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ETIP SNET
EUROPEAN TECHNOLOGY AND INNOVATION PLATFORM
SMART NETWORKS FOR ENERGY TRANSITION

Working Group 3 „Flexible Generation“

Alexander Wiedermann
Member of Working Group 3

ETIP SNET – Regional Workshop Petten 19-20 September 2019

Specific Objectives of the Working Group

WG 3 addresses the business & technology trends considering

- **the contribution of flexible generation**
- **of all dispatchable generation sources**
- **for power, heat and cooling**
- **centralized and decentralized**
- **with or without embedded storage**

as needed for an integrated energy system.

WG 3 Members and Leader

May 23, 20 7th WG3 Workshop in Villingen

Chair:

Michael	**Ladwig**	General Electric, CH

Co-Chairs:

Miguel Martin	**Garagorri de Miota Pogoretz**	Iberdrola, ES Andritz, AU

Advisor:

Vincenzo	**Casamassima**	RSE, IT

Members: **Proud to have active members, but we're looking for new members**

Christian	**Bergins**	Mitsubishi Hitachi Power Systems Europe GmbH
Olaf	**Bernstrauch**	Siemens Power and Gas Division
Martijn	**Bongaerts**	Liander NV
Peter	**Breuhaus**	International Research Institute Stavanger (IRIS)
Iarno	**Brunetti**	ENEL Produzione
Antonio	**Cammarata**	Czech Technical University in Prague
Edgardo	**Coda Zabetta**	Amec Foster Wheeler
Matthias	**Finkenrath**	Kempten University of Applied Sciences
Ralf	**Grether**	VOITH HYDRO
Carlos	**Herce**	Prodesa
Carlos	**Izquierdo**	Red Eléctrica de España (REE)
Peter	**Jansohn**	Paul Scherrer Institute (PSI)
Bruno	**Lacarriere**	IMT Atlantique
Eduard	**Minciuc**	University Politechnica of Bucharest
Kaj	**Portin**	Wärtsilä Corporation
Matti	**Rautanen**	VALMET TECHNOLOGIES
Uwe	**Ruedel**	Ansaldo Energia Switzerland Ltd
Peter	**Stettner**	ANDRITZ HYDRO GmbH
Diana	**Strauss-Mincu**	Fraunhofer IWES
Alexander	**Wiedermann**	MAN Energy Solutions SE

Position of WG3 to be reflected in White Paper:
"Flexible Power Generation in a Decarbonizing Europe"

What do we want to achieve?

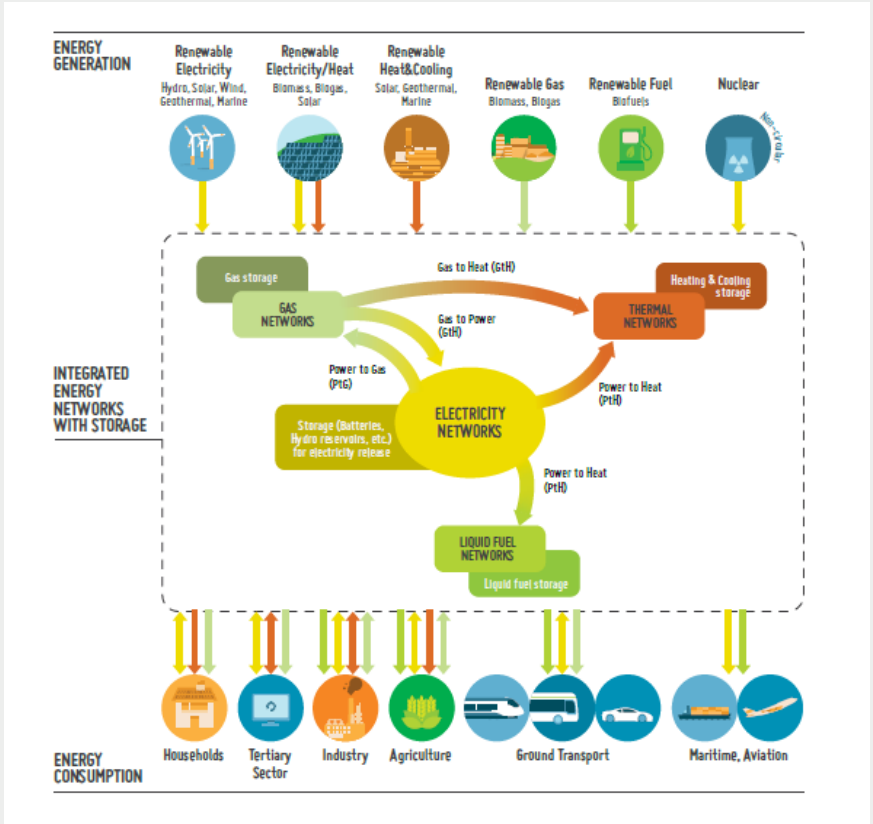
- understanding the existing energy system in EU (demand & supply)
- providing a forecast on how we see the European energy generation landscape in 2050
- understanding of «flexible generation» (what does it mean?) and its necessity for Europe, its technologies, challenges and future R&D needs (targets)
- explaining definitions and boundaries
- detailing the deliverables of flexible generation
- explaining the economics
- outlining the sector integration
- explaining the contribution of flexible generation to the generation transition and CO2 reduction

Position of WG3 to be reflected in White Paper:
"Flexible Power Generation in a Decarbonizing Europe"

Structure of the paper

Executive Summary
1. European targets with regard to flexible generation
2. Flexible generation technologies
3. Technology description in annex or «grey boxes»
4. Outlook for a generation in a decarbonizing Europe
5. From linear to circular economy
6. Plant Level demonstration based on available technology

Conclusion



Status

Revised draft finished by end of September
Finalisation during next WG F2F-meeting in Graz
Layout support by ETIP-SNET
Submission before next Gov Board meeting

Technological Requirements (by WG3)

Needed joint efforts to address the following topics:

- **Operational Flexibility:** minimum loads, quick start possibility, fast ramp rates
- **Fuel Flexibility:** unlimited fuel flexibility designs, up to 100% H2
- **Emission Reduction Technologies:**
  cycling, minimum load down to idle
- **Product Flexibility:** enabling sector integration (heat, electricity, synthetic fuels)
- **Integrating Storage into Power Generation:**
  seasonal storage to encounter “dark doldrums”
- **New Technologies:** Fuel cells, novel electrolyzer technologies: materials technology
- **Chemical Use of Gaseous by-Products:**
  waste gasification
- **Offshore Hydropower:** extended utilization of hydrokinetics (river, ocean and wave)

Conclusion

- Lots of technologies have been established and are available
- They need to be adjusted to the circular economy

Unless CO2 emissions do have a certain cost impact in all sectors, it is difficult to develop business models for further carbon reduction

If we want to achieve our vision we need to define the way forward and start right now!

Roundtable discussion

The pathway forward:

- **What is the role of thermal power and heat generation in 2050?**
- **Do we need CCS in the future?**
- **„Blue Hydrogen, “ or can we produce enough „Green“ Hydrogen?**
- **Do we have to be afraid of „cold doldrums“ and blackouts?**
- **Centralized or decentralized generation, other sectors?**
- **How can we achieve a common mind in all EU countries?**
- **How can we raise more public awareness and acceptance for needed infrastructure?**
- **How can policy contribute to accelerate the transition towards a decarbonized society?**

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On behalf of
WG 3 “Flexible Generation”

Thank you