

Energy- optimising for a sustainable future

A collection of inspirational case studies from companies around the world, who have optimised their processes and made significant savings.

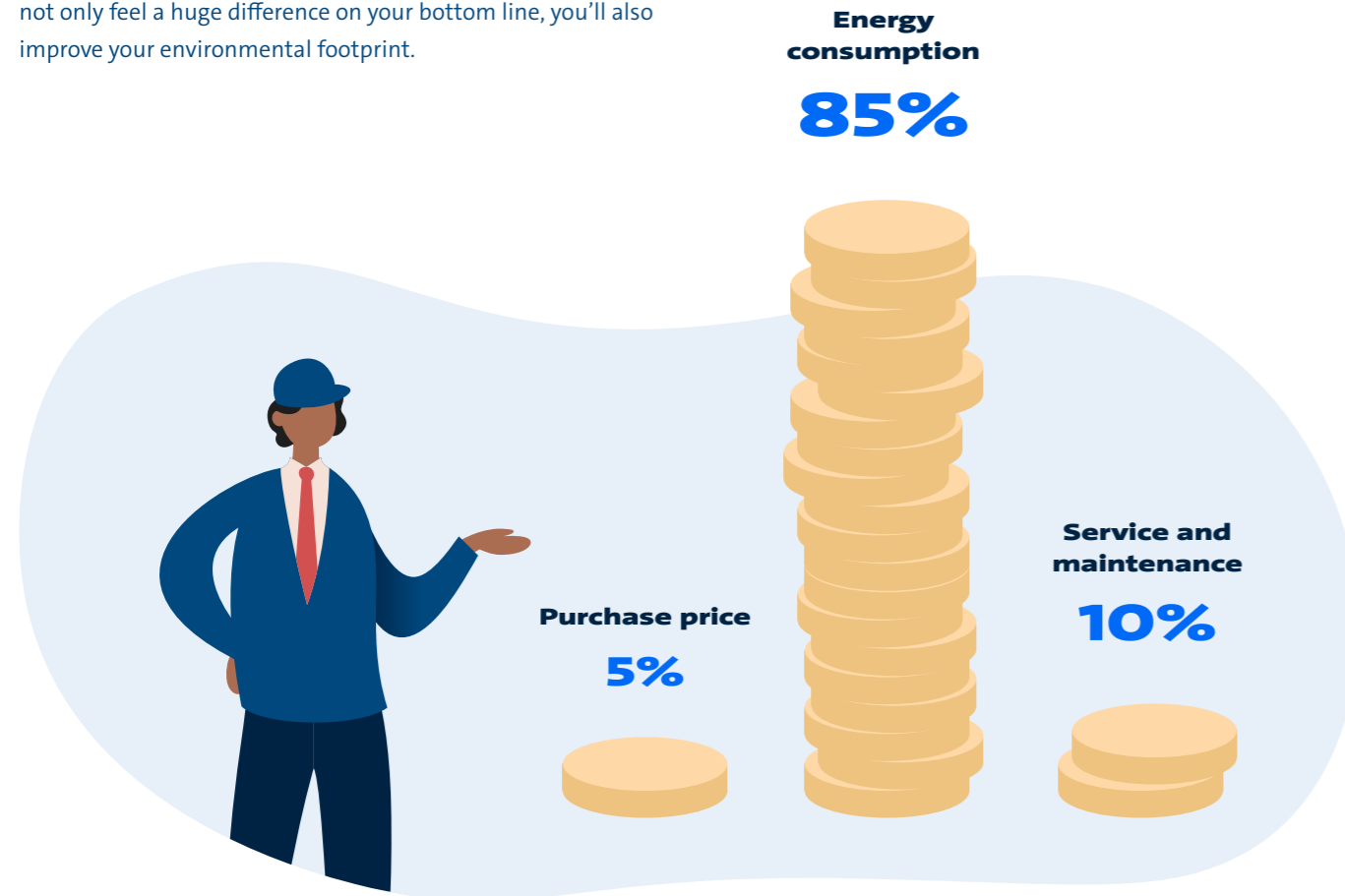
See how to energy-optimize your building
grundfos.com/energy-optimisation

GRUNDFOS 

Possibility in every drop

Embracing a world of energy optimisation

So, why exactly is energy optimisation so important? It's simple, really. Pump systems account for 4% of the world's energy consumption. And many of these systems are inefficient, old or incorrectly sized. By optimising your pump systems, you'll not only feel a huge difference on your bottom line, you'll also improve your environmental footprint.



