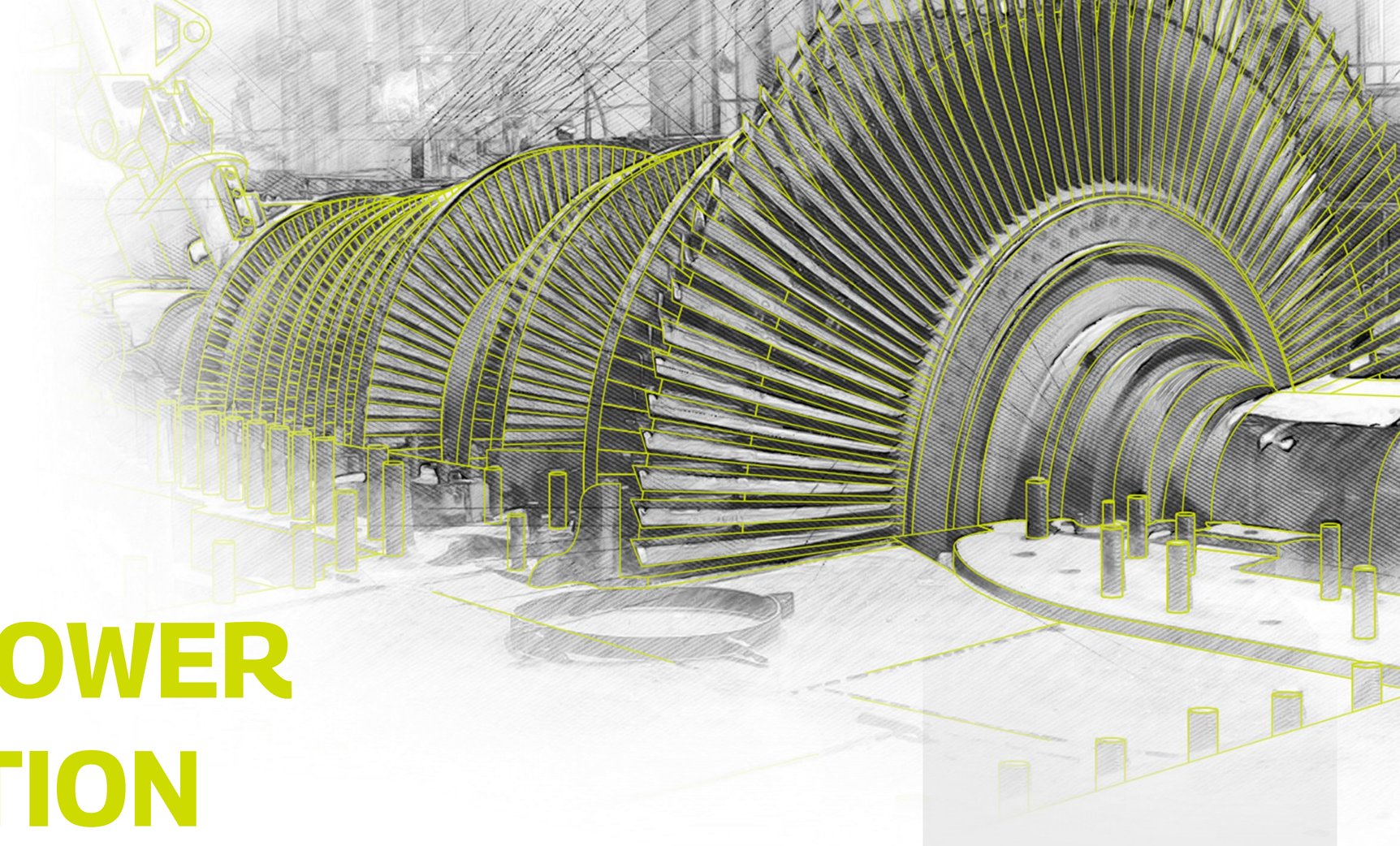
DB ENERGY

Zero-emission industry



REACTIVE POWER COMPENSATION

No charges for inductive and capacitive reactive energy

Wroclaw 2024

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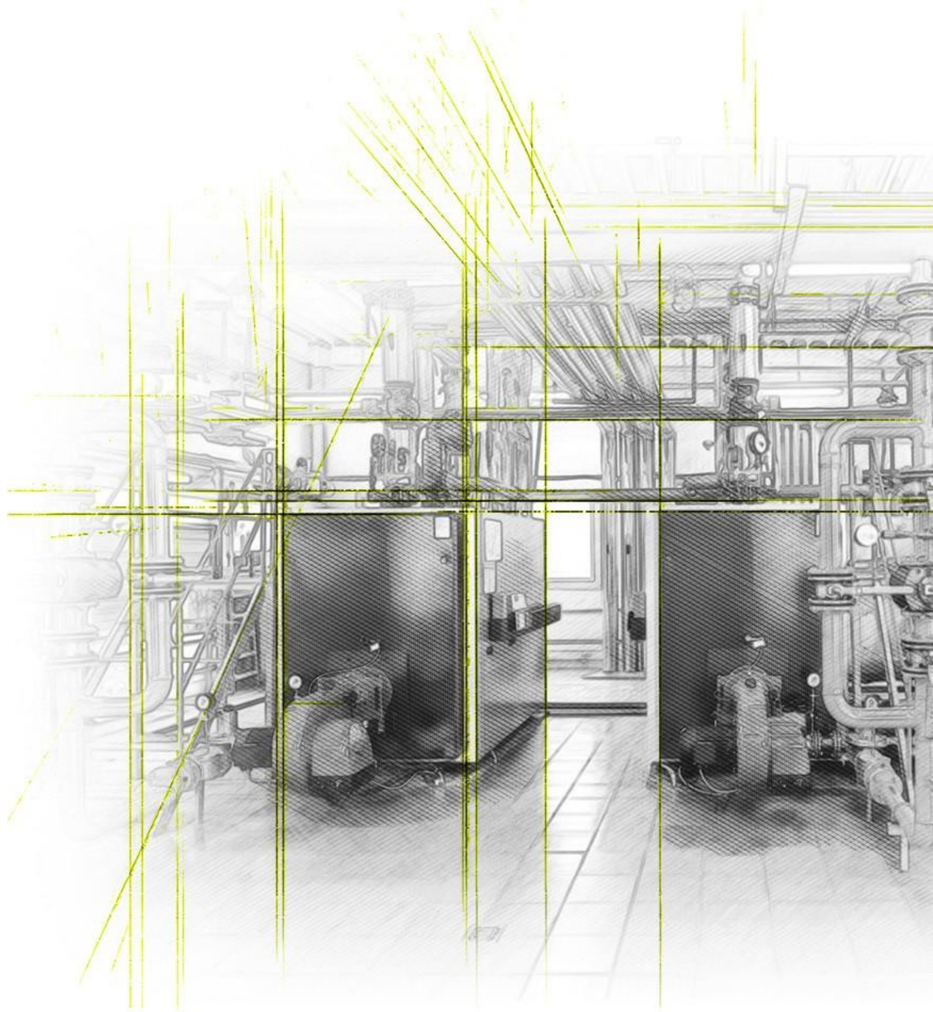

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DB Energy

What do WE DO?

DB Energy was founded in 2009 in Wrocław. We have been developing zero-emission strategies and improving energy efficiency in the industry for more than 10 years.

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Consultancy

- Walk Through Audit
- Company Energy Audit
- Energy Efficiency Audit
- Zero emission strategies
- White Certificates

Investments

- energy saving investments development
- financing and project implementation in the ESCO model or as General Contractor
- investor supervision

Diagnostics

- control of installations efficiency and their energy consumption
- continuous attempts to identify potential for further energy efficiency improvements
- measurements

Comprehensive Consulting

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Complex support for our client while developing energy-saving investments.

