 Plant with a cooling capacity of 30,000 ton together with gas co-generation. He had worked as an in-house Consultant for a listed company which operated two District Cooling Plants, one of them included an ice storage system. He was engaged several times to audit and troubleshoot HVAC problems in high rise buildings which were connected District Cooling Plants. For many years he was invited to teach Air Conditioning System Design in University of Malaya, University Technology Petronas and Monash University in Malaysia. For the last 30 years he regularly conducted public trainings, in-house trainings and also professional trainings for the Institution of Engineers Malaysia. For the 3rd time he was invited to present in this Annual District Cooling Conference where his Exclusive Workshop in Singapore last year was evaluated by the participants to be the best presentation.

## Narila Hasbulla, Head of Facilities Management Department

Narila obtained her first degree in Property Valuation and Finance from City University of London and subsequently, her Masters degree in Facility Management from UiTM. Narila has a diverse background and worked in companies from various industries. Areas of her expertise include Project Management, Business Development, Property Management and Facility Management with projects range from hotel development, National Railway Privatisation Project, Hospital Lab and Equipment Replacement Privatisation and Hospital Catering Privatisation among others. She also had experiences in setting up new initiatives within an organisation such as Accelerator Program on mobile apps, setting up JV companies, manufacturing company, merger and acquisition as well as Government Initiatives Programs. She also involved in trouble shooting and provided solutions as well as turnaround problematic areas/subsidiary within a company. She was involved in the Merger & Acquisition of Megajana Sdn Bhd (a District Cooling Provider for Cyberjaya) with the French partner, Cofely (M)Sdn Bhd, a subsidiary of GDF Suez Energie Services. Her current position as Head of Department of Facility Management of Cyberview sees her managing 14 properties with more than 200 tenants, in Cyberjaya of which 9 are connected to the District Cooling Services.

## MEDIA PARTNER:



WADE is a non-profit research and advocacy organization that was established in 1997 to accelerate the worldwide deployment of decentralized energy (DE) systems. National cogeneration and DE organizations, DE companies and providers, as well as a range of national governments now back WADE. In total, WADE's direct and indirect membership support includes over 200 corporations around the world. It is the worldwide representative organization for those parties seeking the economic and environmental benefits of decentralized energy (DE) generation - including high efficiency cogeneration (also known as combined heat and power, CHP) and decentralized renewable energy technologies