ENERGY REFERENT REPORT

AKADÉMIA OFFICE BUILDING KFT.

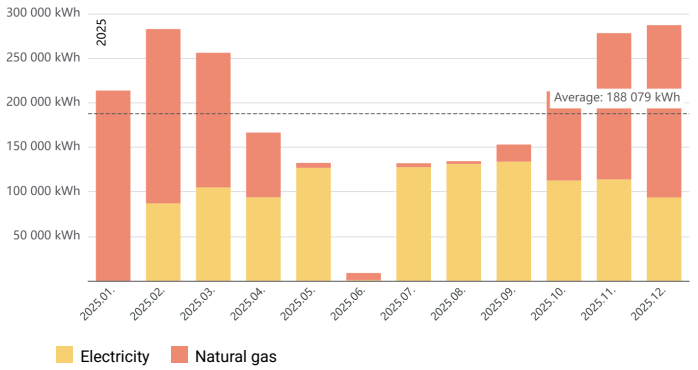
2025

The present energy referent report at the time of generation
026.09.15. 09:56was prepared based on the data available in the Panda energy management softwar

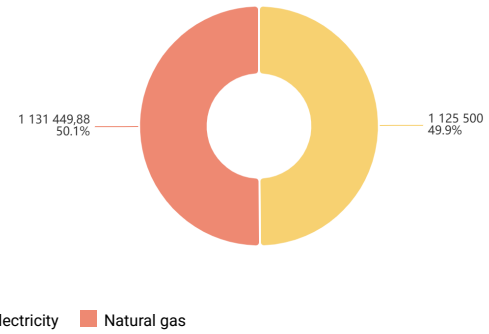
Service provider
Pannon Építőműhely Kft.
CRN: 01-09-283258
1117 Budapest, Szerémi út 7/A.
+36 (1) 203 27 10
pandaenergia.hu

Customer
Akadémia Office Building Kft.
Tax number: 27194335-2-41
1027 Budapest, Horvát utca 14-26.
CRN: 01-09-387987
Main activity: 6820 Saját tulajdonú, bérelt ingatlan bérbeadása, üzemeltetése

Total monthly energy consumption



Distribution of total energy consumption



Compared to the previous period (2024.01. - 2024.12.) consumption increased by **9%** (190 389 kWh change).

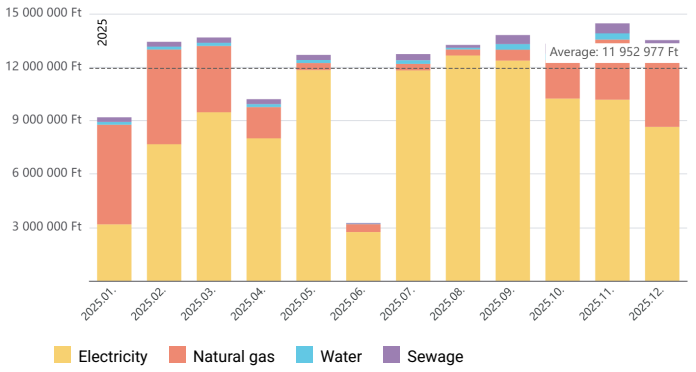
Total consumption for the current period: **2 262 880 kWh**.

In the last month (2025.12.) the consumption increased by **3%** (8 968 kWh change) compared to the previous month (2025.11.).

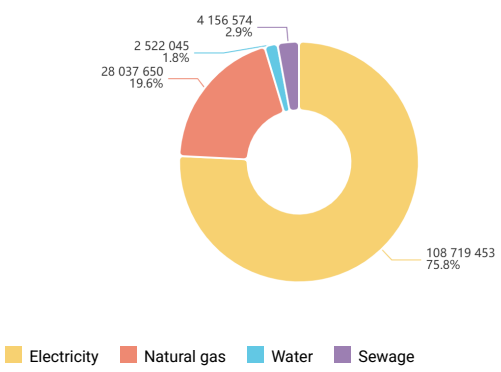
In the last month (2025.12.) the consumption increased by **5%** (14 835 kWh change) compared to the same month of the previous year (2024.12.).

Time period	Electricity (kWh)	Natural gas (kWh)	Σ
2025. 01.	0,00 M	0,21 M	0,21 M
2025. 02.	0,09 M	0,20 M	0,28 M
2025. 03.	0,10 M	0,15 M	0,26 M
2025. 04.	0,09 M	0,07 M	0,17 M
2025. 05.	0,13 M	0,01 M	0,13 M
2025. 06.	0,00 M	0,01 M	0,01 M
2025. 07.	0,13 M	0,00 M	0,13 M
2025. 08.	0,13 M	0,00 M	0,13 M
2025. 09.	0,13 M	0,02 M	0,15 M
2025. 10.	0,11 M	0,10 M	0,21 M
2025. 11.	0,11 M	0,16 M	0,28 M
2025. 12.	0,09 M	0,19 M	0,29 M
Σ	1,13 M	1,13 M	2,26 M

Total monthly energy costs



Distribution of total energy costs



Compared to the previous period (2024.01. - 2024.12.) net cost increased by **9%** (12 097 074 Ft change).

