

# Three emergency measures for the European energy crisis

Immediate steps your facilities can take today to comply with reduced energy consumption and peak demand targets



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### An unprecedented crisis

The conflict in Europe is causing an energy crisis at a scale not seen in almost 50 years. Countries, businesses, households, and European economies are severely and increasingly impacted.

The International Monetary Fund (IMF) recommends that governments "act decisively to encourage energy savings,"<sup>1</sup> and to "transition to greener power."<sup>2</sup> Between June 2021 and July 2022, Russian natural gas deliveries dropped by 60%.<sup>3</sup> The resulting shortage caused European gas prices to rise to 10x above average over the past decade.<sup>4</sup> Due to this restriction, the European Commission reports that "electricity retail prices have increased by almost 50% year-on-year from July 2021" <sup>5</sup> because electricity is often generated by burning gas.<sup>6</sup>

Energy officials foresee the world entering an unprecedented energy crisis that may exceed those from the 1970s and early 1980s that encompassed oil, gas, and electricity. Worse yet, the IEC's Fatih Birol predicts that "it will probably last longer."<sup>7</sup>

#### The European response

Though the gas storage is now over 80% capacity to prepare for winter, analysts warn that Europe needs to drastically reduce consumption to avoid depleting these reserves.<sup>8</sup> In response, individual nations are preparing for possible energy rationing.<sup>9</sup>

The European Commission (EC) has taken the following steps:



#### May 2022

REPowerEU Plan

- Eliminate dependence on Russian fossil fuels by 2030.
- All European Union (EU) countries agreed on the voluntary gas demand reduction by 15%.<sup>10</sup>



#### November 2022

The EC energy crisis plan proposes all member states, effective from December 1st, 2022 - end of 2023, with possible 2023+ extension to:

- Voluntarily reduce electricity consumption by 10%.
- Reduce electricity consumption by 5% during peak hours as mandated for all EU countries.

#### Sample country-level emergency measures

**Beyond the 5% mandatory reduction** of electricity consumption during peak hours, EU member states and utilities are free to implement their own emergency measures to meet targets and mitigate energy insecurity and shortage risks, all while facing the challenge of controlling costs for businesses and consumers.

#### France



As part of the **Ecowatt** three-level (Green, Orange, Red) emergency plan mandates:

#### 1. Green level:

- Corporate office buildings should lower heating to 19°C
- No hot water for hand washing
- Make Fridays a telework day
- Turn off lights, signs, and car parks after closing times
- Modulate interior lighting
- · Air condition only occupied/reserved spaces

#### 2. Orange and Red levels, if the energy crisis escalates, businesses should:

- Turn off heating after preheating spaces
- Reduce ventilation
- Reduce or turn off electric vehicle (EV) charging
- Additionally, utilities may require voltage drop, selected power cuts, and demand/response mechanisms

#### Germany



- Replace all Russian energy imports by mid 2024
- Postpone the closing of three nuclear plants
- Public buildings must lower heating to 19°C and turn off radiators in corridors, foyers, entranceways, and technical rooms
- Dim lights and turn off fountains in all public places
- Commercial and residential buildings and companies consuming above 10 GWh must perform energy audits and invest in efficiency improvements with a specified payback period

#### What does this mean for your business and facilities? What steps should you take?

This guide can make these urgent decisions easier by helping you understand:

- The potential impacts of the energy crisis on your business operations
- Emergency measures to reduce energy consumption now and prepare for the future
- Why Schneider Electric should be your partner for this journey

# How will the energy crisis impact your operations?

The energy crisis will dramatically affect business operations and economies in these three key areas:

#### 1. Expect several years of challenges

Experts predict the crisis could last at least through 2023, with the next winter being even harder. The high demand for energy and restricted supply led Amrita Sen, chief analyst with Energy Aspects Ltd., to conclude, "This is not a one winter story."<sup>11</sup>

#### 2. Increasing operating expenses (OpEx)

Bloomberg reported in August that gas "prices are about 11 times higher than where they usually are for the time of the year. Electricity prices are increasing in tandem. Costs are spiraling for households and businesses facing the worst inflation in decades."<sup>12</sup>

Along with households, small and medium enterprises and the industry feel the pressure of these dramatic increases.<sup>13</sup> For example, some businesses in Hungary have seen a 750% increase in electricity bills since the beginning of the year.<sup>14</sup> **Any reductions achieved in electricity or gas energy consumption will help protect profits**. **25%** of Bulgaria's population can no longer afford to heat their homes.<sup>15</sup>

**14%** of British households – a market closely connected with mainland Europe – are behind on their utility bills<sup>16</sup> and they expect them to triple within six months.<sup>17</sup>

#### Three key areas that will dramatically affect the European economy



Expect several years of challenges



Increasing OpEx



Business continuity risks

#### 3. Business continuity risks

Potential risks to operational continuity – even business survival –can force reduced hours, staff layoffs, or a complete shutdown of operations.