85% of the life cycle cost of a pump is related to energy consumption

That's a pretty staggering figure, really. And it just illustrates why it's so important to ensure that your pump systems are energy-efficient. Since the purchase price makes up a mere 5%, the payback time is typically extremely short. So, while up-front costs may seem a bit steep, there's no reason to fear that you're losing money.

Upgrading your pumps has other operational, environmental and business benefits as well. By investing in greener and more energy-efficient pump solutions, you'll boost your environmental profile, bringing down carbon emissions in the process, and helping your organisation to comply with the latest sustainability and energy-saving regulations.



Environmental benefits

- Reduced CO₂ emissions
- Greener corporate image
- Compliance with energy regulations



Operational benefits

- Energy savings
- Reliable operation
- Low failure rates
- Reduced downtime
- Complete overview of pump installations
- Reduced repair costs

Optimising with Grundfos

Our founder Poul Due Jensen once said “the world is full of problems that can be solved in a better way.” It’s a mantra we still live by to this day, as we constantly push ourselves to provide energy-optimising pumping solutions to a variety of industries and applications.

Contributing towards energy optimisation is etched in our DNA. And within the commercial sector, we offer a range of systems and services for everything from hotels and hospitals to office towers, ultimately helping our clients reduce their operating costs as well as their environmental footprint.

In the following case stories, you’ll get a unique insight into the impact Grundfos and our three core energy optimisation services have had on several customers in the commercial sector.

Poul Due Jensen
Founder



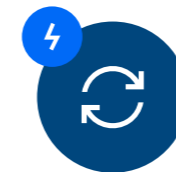
Energy Check

A Grundfos Energy Check provides you with an overview of the life cycle costs of your pumps. It gives you an indication of possible energy savings, and helps you make decisions on future pump replacements.



Energy Audit

A Grundfos Energy Audit is a six-step diagnostic tool developed to analyse your current pump performance and provide suggestions for future energy savings and improved performance.



Energy Earnings

Only available in APAC for now.

Grundfos Energy Earnings is a service agreement in which outdated, inefficient pump systems are replaced with new, energy-efficient pumps from Grundfos, which are financed by the energy savings of your new pump system.



Energy Audit reveals hidden savings

Upgrading pumps to energy-efficient counterparts brought substantial energy savings with a remarkably short payback time.

Residential buildings

Mumbai, India

In a Mumbai residential complex facing rising maintenance costs, the owners' association decided to optimise the hydro-pneumatic water system installed by the developer.

A Grundfos Energy Audit of the domestic and flushing hydro systems revealed that the existing system was significantly oversized, with actual water consumption at only 55% of its design capacity. Af-

ter observing the consumption pattern, a detailed replacement plan was chalked out and Grundfos CRE pumps were selected to replace the existing booster system with a payback period of 21 months.

Downsizing the existing booster system paid off, as the new CRE pumps helped the customer achieve energy savings of 27%, equivalent to reducing carbon emissions by 13.4 metric tonnes per

year. Grundfos supplied and upgraded the existing system with CRE pumps, utilising the existing headers, valves and expansion tank.

Grundfos supplied

3x CR32 pumps

2x CRE 10–6 systems



Payback time in months

21

Metric tonnes of CO₂ reduced pr. year

13.4

Energy savings

27%



Upgraded pump system. Increased efficiency.

Energy consumption is slashed by 40% thanks to a pump system overhaul.

