

# Energy Data Analysis



## Why?

Energy is a **key enabler** to sustain support activities and / or military operations. Through appropriate monitoring, measurement and analysis, energy efficiency can be improved and relevant costs be reduced.

## How?

Smart metering technologies for energy products (electricity and fuels) are continuously evolving, availing more detailed information to be distributed remotely while capital expenditure is becoming more affordable.

Absolute numbers on consumptions of energy products can serve only as a first approach and cannot provide a clear picture on the trends (improvement or deterioration) of energy efficiency. To that end, the development of appropriate Energy Performance Indicators (EnPIs) is imperative.

Energy modelling is a very useful tool for assessing future energy consumption using various scenarios, thus assisting in decision-making.

## Benefits to the Defence Sector

Energy data collection and analysis in a systematic approach will avail the defence sector to **support operational requirements**, to **increase energy efficiency** and to **reduce energy consumption** and **relevant operational costs**, through:

- Forecasting energy consumption for budgetary and operational planning reasons.
- Detecting the Significant Energy Uses (SEUs).

- Launching targeted action plans and new interventions to enhance energy efficiency and reduce costs.

## Challenges for Defence

- Considerable amounts of smart metering devices are required in order to partition the energy consumption into relevant uses, due to:
  - Significant sizes of the building stock, which are widely dispersed.
  - Complex electricity distribution internal grids.
- Lack of financial resources to procure adequate numbers of smart metering devices to cover the existing building stocks and the significant energy uses.
- There are cases in which the Armed Forces are just occupants of the infrastructure and, under that capacity, any intervention (incl. the installation of smart metering devices) has to be carried out by the owner.

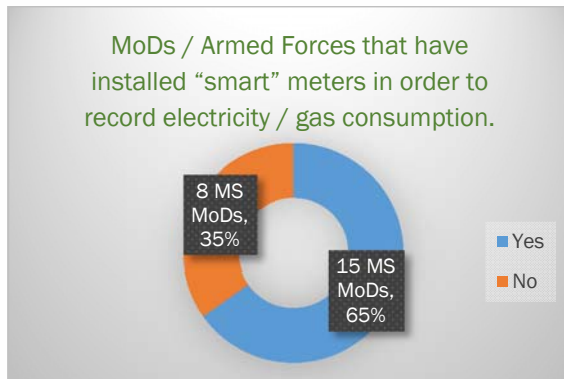
## Status in the Defence Sector

According to a relevant Questionnaire on Energy Data Collection, Analysis and Sharing (Jan. 2016), answered by 23 Member States, representing 94.7% of EU defence expenditure as well as 90.9% of EU defence personnel<sup>1</sup>:

- The defence sector is making good progress in installing and using smart meters for recording electricity and gas consumption:

<sup>1</sup> Data for the year 2015, retrieved through EDA Defence Data portal (<http://www.eda.europa.eu/info-hub/defence-data-portal>). The

EU MS MoDs that provided replies are: AT, BE, BG, CY, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LV, NL, PT, RO, SE, UK. CH also contributed.



- o Almost half of the Ministries of Defence (MoDs) / Armed forces project their future energy needs for planning reasons and communicate them to the competent national authorities in order the latter to establish and thereafter monitor the national energy efficiency targets:



## Examples in Defence Context

### German MoD

In 2005, the German MoD launched the initiative to install meters for water, heat, electricity, renewable energy, sewage, air condition etc. in all buildings.

Up until now such meters have been installed in approximately 50% of all buildings where such an installation is economically reasonable. This is the case if the implementing cost is lower than the value of energy that the meter will be counting in two years.

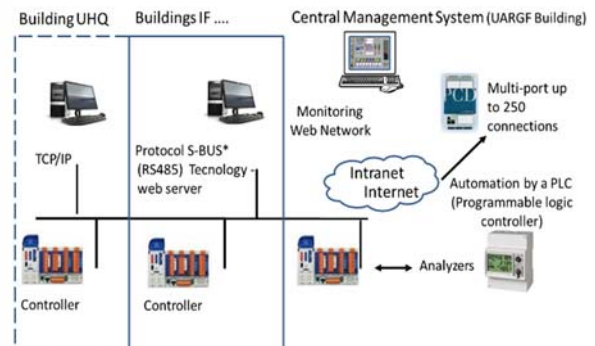
The devices are connected to the building automation, mainly with the M-BUS protocol, saving data in 15 minute intervals.

The data is sent from all building automation management units to the central monitoring and operations management system, availing further analysis and evaluation on different levels.

### Portuguese MoD

The Portuguese MoD installed an integrated energy monitoring and management system in the **Reduto Gomes Freire** complex, initially constructed in the 18th century.

With an optical fibre structured network and meters in 8 buildings, the installed system allows the electrical consumption monitoring every 15 minutes, providing up-to-date information on energy usage and enabling identification of anomalies and opportunities for improvement.



courtesy of PT MoD

Through the implementation of this project, and the small scale interventions that stemmed out from the monitoring, a **reduction of 24% of the electricity consumption** compared to the baseline year was achieved.

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