

Coop Danmark A/S

Coop has Denmark’s largest multisite Energy Management System ISO 50001 and is the first retail company approved by Science-Based Targets initiatives.



Case Study Snapshot

Industry	Retail Company
Product/Service	Grocery and consumer goods
Location	Denmark
Energy performance improvement percentage (over the improvement period)	24% improvement over 6 years
Total energy cost savings (over the improvement period)	USD 29,000,000
Cost to implement Energy Management System (EnMS)	USD 1,500,000
Total energy savings (over the improvement period)	137,000 MWh
Total CO₂-e emission reduction (over the improvement period)	42,000 Metric Tonnes (scope 1+2)*

**2018-2022 Coop’s calculation of CO2 emissions*

Organisation Profile/Business Case

Coop Denmark is Denmark’s leading retail company with 1,000 stores throughout Denmark, 40,000 employees and a total turnover of approximately DKK 43 billion. Coop operates the following chain stores: Kvickly, SuperBrugsen, Dagli’Brugsen, Coop 365discount and Irma, as well as the online stores Coop.dk MAD and Coop.dk Shopping

Coop has an ambitious goal of being Denmark’s most sustainable company within the retail industry; this includes being climate positive in 2030, with 2018 as the baseline year. As Denmark’s leading retailer, Coop has had its climate action plan approved by the international Science-Based Targets initiative (SBTi). It is thus documented that Coop’s climate goals meet the Paris Agreement. The climate plan also includes a reduction for Coop’s entire value chain of 1 million tonnes CO₂ per year. This includes not only Coop’s own CO₂ emissions from refrigerated counters, transport, buildings, etc., but also the emissions that all Coop’s suppliers and customers emit during the production and consumption of each individual product. The climate plan aims to reduce Coop’s CO₂ emissions from its own operations by 75% in 2025 and ultimately by 91% in 2030. Converted to energy figures, this corresponds to an approximate 17% reduction in Coop’s total energy consumption in 2030. The last part of the goal must be achieved by planting 1,000 hectares of forest in Denmark. Energy optimisation projects must support Coop’s overall goal of reducing the energy consumption of its own operations and firmly establish energy management work throughout Coop’s operations. As an interim goal, Coop must have phased out fossil energy sources in stores and distribution centres owned by Coop by no later than 2023. In addition, Coop must roll out the legally required and approved replacement plan from the HFC cooling system to natural refrigerants.

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CSR is an important part of Coop's fundamental values. The introduction of ISO 50001 is therefore an inevitable part of Coop's strategic tool for working systematically to improve in the area of energy. In addition to looking at savings and reductions, Coop uses energy management as a lever to look ahead at new sustainable opportunities and future potential - both in terms of technological and innovative best practice solutions.

“CSR is part of our fundamental values. Coop has a strong focus on its climate footprint and modest energy resources. From a climate perspective, energy management is an essential tool to achieve our climate goals of becoming climate positive by 2030. And from a business perspective, energy savings can help strengthen the bottom line of our stores.”

— Kræn Østergård Nielsen, CEO

Business benefits

ISO 50001 certification is thus part of Coop's strategic plan to help reduce environmental impact without affecting the company's core business, whilst increasing profitability at the same time. ISO 50001 is therefore contributing to improve energy efforts by monitoring and managing the company's energy consumption and savings.

Coop has a constant focus on energy optimisation work to ensure continuous energy savings, so that Coop can achieve its climate goals. Since the introduction of ISO 50001 in 2016, Coop has intensified investments in green transition. As part of the strategic work around energy, Coop has been steadfast in its roll-out of multiple energy optimisation projects across the store chains. These initiatives include:

- Implementation of an energy management system
- Replacement of 200,000 tubes and spots with LED
- Central control of heating and ventilation
- Heating strategy in shops, offices and warehouses
- Heat recovery in shops and warehouses
- Conversion of cooling systems, using refrigerants less damaging to climate
- Reduction of several energy-consuming devices in stores
- Installation of solar cells on shop roofs and multiple warehouses
- Installation of 500 electric charging stations
- Replacement of numerous gas-driven vans with electric-powered vans
- Employee involvement

Coop has allocated approximately USD 71 million to initiate energy saving projects that result in USD 23.5 million in annual savings. In addition, the energy management system has secured Coop more than DKK 50 million in energy subsidies for energy optimisation projects. From 2018 to 2022, heat recovery and solar cells have resulted in energy savings equivalent to approximately USD 3.5 million and expects to save USD 5 million annually by 2025.

The annual cost to operate and maintain the energy management system is approximately USD 240 thousand.