Management institute Ahmedabad, India

A leading management institute in Ahmedabad faced inadequate water flow during peak hours, while the aged water booster system with end-suction pumps posed several maintenance issues, increasing OPEX. And if that wasn't enough, the manual control of the system resulted in a significant water loss during peak hours.

To address these critical issues, a Grundfos Energy Audit suggested upgrading the gravity feed system to a pressurised

water supply system, thereby eliminating a 100-kilolitre water tank. Additionally, the old end-suction pumps were replaced with a Grundfos Hydro MPC-E booster system, featuring three smaller, high-efficiency CRE pumps with IE5 motors.

The new Hydro MPC-E booster system turned out to be a huge success, reducing the energy consumption by up to 40%. It also helped provide constant flow and pressure at all points, while employing an

automated operation without manual intervention. In short, the new system took care of all the client's needs, completely transforming their operation.

Grundfos supplied

1x Hydro MPC-E CRE 15-3kW

Energy savings

40%



Optimised system eliminates wasted energy

Upgrading to an energy-efficient booster system brings substantial benefits to one of India's leading technology institutes.

Technology institute

Delhi, India

At one of India's leading educational institutes, energy consumption and maintenance of the existing water supply system was escalating. Due to the diverse terrain of the campus, it was under severe stress. Issues such as pipeline bursts, pressure fluctuations and water hammer became a common concern. Acknowledging the urgent need for an upgrade, they swiftly brought in Grundfos.

Grundfos soon realised that the best way to address these challenges was to provide Hydro Multi E Booster systems

equipped with IE5 efficiency motors. The unique features of the system such as soft pressure build-up and proportional pressure control essentially managed any over-pressurisation issues and compensated for frictional losses, resulting in energy savings of up to 10%.

Implementing the Hydro Multi E Booster systems proved to be a huge success, as the institute achieved a substantial 36% reduction in connected electrical load per motor for the same hydraulic duty. This was primarily down to the efficient

IE5 motors. Additionally, the installation allowed for further optimisation of the electrical supply motor, enabling the customer to achieve even more savings.

Grundfos supplied

- 6x Hydro Multi E 2 X CRE 10-03 2.2 kW systems
- 1x Hydro Multi E 2 X CRE 45-2-1 11.0 kW system
- 1x Hydro Multi E 3 X CRE 32-3 7.5 kW system



Energy savings

10%

Reduction in connected electrical load per motor

36%



Reduced OPEX Improved comfort

A luxury resort was suffering from high costs and guest complaints. Grundfos stepped in and solved both issues, and in doing so, won two more projects.

Luxury resort Turkey

When a luxury hotel in Turkey experienced that its booster pumps were causing high operating and maintenance costs and low efficiency, management turned to a familiar friend in Grundfos and sought out assistance.

With a history of successful collaboration, Grundfos Turkey provided the resort with a tailored solution, upgrading their hydro-pneumatic booster systems with IE5 motors as well as replacing their ineffi-

cient HVAC circulation systems with TPE3 pumps and Control MPC systems.

The results were clear to see. The implementation of a new Hydro MPC E system featuring proportional control not only resolved operational issues, it also provided sufficient water pressure in showers, drastically minimising complaints from guests at the resort. The new design and installation also contributed to a 20% reduction in energy consumption,

along with associated savings in time, maintenance and cost. It's a true success story that led to the resort management offering two additional projects to Grundfos Turkey.

Grundfos supplied

TPE3 pumps
IE5 motors
Control MPC systems

Energy savings
20%



A sustainability triumph

Outdated and oversized pumps waste huge amounts of energy. Tailored Grundfos solutions are designed to conserve energy and contribute to a sustainable future.

Hospitality brand

India

One of India's most prominent hospitality brands faced challenges with outdated HVAC and pressure-boosting systems across its prestigious hotels, leading to operational issues, high energy consumption, frequent breakdowns and, ultimately, a lower guest satisfaction.

Driven by their commitment to meet sustainability targets and deliver unmatched guest comfort, the hotel chain sought a reliable, cost-effective and energy-efficient pumping systems.