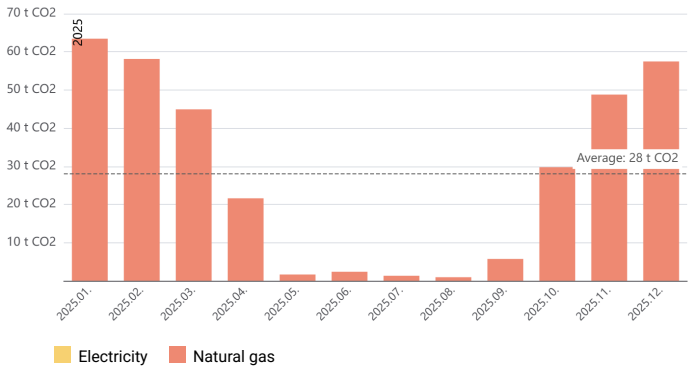
In the last month (2025.12.) the net cost decreased by **-7%** (-941 217 Ft change) compared to the previous month (2025.11.).

In the last month (2025.12.) the net cost decreased by **-11%** (-1 676 786 Ft change) compared to the same month of the previous year (2024.12.).

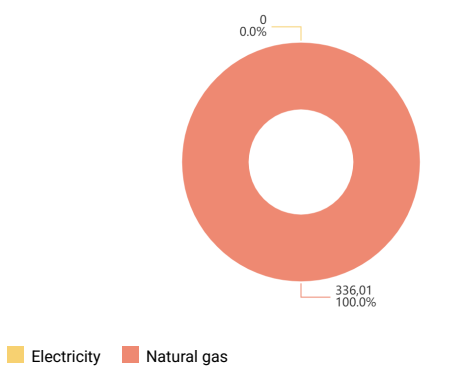
Total net cost for the current period: **143 435 722 Ft**.

Time period	Electricity (Ft)	Natural gas (Ft)	Water (Ft)	Sewage (Ft)	Σ
2025. 01.	3,17 M	5,60 M	0,16 M	0,26 M	9,18 M
2025. 02.	7,67 M	5,32 M	0,16 M	0,27 M	13,42 M
2025. 03.	9,46 M	3,72 M	0,18 M	0,30 M	13,66 M
2025. 04.	8,00 M	1,76 M	0,17 M	0,28 M	10,20 M
2025. 05.	11,83 M	0,40 M	0,17 M	0,29 M	12,68 M
2025. 06.	2,73 M	0,44 M	0,02 M	0,04 M	3,24 M
2025. 07.	11,81 M	0,37 M	0,20 M	0,34 M	12,73 M
2025. 08.	12,65 M	0,34 M	0,09 M	0,16 M	13,24 M
2025. 09.	12,36 M	0,61 M	0,31 M	0,51 M	13,80 M
2025. 10.	10,23 M	2,17 M	0,35 M	0,56 M	13,31 M
2025. 11.	10,17 M	3,38 M	0,35 M	0,56 M	14,46 M
2025. 12.	8,64 M	3,94 M	0,36 M	0,58 M	13,51 M
Σ	108,72 M	28,04 M	2,52 M	4,16 M	143,44 M

Total monthly carbon dioxide emissions



Distribution of total carbon emissions



Compared to the previous period (2024.01. - 2024.12.) emission increased by **19%** (52 t CO2 change).

In the last month (2025.12.) the emission increased by **6%** (3 t CO2 change) compared to the same month of the previous year (2024.12.).

In the last month (2025.12.) the emission increased by **18%** (9 t CO2 change) compared to the previous month (2025.11.).

Emission calculation methodology and detailed derivation:

2025:

Total: 336,04 t CO_2 eq

Electricity: 1 125 500,00 kWh * 0 t CO_2eq/kWh = **0,00 t CO_2 eq**

Vásárolt zöldáram [100.0%]: 1 125 500,00 kWh * 0 t CO_2eq/kWh = **0,00 t CO_2 eq**

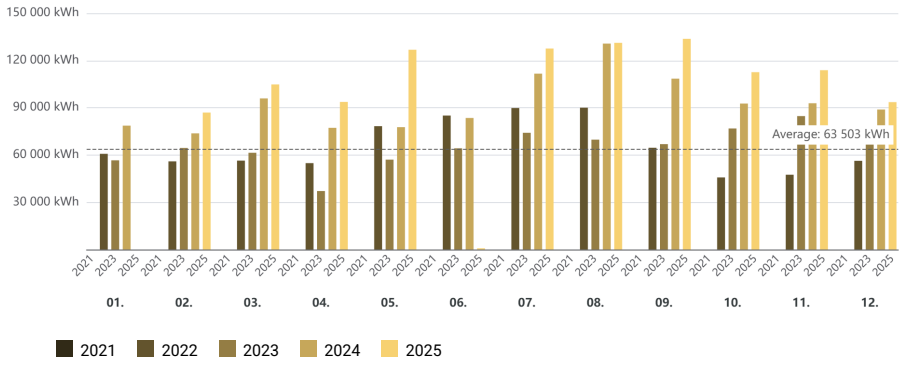
Avoided emissions: **512,10 t CO_2 eq**

Natural gas: 1 131 449,88 kWh * 0,000297 t CO_2eq/kWh [ÉKM Regulation] = **336,04 t CO_2 eq**

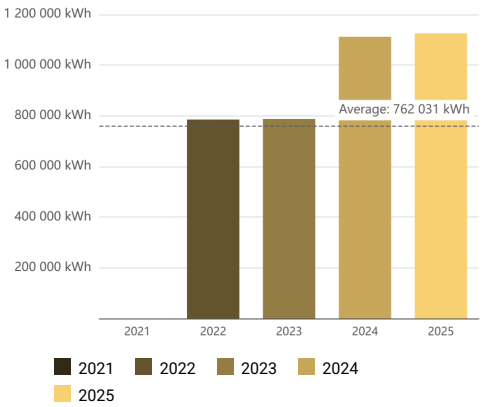
Total emission for the current period: **336 t CO2** (Avoided emissions: 512,10 t).

