**COMBINING INDUSTRIAL BACKUP GENERATORS TO PROVIDE STRATEGIC RESERVE TO THE GRID**

**Introduction**

Reduction of conventional generation

- Nuclear power reduction
- Uncertain nuclear phase-out
- Frequent (temporarily) shutdowns

Existing backup generators

- Few running hours
- High maintenance cost

Closing fossil (gas) power plants

- Decreasing spark spread
- Long lead time

- Grid paralleling possible
- Expensive conformity check

**Problem:**

**Power shortage during winter peak consumption**

- Cold, dark, no wind
- Limited interconnection capacity
- Up to 1GW in Belgium (peak power 14GW)

**Peak power capacity required**

- Mainly between 17-19h during winter
- Expensive – few running hours
- Limited candidates available

**Problem evolution**

- First time: winter 2014-15
- Strategic reserve rarely activated as of 2016-17

**Proposed solution**

Combine backup generators in Virtual Power Plant

- Central control by TSO or aggregator

**Advantages**

- Existing infrastructure
- Remuneration for backup generators
- Regular load testing
- Close older power plants

**Disadvantages**

- Increased maintenance due to higher use
- Local exhaust - pollution
- Impact (congestion) on distribution grid

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