The hotel invited Grundfos experts to study the performance of their existing

HVAC and pressure-boosting systems. An Energy Audit soon proved that the issues were caused by oversized and outdated pumps in the system. To address this, the fixed-speed pumps were replaced with CRE pumps with variable frequency drives while the old, cast-iron pumps were replaced with Grundfos NK pumps with IE3 motors. Additionally, a customised service agreement including periodic maintenance was drawn up to ensure maximum uptime.

The solution resulted in estimated energy savings of over 30%, reducing carbon emissions by 49 tonnes per year

and ensuring a swift return on investment. By offering tailored solutions from energy optimisation to service agreements, Grundfos showed how energy conservation can shape the future of sustainability.

Grundfos supplied

- 9x CRE 10-15 vertical multi-stage pumps – CRE with IE5 efficiency motors
- 4x NK 150-315/296 with IE3 efficiency motors
- Grundfos Energy Audit
- Grundfos Service Agreement

Estimated energy savings

30%

Carbon emissions reduction per year

49 tonnes





Energy savings

29%

Annual reduction of CO₂ emissions

**47,000
kg**



Reducing costs and meeting goals

Transforming outdated chiller pumps helped a Bangkok art gallery to significantly reduce their energy consumption, while innovative financing helped them meet their sustainability goals.

Art gallery

Thailand

River City Bangkok, a renowned art gallery, faced challenges with aging and inefficient chiller pumps. With an aim to achieve energy savings while keeping upfront investments at a minimum, the gallery's management reached out to Grundfos for help.

Grundfos initiated an in-depth Energy Audit as part of the Grundfos Energy Earnings (GEE*) project. The analysis revealed significant energy-saving potential through pump upgrades, leading to the installation of six LS 150-125 pumps

equipped with IE3 motors and three new overload relays.

The results were impressive, showcasing a 29% reduction in energy consumption and an annual decrease of around 47,000 kg of CO₂ emissions. What set this solution apart was that the project was financed by Grundfos through shared realised savings – known as Grundfos Energy Earnings. This innovative approach allowed River City Bangkok to take steps towards a net-zero operation, aligning with their sustainability goals.

Grundfos Energy Earnings is a commitment to sustainability and innovation and the River City Bangkok story is testament to the power of collaboration between Grundfos and its partners as we continue to make positive strides towards a more energy-efficient future.

Grundfos supplied

- 6x Grundfos LS 150-125 pumps coupled with IE3 motors
- 3x new overload relays

*GEE (Grundfos Energy Earnings) is only available in the APAC region.



5-star energy optimisation

Energy-efficient cooling system replacement reduces costs and emissions for luxury hotel

Hotel

Romania

The 20-year-old cooling system installed on the top floor of the JW Marriott Bucharest Grand Hotel, a 5-star luxury hotel in Bucharest, was beginning to show its age. Having built up a trusting relationship over five years with the ad-hoc supply of individual pumps and consultancy, the hotel agreed to Grundfos' offer of a complimentary Energy Check assessment.

The Grundfos Energy Check report highlighted that the hotel's existing cooling system of five 37kW pumps could be re-

placed with just three intelligent, highly efficient 18.5kW Grundfos NBE pumps, frequency converters and a smart controller. The proposal projected a payback time of less than a year, significant annual energy and cost savings and a considerable reduction in the hotel's carbon emissions.

With the go-ahead to proceed, Grundfos provided full project assistance throughout, installing a turnkey solution that, in its first year, is running according to the Energy Check's projected energy and cost

savings. The JW Marriott and Grundfos teams are looking forward to future close collaboration, with a programme of on-going pump replacements agreed and opportunities for Energy Check investigations into the hotel's other water systems.