Time period	Electricity (t CO2)	Natural gas (t CO2)	Σ
2025. 01.	0,00	63,44	63,44
2025. 02.	0,00	58,13	58,13
2025. 03.	0,00	44,92	44,92
2025. 04.	0,00	21,60	21,60
2025. 05.	0,00	1,63	1,63
2025. 06.	0,00	2,35	2,35
2025. 07.	0,00	1,30	1,30
2025. 08.	0,00	0,92	0,92
2025. 09.	0,00	5,71	5,71
2025. 10.	0,00	29,75	29,75
2025. 11.	0,00	48,79	48,79
2025. 12.	0,00	57,47	57,47
Σ	0,00	336,01	336,01

Electricity consumption in relation to recent years

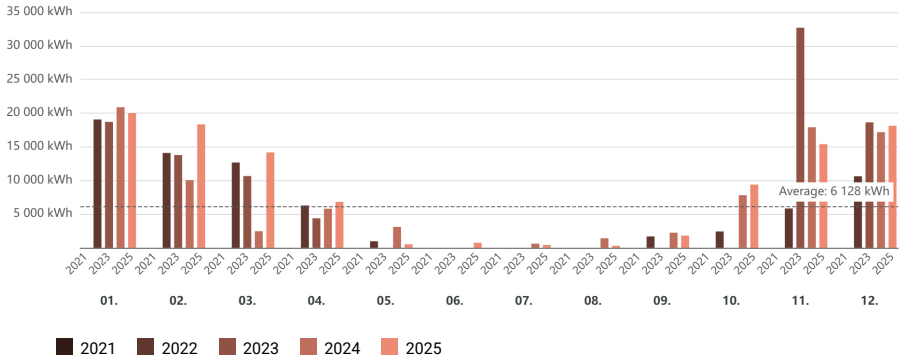


Annual distribution of electricity

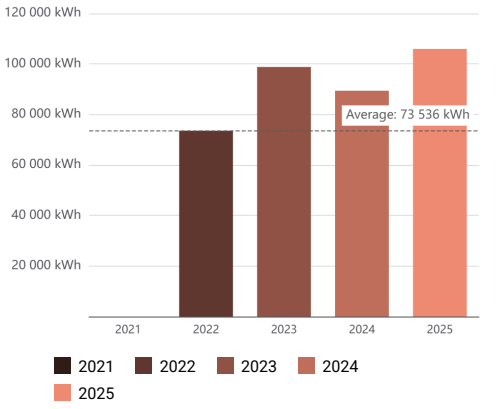


Time period	01. (kWh)	02. (kWh)	03. (kWh)	04. (kWh)	05. (kWh)	06. (kWh)	07. (kWh)	08. (kWh)	09. (kWh)	10. (kWh)	11. (kWh)	12. (kWh)	Σ
2021.	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M
2022.	0,06 M	0,06 M	0,06 M	0,05 M	0,08 M	0,09 M	0,09 M	0,09 M	0,06 M	0,05 M	0,05 M	0,06 M	0,79 M
2023.	0,06 M	0,06 M	0,06 M	0,04 M	0,06 M	0,06 M	0,07 M	0,07 M	0,07 M	0,08 M	0,08 M	0,07 M	0,79 M
2024.	0,08 M	0,07 M	0,10 M	0,08 M	0,08 M	0,08 M	0,11 M	0,13 M	0,11 M	0,09 M	0,09 M	0,09 M	1,11 M
2025.	**0,00 M**	**0,09 M**	**0,10 M**	**0,09 M**	**0,13 M**	**0,00 M**	**0,13 M**	**0,13 M**	**0,13 M**	**0,11 M**	**0,11 M**	**0,09 M**	**1,13 M**

