Welcome to Innovative Energy Solutions for the Military: NATO Energy Security Centre of Excellence

Moderator: Mark Albe, Arcadis

Speaker:

• Col. Gintaras Bagdonas, Director, NATO Energy Security Centre of Excellence
Innovative Energy solutions for the Military

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SAME
Europe region Capabilities Engineers Workshop

COL Gintaras BAGDONAS (LTU Army)
Director, NATO ENSEC COE

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Agenda

• NATO Energy Security Centre of Excellence (NATO ENSEC COE)

• NATO and Energy Efficiency: where we are and a way ahead

• Best practices from NATO ENSEC COE

• Sum-up: opportunities and challenges
NATO CENTRES OF EXCELLENCE (24)

NATO COE:
- has a recognized expertise on subject
- is out of NATO’s chain of command
- owned by nations
NATO Energy Security Centre of Excellence

Mission:
To assist NATO bodies, Nations and Partners by supporting NATO’s capability development process, mission effectiveness and interoperability by providing comprehensive and timely expertise on all aspects of energy security.

Forthcoming Nations:
NATO ENSEC COE Role

- Enhance awareness on energy developments with security implications;

- Develop competence in supporting critical energy infrastructure protection (CEIP) and resiliency;

- Improving energy efficiency in military forces.
Energy Security and Defence

“Safety and certainty in oil lie in variety and variety alone.” - Winston Churchill (1913)
NATO and Energy Security

„Whoever defines the issue controls the debate“

NATO ENSEC COE definition (working)

Energy security refers to the uninterrupted availability and resiliency of energy sources to support ALLIANCE SECURITY INTERESTS
NATO and Energy Efficiency

First NATO talks 2006 (Riga)

5 areas of involvement

Emerging Security Challenges

Energy Efficiency in the military forces

In 2017 Energy Efficiency Policy?

National initiatives

2014 (Wales)

2012 (Chicago)

2010 (Lisbon)

2008 (Bucharest)

2016 (Warsaw)

Implementation report to NATO - 2016

NATO Green Defence Framework

MC Policy on Power Generation

Smart Energy Team

SMC Project

Other....

National initiatives

2016 (Warsaw)

2014 (Wales)

2012 (Chicago)

2010 (Lisbon)

2008 (Bucharest)

2006 (Riga)

Principles

Practice
Art. 135

„.......NATO will also continue to develop its capacity to support national authorities in protecting critical infrastructure, as well as enhancing their resilience against energy supply disruptions that could affect national and collective defence, including hybrid and cyber threats.

NATO will further improve the energy efficiency of its military forces through establishing common standards, reducing dependence on fossil fuels and demonstrating energy-efficient solutions for the military.“
The need to reduce the logistic footprint
Why Energy Efficiency?

French Operation Serval in Mali

Fuel consumption evolution in operation in 2015

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Energy Security from Operations

- WWII - average 1 gal./ground soldier/day, today 20 gal. soldier/day;

- It is expected to double the operational energy requirements within the next 20 years;

- NATO needs to improve its ability to measure operational energy, reduce demand and increase efficiency.
NATO’s approach to energy in operations

• A few NATO documents on the subject;

• Focused on expeditionary missions and operations;

• Efforts scattered among nations and different NATO bodies;

• Little interest outside the “expert circle”.
Suggested Solutions to reduce logistic footprint

• Promoting interoperability;
• Updating and drafting new STANAGs;
• Testing innovative energy solutions through exercises;
• Demonstrating new technologies and sharing knowledge among Allies;
• Expanding NATO’s network of experts and the industry;
• Shifting from NATO’s “green” profile to operational effectiveness.
Energy Efficiency to Reduce Logistic Footprint

NATO ENSEC COE WORKING CONCEPT ON ENERGY EFFICIENCY:
Energy Efficiency is the ability to optimize the use of energy to enhance operational effectiveness
Best practices of NATO ENSEC COE
Education and Training Efforts

- ADL 2014 NATO Energy Security Awareness Course
  https://jadl.act.nato.int/

- Energy Security Strategic course
  Georgia – 11-15 April 2016

- Energy Security in the operational framework Course
  Vilnius, Lithuania – 14-17 June 2016

- Energy Security Strategic Awareness course
  NATO School, Germany – 26-30 September 2016

In addition to these courses, 2 new courses are planned:

- Energy efficiency & energy management
- CEIP (Critical Energy Infrastructure Protection)
Energy efficiency: cultural change is a critical enabler for military operations (2014-2017);

Alternative energy solutions for Infantry Battalion and deployable typical military unit (2013-2014).
Projects - Experimentations

- Experiment “Energy Management in the Military Expeditionary Environment”
  - Applies ISO:50001 to the expeditionary operational environment
  - Supports implementation of MC Policy for Power Generation
  - Enhances the future development of energy efficiency related concepts, standards and doctrine.

Together with: Schneider Electric
Deployable modular Hybrid Power Generation & management System

System Performance:
- 2500 kWh/day
- 150 kW (peak load)
- 100 plus man camp or CP/HQ
- Average 20-30% fuel saving
- + 150% gain in maintenance life cycle
- + 30% security (energy autonomy)

HPGS is the winner of award among about 100 participants
Camp in Ex „Strong Hussar“, Aug 2016: 48 hrs test of HPGS
Ex Strong Hussars 2016-Rukla training area 24
august-24hrs energy Production
GENERATOR ON ONLY 5 HOURS!!
Consumption: 48 hrs test
Aug 2016

Fuel Saving: 37%
**Challenges**

- Interoperability
  - maintaining Single Fuel Policy
- COTS vs R&D
- Integrating Energy Efficiency, CEIP and Resiliency into Defence Planning Process
- Coordination of different national initiatives and with civilian regulations
- Lack of shared data

**Opportunities**

- Partnership with industry and Academia
- Exchange of best practices
- R&D on Alternative Energy Sources
- Energy Saving Systems
  - Reduces Costs
  - Reduces Casualties
  - Reduces of Personnel
  - Reduces of Equipment
  - Increases Effectiveness

**Desired Outcome: Energy Efficient in NATO**

- Energy Efficiency in Operations
  → Alternative Energy Sources
  → Energy Saving Systems

COTS: Commercial of the Shelf
„My soldiers can eat their belts…

but my tanks have gotta have gas“

General George S. Patton
Thank you!

Colonel Gintaras Bagdonas (LTU Army)
Director, NATO ENSEC COE
Gintaras.Bagdonas@enseccoe.org