Walk Through Audit

we identify the potential for energy-saving investments

Company Audit

an obligatory audit for large companies, we develop a long-term energy efficiency improvement plan

Energy Efficiency Audit

we provide a complete concept of an energy-saving investment

Zero-emission strategies

plant's zero emissions due to reducing CO_2 emission

Concepts and projects

feasibility studies, technical implementation concepts and construction projects for energy-saving investments

Comprehensive suport for the proces to improve ENERGY EFFICIENCY

we manage extensively the entire process to improve energy efficiency

benefits and savings are maximized for a client

SAVINGS ARE IDENTIFIED

Audits:

- Walk Through
- company energy audit
- energy efficiency audits
- zero-emission strategies

PROJECT CONCEPTS

- detailed analysis of particular energy saving investments
- guidelines for designers essential to maximize benefits and savings
- construction projects

FINANCING AND IMPLEMENTATION

- DB Energy finances a project in the ESCO model
- DB Energy develops a project in the General Contracting model
- benefits and savings are maximized

DIAGNOSTICS AND MONITORING

- We control and diagnose in an ongoing manner energy consumption and operating efficiency of machines and devices
- We identify continuously space for further energy efficiency improvement
- We provide long term management over implementing zero-emission strategies

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Reactive power compensation

Reactive power in a nutshell

Var – Volt Ampere Reactive – the unit which reactive power is expressed in

inductive and capacitive energy – depending of an applied device, there are two types of reactive power to be distinguished

reactive power is accountable for additional network load – charges for reactive energy have been introduced to encourage a receiver to reduce its uptake

tgφ>0.4 – a coefficient used to calculate the reactive energy intake: if more than 40 kVarh of reactive energy is consumed for each 100 kWh of active energy, additional charges are included

reactive energy impacts the transmission network capacity – charges for reactive energy consumption, which exceeds the contract limits, are aimed at reducing the load of the transmission network

Reactive power
TYPES

INDUCTIVE REACTIVE POWER

Typical receiving devices which generate inductive reactive power:

Induction motors, transformers, transmission lines, lighting installations (fluorescent lamps, mercury-vapour and sodium-vapour lamps), induction furnaces and compensation chokes

CAPACITVE REACTIVE POWER

Typical receiving devices which generate capacitive reactive power:

UPS accumulators, computers, damaged capacitor banks, welding machines, inverters, energised cables

Reactive power
OVERCOMPENSATION

If the capacity of a bank to compensate the inductive reactive power **is adjusted inappropriately, overcompensation** may occur which accounts for:

negative value of the **tgφ** coefficient

faster wear and tear of devices and the network

additional charges for capacitive reactive energy

Service

INCENTIVES

No charges for reactive energy

reduction of an extensive reactive energy uptake – costs reduction for a client

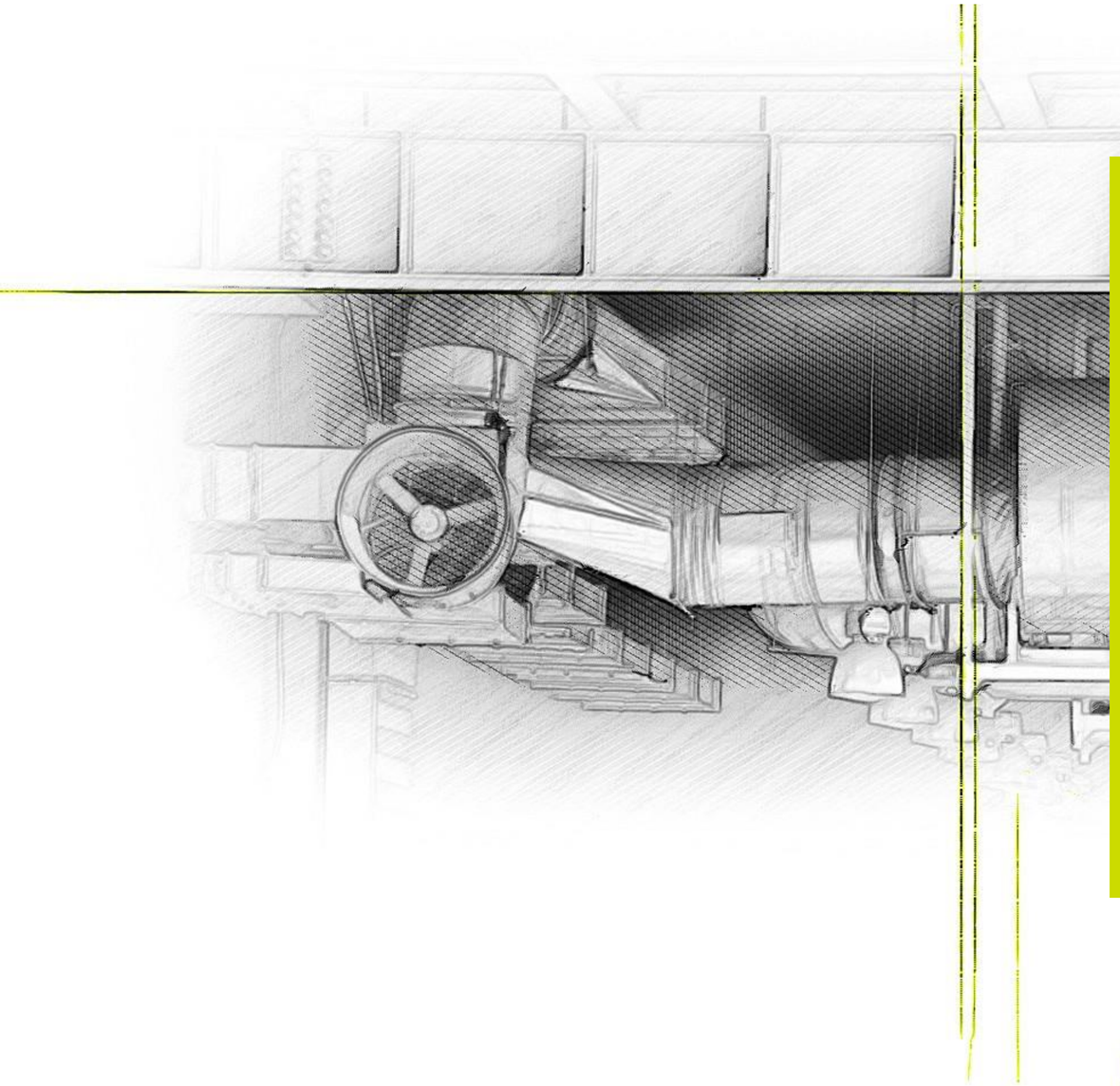
immediate savings – the service allows fees for active energy to be decreased by approx. 2%

increased efficiency of electric power devices and installations

quick payback period for a client, if the project is financed by them

retrofit adjusted to client's real needs

Typical ways
TO REDUCE REACTIVE ENERGY UPTAKE



In order to prevent reactive energy charges, compensation devices are implemented. That stands for the most commonly used solution. Among compensation devices the following are to be found:

capacitors or capacitor banks to compensate the inductive reactive energy

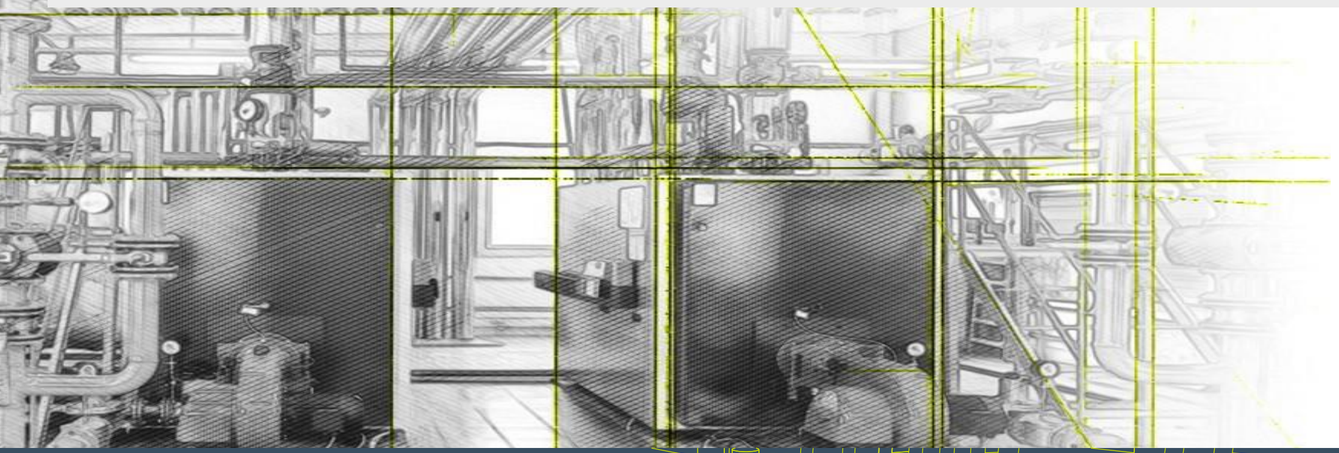
compensation chokes to compensate the capacitive reactive energy