Natural gas consumption in relation to recent years

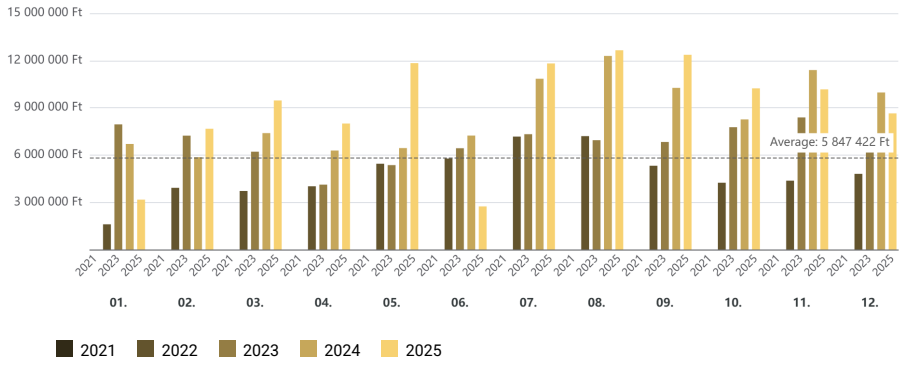


Annual distribution of natural gas

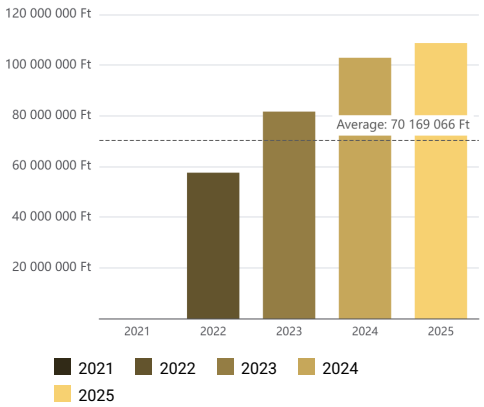


Time period	01. (kWh)	02. (kWh)	03. (kWh)	04. (kWh)	05. (kWh)	06. (kWh)	07. (kWh)	08. (kWh)	09. (kWh)	10. (kWh)	11. (kWh)	12. (kWh)	Σ
2021.	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E
2022.	19,05 E	14,08 E	12,66 E	6,28 E	0,96 E	0,00 E	0,00 E	0,00 E	1,68 E	2,41 E	5,83 E	10,61 E	73,56 E
2023.	18,69 E	13,77 E	10,65 E	4,37 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	0,00 E	32,69 E	18,62 E	98,80 E
2024.	20,87 E	10,06 E	2,46 E	5,80 E	3,09 E	0,00 E	0,61 E	1,40 E	2,23 E	7,81 E	17,90 E	17,17 E	89,39 E
2025.	**20,00 E**	**18,33 E**	**14,16 E**	**6,81 E**	**0,52 E**	**0,74 E**	**0,41 E**	**0,29 E**	**1,80 E**	**9,38 E**	**15,38 E**	**18,12 E**	**105,94 E**

Electricity costs in relation to recent years

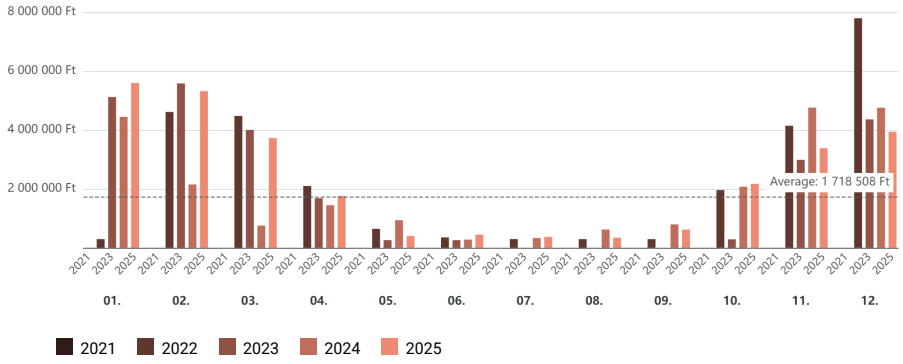


Annual cost breakdown of electricity

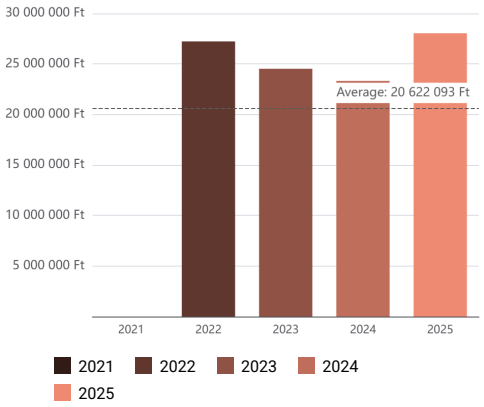


Time period	01. (Ft)	02. (Ft)	03. (Ft)	04. (Ft)	05. (Ft)	06. (Ft)	07. (Ft)	08. (Ft)	09. (Ft)	10. (Ft)	11. (Ft)	12. (Ft)	Σ
2021.	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M
2022.	1,60 M	3,91 M	3,71 M	4,01 M	5,44 M	5,77 M	7,17 M	7,20 M	5,32 M	4,24 M	4,37 M	4,80 M	57,55 M
2023.	7,94 M	7,23 M	6,21 M	4,12 M	5,36 M	6,43 M	7,32 M	6,94 M	6,83 M	7,76 M	8,38 M	7,14 M	81,66 M
2024.	6,70 M	5,86 M	7,39 M	6,28 M	6,44 M	7,23 M	10,84 M	12,29 M	10,26 M	8,26 M	11,39 M	9,97 M	102,91 M
2025.	3,17 M	7,67 M	9,46 M	8,00 M	11,83 M	2,73 M	11,81 M	12,65 M	12,36 M	10,23 M	10,17 M	8,64 M	108,72 M