Grundfos supplied

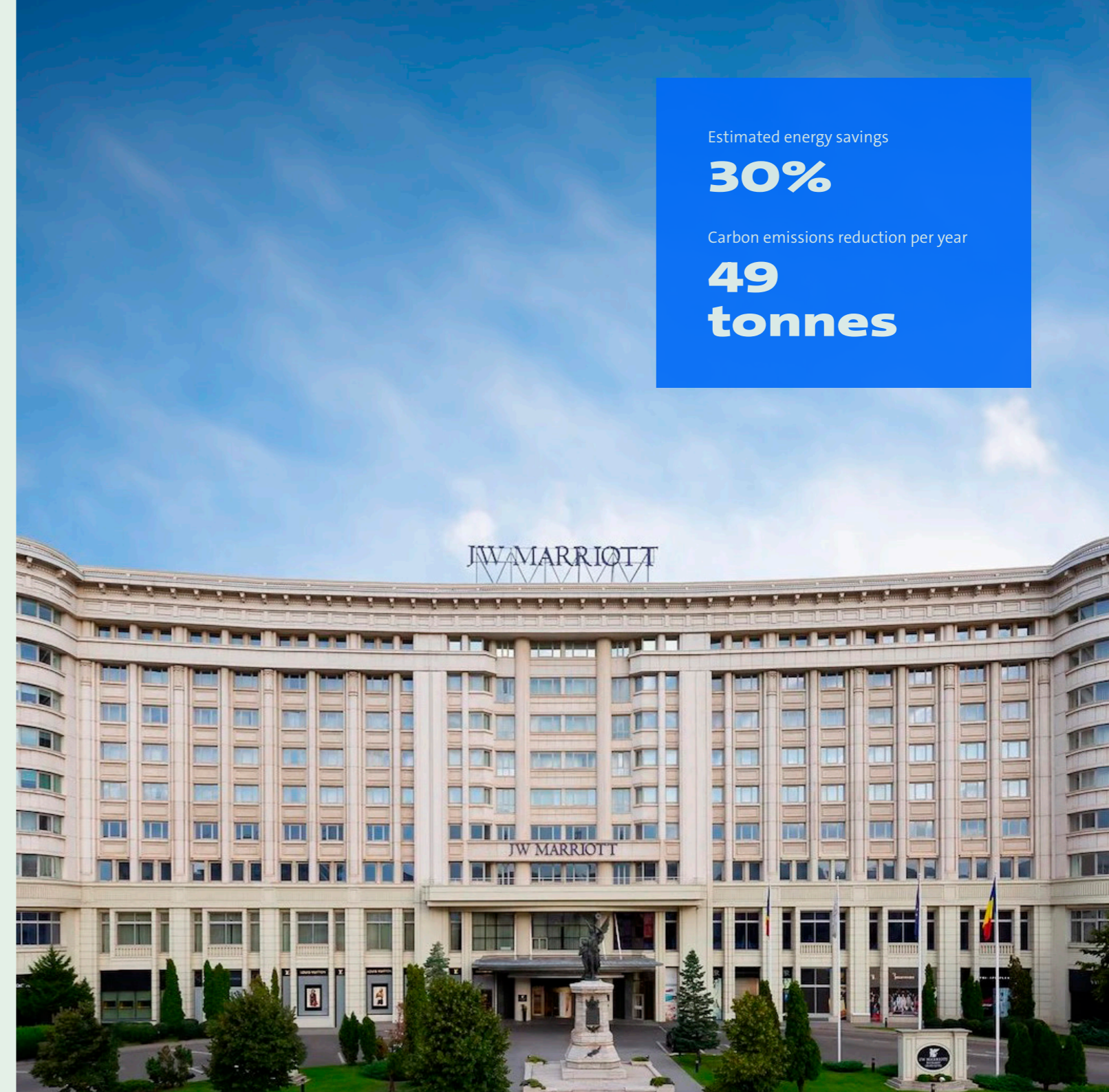
- 3x Grundfos NBE end-suction close-coupled EN733 standard pumps
- 1 x Control MPC Series 2000 controller – 3-pump variant
- 1x Differential pressure sensor

Estimated energy savings

30%

Carbon emissions reduction per year

49 tonnes



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