REACTIVE ENERGY UPTAKE REDUCTION

It is financially-viable to reduce reactive energy uptake when:

costs for reactive energy consumption, which exceeds the contract limits, amounts to min. PLN 500 net each month

charges for reactive energy consumption **are of permanent and cyclical nature** (they are not incidental)



Necessary information:

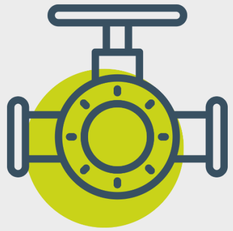
Has a system to compensate reactive power been installed?

Have charges for inductive or capacitive energy been detected? Perhaps both of them?

Is the following set of data available
- 15-minute measurement data for active or reactive energy
- 12 latest VAT invoices?

We reduce reactive energy consumption
IN ALL INDUSTRY SECTORS

These are clients who experience frequent reactive energy uptake which exceeds the contract limits:



wastewater treatment plants

pumping stations

hotels

wood processing plants

sawmills

paper mills

printing houses

concrete plants

mechanical plants

Comprehensive process management
AIMED AT REACTIVE ENERGY REDUCTION

We consider client's investment plans which allows **the reactive energy to be reduced maximally**

DATA COLLECTION – AN OFFER

- 15-minute measurement data and 12 latest VAT invoices
- Reactive energy fees
- Scheme of the reactive power compensation system
- Offer preparation

CONTRACT CONCLUSION – MEASUREMENTS

- Offer acceptance
- Selection of the financing method (incl. ESCO)
- Contract conclusion
- On-site visit: inspection and measurements

DEVICES SELECTION AND THEIR PRODUCTION

- Collected data verification
- Possible solutions analysis
- Devices selection
- Devices production

DELIVERY, ASSEMBLY AND LAUNCH

- Arrangements with the distribution system operator (DSO)
- Devices delivery
- Devices assembly
- Launch and acceptance (DSO)

DB ENERGY

DB Energy
the market leader

15 YEARS OF EXPERIENCE IN THE INDUSTRY

1,300	industrial audits
EUR 1.3 bn	value of energy-saving investments
EUR 480 ml	annual savings generated by the designed investments
9.3 TWh	annual energy savings thanks to designed investments
EUR 150 ml	value of the requested White Certificates

We reduce annual energy consumption
IN ALL INDUSTRY SECTORS

Mining industry

28%

Food industry

20%

Wood, paper and chemical industry

26%

Building industry and infrastructure

24%

Metal industry

22%

DB ENERGY

They have trusted us

Selected
CLIENTS

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DB ENERGY WILLBEE ENERGY APPS

VI Commercial Division of District Court Wrocław-Fabryczna,
under KRS number 0000685455, NIP 8942995375, REGON 02124914
Share capital of PLN 306,146

European Funds Smart Growth

European Union European Regional Development Fund

DB Energy conducts the R&D project titled „Development of an innovative drive diagnostics system (DiagSys) based on electrical signal measurements characteristic of mechanical damage to rotating machine components, together with a specialized analyser of machine operating status and efficiency (APPS 3)". The project is financed under the Intelligent Development Operational Programme 2014-2020, under sub-measure 1.1.1. „Industrial research and development work carried out by enterprises". No. of the competition: 1/1.1.1/2015. Value of the project PLN 5,974,021.85. Value of co-financing PLN 3,727,676.11.