Natural gas costs in relation to recent years



Annual cost breakdown of natural gas

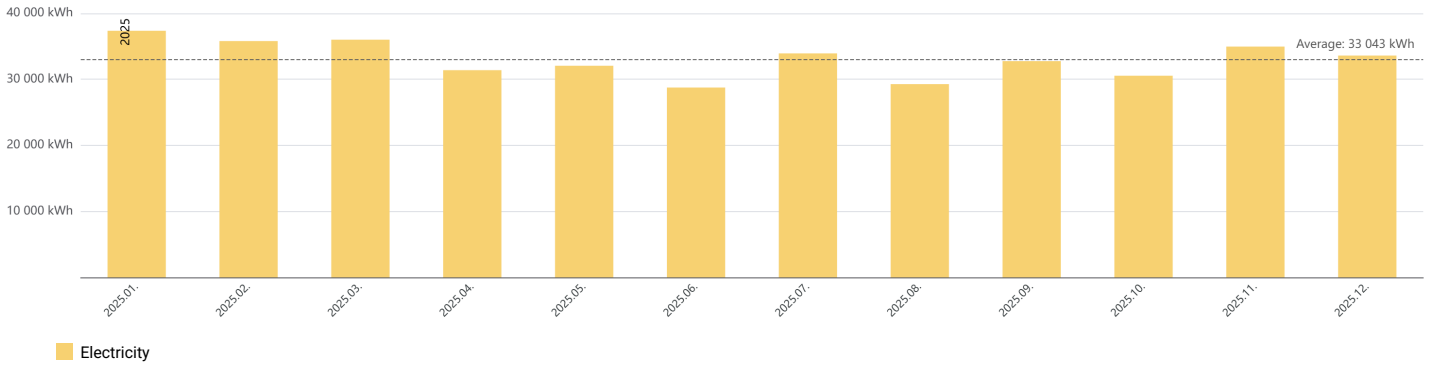


Time period	01. (Ft)	02. (Ft)	03. (Ft)	04. (Ft)	05. (Ft)	06. (Ft)	07. (Ft)	08. (Ft)	09. (Ft)	10. (Ft)	11. (Ft)	12. (Ft)	Σ
2021.	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M	0,00 M
2022.	0,29 M	4,61 M	4,48 M	2,10 M	0,64 M	0,35 M	0,29 M	0,29 M	0,29 M	1,96 M	4,14 M	7,79 M	27,23 M
2023.	5,12 M	5,58 M	4,00 M	1,68 M	0,26 M	0,26 M	0,00 M	0,00 M	0,00 M	0,28 M	2,99 M	4,36 M	24,52 M
2024.	4,44 M	2,15 M	0,75 M	1,44 M	0,93 M	0,28 M	0,33 M	0,62 M	0,79 M	2,07 M	4,76 M	4,76 M	23,32 M
2025.	5,60 M	5,32 M	3,72 M	1,76 M	0,40 M	0,44 M	0,37 M	0,34 M	0,61 M	2,17 M	3,38 M	3,94 M	28,04 M

Electricity measurement

Academia · 1054 Budapest, Akadémia utca 6.

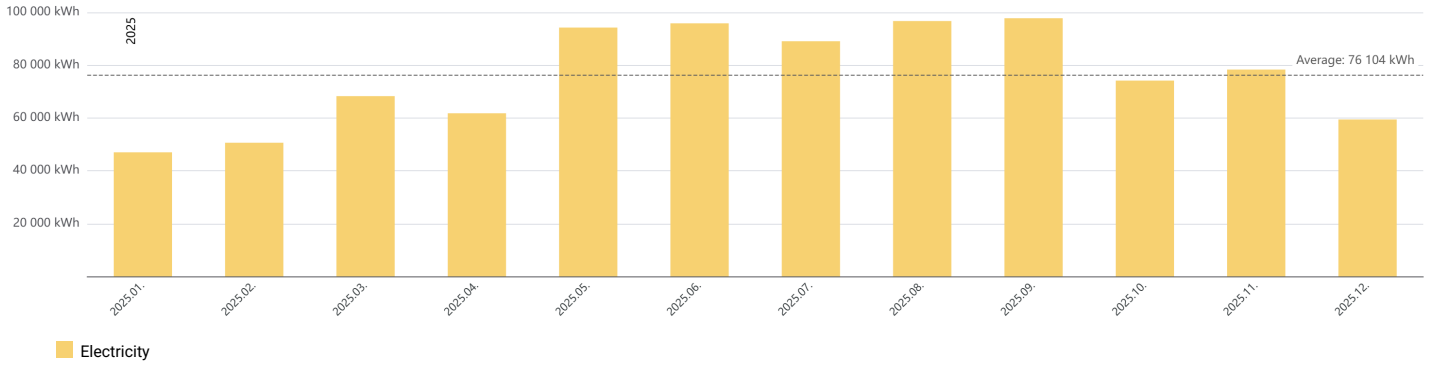
Time series monthly distribution



Electricity measurement

Academia · 1054 Budapest, Akadémia utca 6.

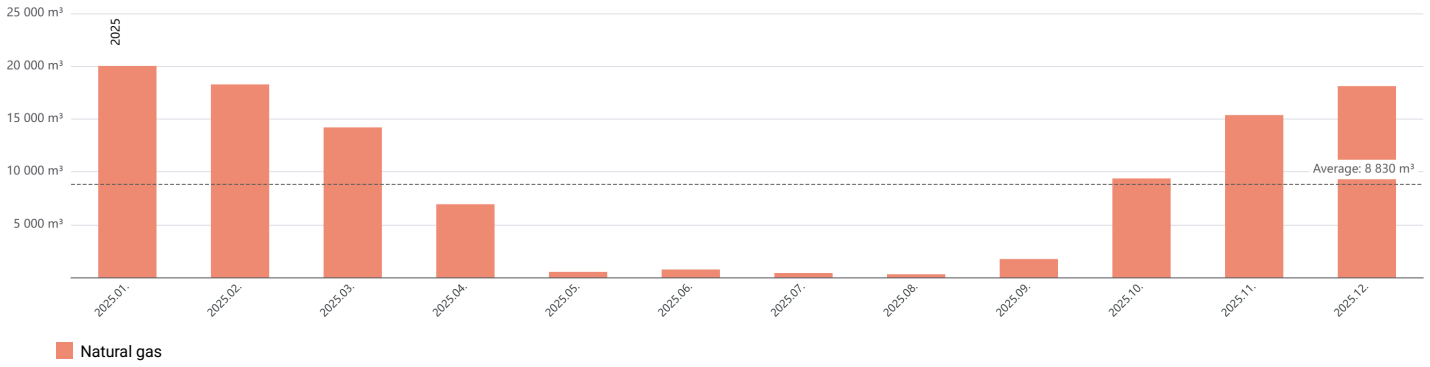
Time series monthly distribution



Gas measurement

Academia · 1054 Budapest, Akadémia utca 6.

