The role of microgrids in future energy supply systems - Can autonomous microgrids become mainstream?

One day seminar - Thursday 26 September 2019

IGEM House, Kegworth DE74 2DA

The background

The latest in the series of IDGTE's one-day seminars covering developments in the changing energy scene will be held on Thursday 26 September at IGEM House in Kegworth.

In Europe, with the continued growth of renewable generation, the investment in future large central power plant is looking unattractive both in terms of time and cost.

This is especially true for fossil fuelled plant if the major market role is providing grid support and other services - and more nuclear plant seems beset by affordability problems, waning public support and diminished enthusiasm from the supply side.

In contrast, the attraction of smaller hybrid energy systems in a microgrid is growing since it can provide continuous electrical supply within the microgrid, as well as providing export power and services to the main grid when revenue conditions are attractive.

Traditionally, such microgrid systems have been provided at remote locations where security of supply is paramount and where connection to the main grid is questionable - and/or the repercussions of supply interruptions are serious.

However, adoption of hybrid microgrids could become more generally used at locations where secure connections to the main grid are available, provided that the economics are favourable.

Control of such facilities and communication with the wider grid system would be very important in order to maximise revenue and other benefits.

Having an autonomously controlled microgrid would be a logical conclusion.

Although the various components of such a hybrid energy system could well be co-located and connected in a microgrid, this does not have to be the case.

Such components can be situated in various locations some distance apart, as long as their operation is co-ordinated by a "master" control so that they function as a Virtual Energy System. This would of course involve multiple connections to the main grid.

Solar community project in Freiburg, Germany

In recent years, companies whose principal business has traditionally been the supply of gas engines and gas turbines to the industry as OEMs have expanded their scope to encompass other components in order to supply complete energy systems - examples of this include:

- Wärtsilä - Wärtsilä Energy Business solutions provide the needed flexibility to integrate renewables and secure power system reliability. Their offering comprises engine-based flexible power plants – including liquid gas systems – hybrid solar power plants, and energy storage and integration solutions.

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- *RR Power Systems/MTU* - Rolls-Royce is expanding its position in the microgrid market and investing in start-up Qinous, an energy storage specialist based in Berlin. Rolls-Royce Power Systems is also setting up a microgrid demonstrator in Friedrichshafen that will assist in the design of microgrids to meet a customer's specific requirements.

  Rolls-Royce and ABB have additionally announced a global partnership on microgrid technology and advanced automation. Together the two companies will offer an energy-efficient microgrid solution for utilities, commercial and industrial entities.

- *GE* - The impact of growing renewable standards are driving new behaviours and technologies such as two-way power flows, microgrids, digital analytics, and new transmission and distribution models. Modern power systems must adapt to large fluctuations in both supply and demand to maintain grid stability.

  The GE Hybrid EGT is the world's first gas turbine and battery storage hybrid, coupling a 10 megawatt battery with a 50MW GE LM6000 gas turbine, operated by an integrated digital turbine control system.

- *INNIO Jenbacher/Clarke Energy Kohler* - In April 2019, INNIO announced that it will supply six Jenbacher gas engines for the Lemene microgrid project in Finland, helping the Finnish government reach its climate goal of having 100 percent of its energy come from renewable sources by 2030.

This seminar is aimed at providing a forum to cover the following aspects of the topic:

- Presentations by OEM companies who have extended their scope of supply to cover complete systems.
- Experience of operating hybrid systems, microgrids and "virtual" power/energy plants
- A view from National Grid - opportunities for autonomous microgrids
- A market view from a project development perspective
- An alternative view – prospects for new large very efficient CCGT plant
- Energy Storage – battery development in particular

This seminar will include presentations followed by workshop sessions in the afternoon - following the successful format of previous events.

To reserve your place please see details below.

Seminar Price

Delegate	£285.00 (ex VAT)
IDGTE Member	£242.25 (ex VAT)
Student/Retired	£100.00 (ex VAT)

Booking

To reserve your place please either

- download a booking form at **www@idgte.org**
- return the attached booking form to **enquiries@idgte.org**
- contact the office on **01234 214340**

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Programme

9.00 Registration

9.15 **Keynote Speaker -** Professor Graeme Burt, Institute for Energy and Environment, University of Strathclyde: *Energy is increasingly decentralised, variable and renewable. Reliability and resiliency are big concerns in our emerging distributed energy ecosystem. Microgrids, able to generate, supply and store energy locally, are becoming very difficult to ignore.*

9.50 **Rolls-Royce Power Systems/MTU -** Myles Osborn: *Covering developments in distributed energy systems including microgrids which were highlighted in the recent Power Generation Symposium in Friedrichshafen.*

10.25 **Wärtsilä Energy Solutions -** Bent Johst Iversen, Senior Business Development Manager: Optimisation of microgrids by use of intelligent controls and energy storage systems - case study examples.

11.00 Tea/coffee break

11.15 **A Market View** (TBC)

11.50 **Cranfield University -** Kamal Abudu: *Improvements of aeroderivative gas turbines response for microgrid operation.*

12.25 Lunch

1.25 **INNIO Jenbacher -** Klaus Payruber: *The role of gas engines in microgrids and its applications, including case studies of hybrid plant and a microgrid in Lemene, Finland.*

2.00 **Siemens -** Ian Lloyd, Strategic Growth Manager: *Smart infrastructure requirements for the energy future, and how grid control and microgrid solutions have developed to date to automate conventional networks.*

2.35 Tea/coffee break

2.50 **Anesco** (TBC): *Developments in battery technology - next generation.*

3.25 Comfort break

3.30 **Workshop Session 1**

4.00 **Workshop Session 2**

4.30 **Panel Discussion**

4.50 Finish

The workshop sessions are intended to promote more in depth discussion in related areas to the presentations. Please note that delegates can move between streams.

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Booking Form

Seminar Price

Delegate	£285 (ex VAT)	£342.00	IDGTE member	£242.25 (ex VAT)	£290.70
Student/Retired	£100 (ex VAT)	£120.00			

Price includes seminar, teas/coffees, lunch, delegate pack, wifi and parking.

Delegate details

Mr/Mrs/Ms _____ First Name _____ Surname _____

Job title _____ Company _____

Address _____

_____

Postcode _____ Phone _____

Email _____

Ways to pay

Cheque. Enclosed is our cheque made payable to IDGTE.

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National Westminster Bank plc, Bedford, UK. Sort Code: 60 02 13 Account Number: 51275368

Conditions

No refunds shall be issued for cancellations received after 23 August 2019. However, a substitute delegate may attend in your place.

Disclaimer

The IDGTE is endeavouring to meet the needs of the industry by transfer of knowledge from presenters to delegates registered for the event. A condition of registration is that the IDGTE, or presenters, cannot be held responsible for the information provided, changes to the advertised information, or for the services provided by IGEM conference centre.

Venue Details: IGEM House, 28 High St, Kegworth, Derbyshire DE74 2DA
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Please complete and return to IDGTE (details below)

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