• Energy supply disruptions. Twelve member states suffered from reduced gas flows as of August 2022, and a handful were completely cut off, according to the EC.<sup>18</sup> While Germany doesn't expect to be entirely cut off, BNetzA president Klaus Mueller thinks, "There could definitely be gas shortages regionally."<sup>19</sup>

A gas supply shutdown would devastate many businesses, as gas is a basic raw material for manufacturing. **Businesses that can curb energy demand will help their regions avoid shortages.** 

- Energy supply risk. According to EU Crisis Management Commissioner Janezčič, "The EU could face blackouts this winter and is preparing for worst-case scenarios," as stated in October.<sup>20</sup>
- Energy costs could rise beyond operational feasibility. In August, a group of French energy-intensive manufacturers urged the EC to cap gas prices to avoid slowing or shutting down plant production.<sup>21</sup> In some cases, these are the only options.

High energy prices have forced the iconic tableware brand Duralex to temporarily stop production.<sup>22</sup> The energy crisis is pushing many businesses into bankruptcy across Europe.<sup>23</sup> **An immediate reduction in energy consumption and costs can help weather the crisis.**  Due to rising energy prices, Europe has already lost ~50% of its capacity for smelting zinc and aluminum, and more capacity is expected to shut down.<sup>24</sup>

#### Facing a **€500,000**

monthly electricity bill, the Italian luxury hotel Caroli Hotels closed after almost 60 years, sending home 275 employees.<sup>25</sup>

Fortunately, established, proven, and affordable solutions can help.

#### The energy-carbon connection

"Tackling Europe's energy security problem and the climate crisis are two sides of the same coin. Reducing both our use and dependence on fossil fuels, increasing electrification and the transition to renewable energy are now essential to tackling both the current energy crisis and reducing Europe's emissions.

The answer to Europe's energy security problem is the same as the answer to decarbonization. Electrification through renewables and digitalization – Electricity 4.0."

Philippe Delorme, Executive VP, Europe Operations, Schneider Electric

## Three emergency measures to withstand the crisis

The energy crisis is a business emergency that needs immediate action. With energy costs potentially doubling (or more) by 2023, inaction is not an option. To close the efficiency gap, you can quickly reduce your **consumption**, **peak demand**, **and costs**.





#### Measure 1: Measure and monitor



More than **90%** of electrical distribution equipment is not connected to energy management software, preventing energy consumption from being viewed and analyzed.<sup>26</sup>

If you do not have an Energy Management System (EMS), you may miss the detailed data needed to manage savings programs and reduce peak demand. To achieve maximum efficiency, you may also need expert support to implement potential energy-saving measures.

#### What you need to do

- · Assess facilities to determine metering and monitoring requirements remote or on-site.
- **Install an energy metering system** including easy-to-install meters connected to an on-premise or cloud-based EMS to monitor load consumption by floor, zone, room, load types, equipment, process, and more.
- **Connect energy monitoring and control** including installation of an EMS solution and advanced meters with control capabilities that can:
  - Monitor real-time energy consumption
  - Identify inefficiencies
  - Support decision-making and prioritize measures
  - Confirm savings
  - Manage alarms and load shedding to lower peak demand

#### EcoStruxure for Buildings





#### Measure 2: Automate and control



#### Site without a BMS (< 5,000 m<sup>2</sup>)

**Small-medium facilities** – The majority of Europe's building stock is small-medium size and may not have a BMS being run manually without automated control.

Buildings may also not have an EMS. Without a BMS and EMS, you cannot see how energy is used to reveal opportunities to save and automatically control and optimize your energy performance.

#### Site with an existing BMS ( $\geq$ 5,000 m<sup>2</sup>)

**Large facilities** – If a BMS is in place, it could be outdated, or your settings should simply be adjusted to eco-mode.

If you do not have an EMS, you may miss the detailed data needed to manage savings programs and reduce peak demand.

#### What you need to do

#### Building control installation, if not present

**on-site** – can include a preconfigured kit comprising a controller and occupancy sensors with the user interface for the visualization and optimization of your building control in terms of HVAC (Heating, Air, Ventilation, Cooling), lighting, etc.

#### Average building energy consumption



**300** kWh/m<sup>2</sup>/year without automation and control<sup>27</sup>

**180** kWh/m<sup>2</sup>/year with automation and control<sup>28</sup>

**Optimize BMS setting to eco-mode to be hyperefficient** – optimizing BMS settings to eco-mode or adding elements can support energy cost savings without compromising occupant comfort, including:

- HVAC equipment schedule control adjustment and optimized setpoint adjustments
- Lighting control adjustment, including occupancy sensors
- · Identify and replace leaking valves
- Install variable speed drives (VSD) on chillers and fans
- Engage our BMS optimization services for 3-15+% savings

**Complement with microgrid software** to perform advanced load shedding.

• Based on tariff management analysis, automatically shift non-critical loads to off-peak hours

#### **EcoStruxure for Buildings**



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Buildings contribute 40% of global emissions,<sup>29</sup> and most waste up to 30% of their energy.<sup>30</sup> Smart building technologies minimize energy demand while keeping buildings comfortable, healthy, and productive for occupants.