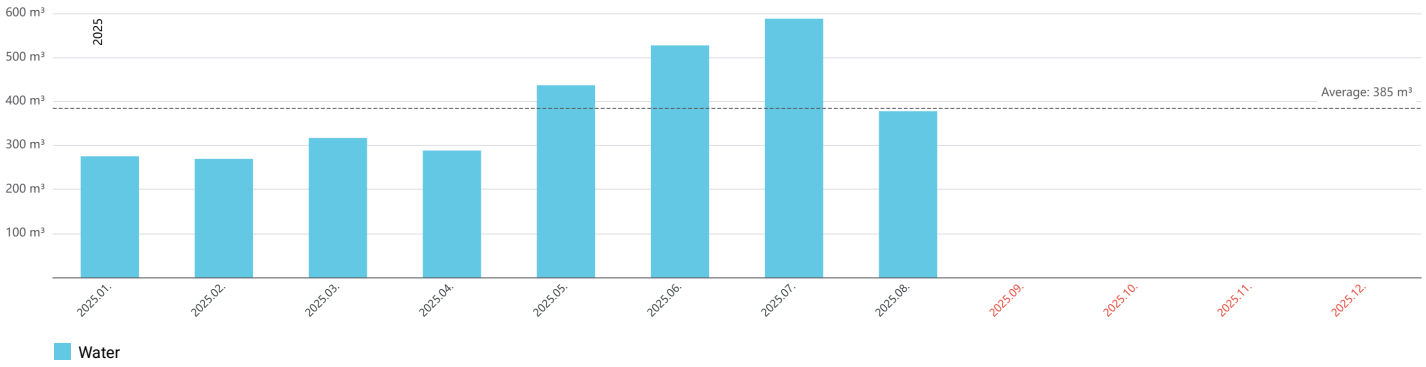
Time series monthly distribution



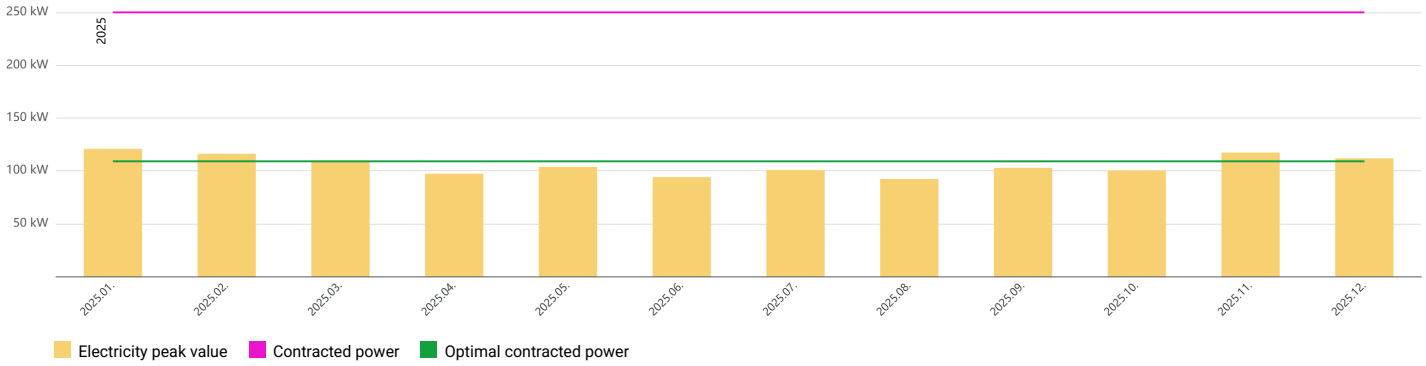
Water measurement

Academia · 1054 Budapest, Akadémia utca 6.

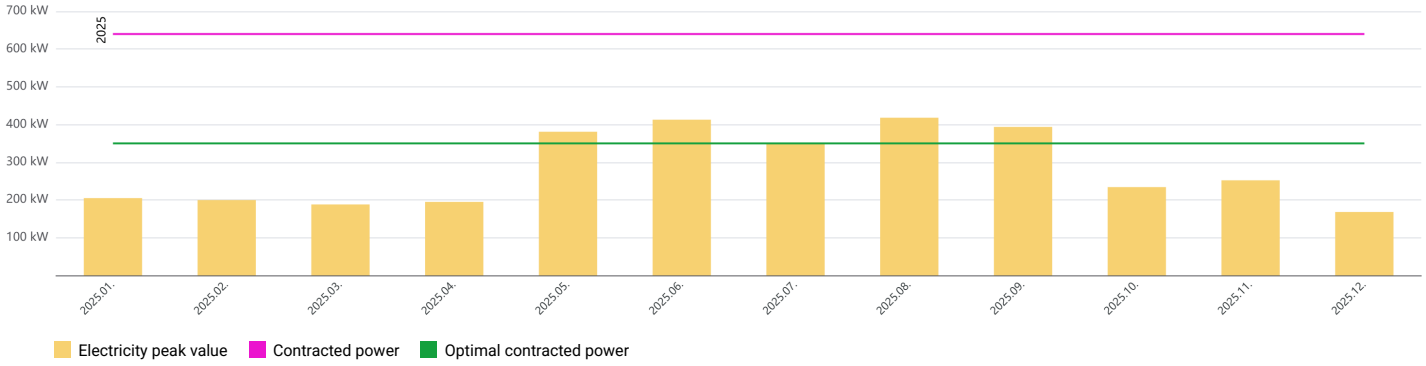
Time series monthly distribution



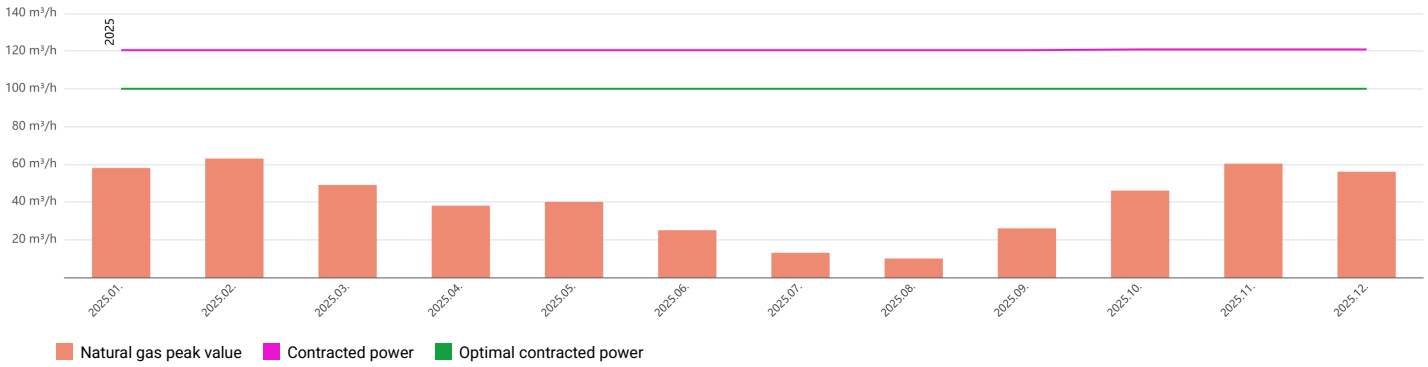
Contracted power



Contracted power



Contracted power



Awareness-raising materials

The year's awareness-raising materials were handed over. The number of active and passive outreach activities will be defined in report 22/c.

The **current** contracted power: **250 kW**, which based on the last 12 months data is **too high**.

Current fees:
Base fee: **3 300 000 Ft**
Penalty fee: **0 Ft**
Operative fee: **0 Ft**
Total: **3 300 000 Ft**
Allowed overcapacities issued: **0**

Optimised fees (recommended power: **109 kW**):
Base fee: **1 438 800 Ft**
Penalty fee: **99 000 Ft**
Total: **1 537 800 Ft**
Annual savings: **1 762 200 Ft**

The **current** contracted power: **640 kW**, which based on the last 12 months data is **too high**.

Current fees:
Base fee: **8 448 000 Ft**
Penalty fee: **0 Ft**
Operative fee: **0 Ft**
Total: **8 448 000 Ft**
Allowed overcapacities issued: **0**

Optimised fees (recommended power: **350 kW**):
Base fee: **4 620 000 Ft**
Penalty fee: **679 800 Ft**
Total: **5 299 800 Ft**
Annual savings: **3 148 200 Ft**

The **current** contracted power: **120.88 m³/h**, the minimum was **120.51 m³/h** and the maximum was **120.88 m³/h**, which based on the last 12 months data is **too high**.

Current fees:
Base fee: **2 605 014 Ft**
Penalty fee: **0 Ft**
Operative fee: **0 Ft**

Total: **2 605 014 Ft**
Allowed overcapacities issued: **0**

Optimised fees (recommended power: **100 m³/h**):
Base fee: **2 160 000 Ft**
Penalty fee: **0 Ft**
Total: **2 160 000 Ft**
Annual savings: **445 014 Ft**

General energy saving suggestions that do not require investment

Building Operations

- Compliance with the recommended temperature – a 1°C temperature change results in a 6-8% variation in energy consumption.
  - Recommended winter temperature: during operating hours: 20°C, outside operating hours: 16°C
  - Recommended summer temperature: during operating hours: 26°C, outside operating hours: 30°C
- Ventilation: justified only during operating hours, based on the number of occupants (not pre-programmed), done multiple times for short durations.
- Lighting: controlled by motion/presence detectors.
- Proper use of shades, potentially reducing heat load by up to 80%.
- Review of regulations:
  - Reducing the influence of human factors and the possibility of human intervention.
  - Is it operating according to the schedule?
- Ensuring comfort (cooling, heating, lighting) only in the spaces actually used.