#### What you need to do

With seamless brand agnostic digital solutions and building analytics integrated into your existing BMS we can optimize operations and energy by:

- Identifying HVAC systems running off-occupancy hours due to scheduling errors draining energy
- Quickly accessing the hot/cold complaints through trending indoor air quality data over a period or specific time
- Ensuring continuous air flow to match ASHRAE guidelines on temperature and humidity to foster higher confidence on return to work
- Optimizing zone performance through automation of checks while minimizing disruption to tenants



#### Combining all or most of these three measures can achieve:

- Compliance with the voluntary 10% electricity consumption reduction or even greater due to active energy efficiency
- · Adherence to the 5% mandatory peak demand reduction thanks to load shedding
- Energy cost optimization that lowers your energy bills
- Better control of gas usage with your EMS integrated with gas measurement

#### What savings can you expect?

Pre-winter					
Small-med	ium industrial or commercial site	Large industrial or commercial site			
	Current consumption	2 Gwh/year	5 Gwh/year		
<5000 m <sup>2</sup>	Actual electricity bill*	€0,5 M	€1.2 M	>5000 m <sup>2</sup>	

To become winter ready...



**Results** 

#### Winter ready

Annual electricity bill savings (€) and energy consumption reduction up to 15% and 10% during peak hours

Small-medium industrial or commercial site	Large industrial or commercial site
From €100k to €250k	From €200k to €560k

\*At 2022 energy cost, based on 0,23 €/kWh

## Longer-term efficiency and decarbonization

You can further leverage your modernized efficiency while decarbonizing your operations to reduce or eliminate dependency on natural gas supplies. While the actions below require longer-term planning, budgeting, and a work schedule, they can deliver a significant return on investment (ROI).

#### Modernization

- Identify and upgrade building equipment or systems that are running inefficiently or are outdated
- Digitize to gain broader and deeper insights into building assets and business performance

#### Electrification

- Replace gas-fueled boilers with electric heat pumps
- Install EV chargers to supply an electric fleet for employee vehicles



#### Renewables and microgrid

- Install on-site renewable energy (e.g., solar, wind, and battery energy storage)
- Microgrid control systems can maximize green energy use for self-consumption while optimizing when to produce, consume, or store energy to help control energy costs

Together, these emergency measures, and a longer-term decarbonization strategy, can help you withstand the immediate energy crisis while making your business and facilities more resilient against future problems and paving the way toward 2050 net-zero and sustainability goals.

EU countries must devote at least 37% of the financing they receive under the €672.5 billion Recovery and Resilience Facility to investments and reforms that support climate objectives.<sup>31</sup>

Schneider Electric has local experts that can help you navigate and apply for government funding programs and explore other financing opportunities.

Contact us

## Retrofit case study | University of Nottingham -Healthcare, UK

4,500 m<sup>2</sup>

	Energy and OpEx savings
<ul> <li>Measure 1: Measure and monitor</li> <li>Electrical metering: to measure and monitor energy consumption, identify savings opportunities, and monitor efficiency targets.</li> </ul>	Up to 15%
<ul> <li>Measure 2: Automate and control</li> <li>HVAC optimization: 1°C change can save 1% energy.</li> <li>Heating/Cooling lockout: save energy by eliminating unnecessary conditioning and simultaneous heating and cooling.</li> </ul>	Up to 30%
<ul> <li>Measure 3: Optimize with analytics</li> <li>Energy performance and monitoring: informed decisions via better insights, reduce downtime, and increase operational efficiencies.</li> </ul>	Up to 15%

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## Retrofit case study | The Hive -Schneider Electric's H.Q., Paris

35,000 m<sup>2</sup>



#### Measure 1: Measure and monitor

- **Retrofit metering**: to measure the amount of energy consumed and where (floor level, etc.) on the site. Visualization of energy consumption.
- Microgrid operation: PV (self-consumption 280 MWh/year) and EV management capped to 80%.

#### Measure 2: Automate and control

- BMS optimization for HVAC control.
- Lighting control and LED conversion: 30-50% energy savings.
- Variable Frequency Drive optimization and installation: 20% reduction in speed (and flow) of plant equipment motors resulted in a 40-50% decrease in electrical consumption.

#### Measure 3: Optimize with analytics

• Energy performance and monitoring: informed decisions via better insights, reduce downtime, and increase operational efficiencies.

Energy and OpEx savings

Up to 20%

Up to 40%

Up to 20%

### Footnotes

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### A trusted partner. A proven track record.

Schneider Electric is a world-leading expert in energy efficiency and sustainability, helping our customers and operations reduce energy consumption in new and existing buildings and infrastructure while driving towards net-zero carbon.

Let us help accelerate your journey to greater efficiency starting today while achieving net-zero buildings in the coming years.



Learn more about how to achieve net-zero carbon: download our eGuide 'Build It for Net-Zero Carbon.'

Download eGuide



Discover our EcoStruxure Building solutions.

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#### Learn more about **EcoStruxure for Buildings**



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