Administrative Measures

- Reviewing organizational regulations, e.g., ventilation, turning off equipment after work, climate and heating control.
- Appointing a dedicated responsible person at the official and institutional levels (energy manager), who informs users about energy usage, results, and saving opportunities.
- Raising awareness among users:
  - Informing building users about the building's energy consumption and its cost.
  - Collecting employees' ideas, even in a competitive format.
  - Regularly distributing awareness materials to employees.
  - Communicating the results achieved in energy efficiency.
- Comparing expected and actual energy consumption, and investigating any discrepancies.
- Creating a consumer registry:
  - Surveying consumer groups, creating a registry, and regularly reviewing it (manufacturer, type, quantity, performance, operating hours).
  - Identifying essential consumers outside operating hours, determining performance and operating hours.
  - Identifying and disconnecting unnecessary consumers.
  - Periodic measurement of energy consumption by large consumers and consumer groups (even manually).
  - Comparing the technical data of consumers with their actual energy consumption.
- Energy-conscious procurement of equipment:
  - Defining minimum energy efficiency requirements in various areas – prescribing the best available technology (BAT).
  - Developing an appropriate scoring system during procurement, with adequate emphasis on energy efficiency and environmental protection.
  - Making decisions based on life cycle cost analysis (LCCA), considering environmental impacts.
- Ensuring the availability of an energy performance certificate, and implementing the proposed architectural and mechanical upgrades.

Specific cost and energy saving proposals not requiring investment

Review of Operating Hours

Significant savings potential can be found in reducing consumption outside of operating hours for most organizations.

Some measures that allow for reducing consumption outside of operating hours without significant investment costs:

- Identifying consumers operating both justifiably and unjustifiably outside of operating hours
- Appointing a responsible person to turn off/regulate unnecessary consumers
- Is the regulation programmed to operate according to opening hours or based on external temperature?
- Is there an opportunity to use off-peak electricity?
- Is the operating time set correctly? (30-60 minutes before and after opening hours)

Checking Contracted Power

The base fee may contain unnecessary charges due to an unjustified level of contracted power.

Some measures that allow for reducing the performance fee without investment costs:

- In the case of low contracted power, when the provider charges for overconsumption:
  - Is the current peak consumption justified?
  - If there are only occasional, sudden spikes in consumption, measures can be taken to reduce and smooth out the consumption pattern, e.g., smoothing the morning heating peak by starting earlier.
- High contracted power, when part of the base fee is paid unnecessarily:
  - Determine the optimal value on an annual basis and request a reduction to that level.
- Inquire with the network provider about when it is possible to modify and request the change.
- Operational contracting options for electricity.

Low investment cost energy saving proposals

Review of Reactive Power

If reactive power occurs, the service provider charges an additional fee, which can be eliminated with the appropriate equipment. Savings through reactive power management > >

If reactive power consumption is detected, the following actions are recommended:

- Check whether the correct capacity compensator has been installed?
- Is the equipment properly maintained? Has it malfunctioned?

The fee for reactive power consumption can be avoided by installing the appropriate equipment. Request a quote for the installation of the equipment here: ugyfelszolgalat@pannonmuhely.hu

Boiler Room Diagnostics

Anomalies detected by Panda energy management analyses can often be traced back to errors in the setup of the mechanical system or improper regulation. Accurate diagnosis of improper operation requires the installation of high-precision measuring instruments, data collection, and analysis, which we can provide as part of our mobile data collection-based mechanical diagnostics service. The diagnostics are suitable for reviewing boilers, central cooling systems, and heat distribution systems, description of mechanical diagnostics > >

The optimization of the mechanical system is carried out in three phases:

1. Installation of the measuring system, data collection: Data collection over 3-10 days with second-by-second measurement
2. Data processing, documentation, analysis, and recommendation
3. Optimization, repair, and development of control systems

Informative pricing at a Budapest location, for a building with a single heat center, net: Phase 1: 96,000 HUF, Phase 2: 224,000 HUF. Please submit the details of your building requiring a review using the following form: boiler room diagnostics contact form > >

Energy saving proposals with investment costs

Measurement and Data Collection

From an energy management perspective, we recommend establishing separate measurements of consumption (integrating existing main and sub-meters into an automated data collection system, and installing additional meters), which brings numerous long-term benefits.

The savings realized in operations are based on monitoring and optimizing the following areas:

- Creating comparability of specific consumption points with expected consumption
- Setting limits
- Usage-dependent regulation
- Mechanical regulation
- Avoiding exceedance of contracted power
- Measuring reactive power
- Peak vs. off-peak operation
- Displaying and optimizing standby mode
- Weather- and usage-dependent regulation
- Measuring operating hours of equipment
- Maintenance optimization
- Supporting energy procurement with 15-minute data.

Lighting Modernization

For newly installed equipment, we recommend using modern LED tubes and LED bulbs. LED technology has numerous advantages: low heat load, longer lifespan, no flickering, and immediate 100% brightness upon switching on. LED tubes provide a cost-effective replacement for traditional T8 tubes. Compared to conventional tubes, they offer 40-50% energy savings, and even more when compared to reflectors.

Renewable Energy

To reduce harmful emissions and electricity costs, we recommend exploring the installation of solar panels, which can generate electricity from solar energy. With the help of inverters, the generated electricity can be used by current consumers. The system can be optimally oriented south. The system is recommended for any building where the roof surface is suitable and sufficiently large for installation. Among other renewable energy generation options, the use of heat pump-based cooling and heating systems may be justified, which is also supported by the state through TAO tax credit.

Legend

1. Remote reading meter
2. Manual reading meter
3. Utility bill
4. Network feeding - missing solar production
5. Network feeding - existing solar production

Additional remarks

The report displayed is based on data stored in Panda based on current service provider connections.