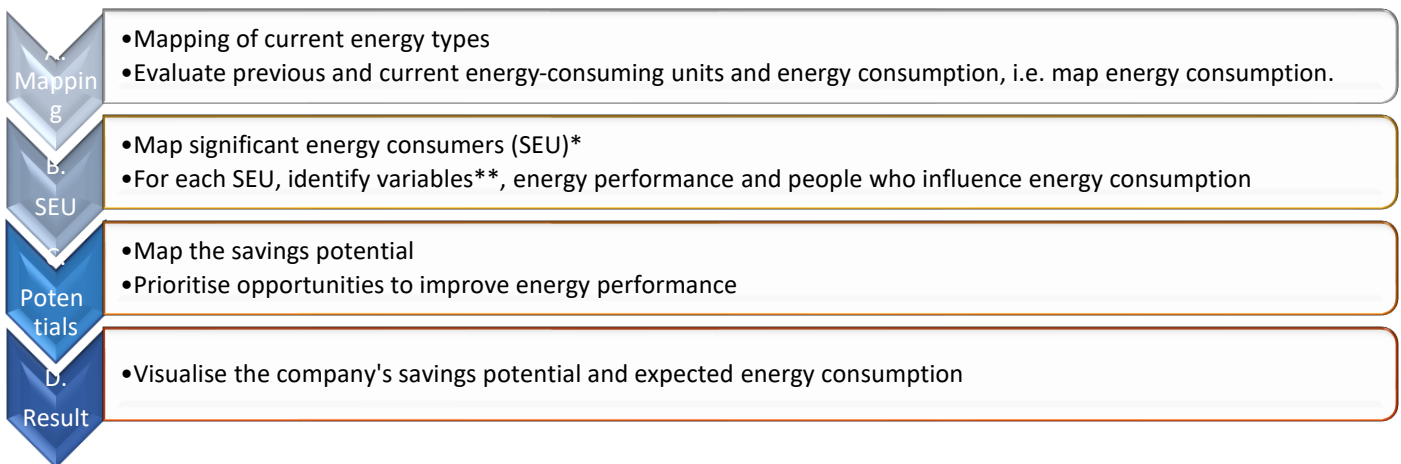
Since the implementation of energy management system, Coop has reduced energy costs and achieved a reduction of approximately 24% of energy consumption, equivalent to 137,000 MWh and 42,000 metric tonnes of CO2 emissions. Energy optimisation is both good for the environment and simultaneously strengthens the bottom line – It means good business!

Global awareness of climate and energy concerns has caused many to switch from fossil energy sources, which puts the Danish infrastructure under pressure - especially the electricity grid. Coop collaborates with the Danish electricity grid, where we look at how Coop can contribute to stabilising the electricity grid in Denmark. By shifting consumption at peak times to ensure that there is enough power for everyone, we can avoid brown-outs and black-outs. From a socio-economic perspective, the energy management system contributes to overall energy savings and CO2 reduction, whilst also contributing to social benefits.

Plan

Top management in Coop has decided that they want to introduce energy management ISO 50001 in Coop and set the course to ensure consistency between climate goals and the energy goals, which are communicated across Coop. It is top management’s responsibility to initiate and support climate work. To achieve this, Coop is setting up a climate department and an energy department, which must be the driving force to ensure that we reach our ambitious goals. To guarantee support for energy projects, Coop’s top management representative sits on the steering group for energy-related matters. The climate department has envisioned ambitious yet reachable quote, which the energy department follows. The energy department reports scope 1+2 to the climate department, who quantifies to CO2 and then follows the development for all 3 scopes. Finally, this is reported via SBTi to validate interim goals and reach compliance with international commitments in extension of the GHG protocol. Energy projects costing above USD 143,000 are proposed to the investment committee, where top management also sits and ensures that these becomes high priority. Project proposals are highly influenced by creating awareness of TCO and CO2 reduction.

Coop's energy management system is structured in a so-called group model and sets the framework for the chains' activities in accordance with ISO 50001:2018. The system is designed to work as one unit across all store chains and functions. The procedure for the energy review is to initially map the different energy types in Coop, after which the most Significant Energy Users (hereafter SEUs) are identified and evaluated. SEUs are updated in the event of major changes and/or in connection with the annual statement. The savings potential is mapped and prioritised based on the above. The list of potential energy saving measures is reviewed and updated and the final results are presented. The energy review is updated annually with the latest energy data figures.



*SEU: Significant energy users and/or with great potential for improving energy performance

**Variable: A factor that influences energy consumption (energy performance) and that changes significantly. For example, it can be units produced, outside temperature etc.

Ad. A) Method for mapping current energy types and energy consumers incl. evaluation and mapping

Coop's energy types and energy consumption are mapped through a review of supply facilities and energy-consuming facilities as well as energy data - including both individual stores and Enacto Level 0 and 1 reports. Historical energy data has been obtained, for example, in the form of monthly data and multiple analyses of the company's energy performance, including a regression analysis to identify significant variables and establish fair and credible baselines. Further mapping, analysis of energy consumption and energy performance are carried out, including mapping of consumption distributed by end consumers. This mapping is based primarily on measurements established in the Energy Management and reported via the level 0 and 1 reports. In addition, analyses of energy performance and hourly values for electricity consumption are issued.

Ad. B) Method for mapping significant energy users (SEU)

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Mapping of SEU is based in part on a series of maps that show where, how and what the energy consumption is used for. The results of this mapping are described in the report and its annex. Further mapping of SEU is based on a preliminary rough assessment of the savings potential. When mapping SEU, for example, emphasis is placed on the savings potential rather than consumption (cf. definition of SEU). Mapping of variables is based on a series of regression analyses where significant variables are identified and applied. For each SEU identified, a number of EnPI and EnP are determined.

Ad. C) Method for mapping savings potential incl. visualisation of potential and expected energy consumption

Based on the initial review and identification of savings potentials, analysis of EnP and mapping of both energy consumption and SEU, an additional mapping of the savings potentials has been made. The economy of the savings potentials, i.e., expected savings and related investment are determined. Various levels of details are applied here - for example, the investments of certain projects are determined based on specific offers while others are based on experience. Saving measures are listed in the gross list, which is available on Teams. In the gross list, additional prioritisations along with savings potentials and expected energy consumption are made.

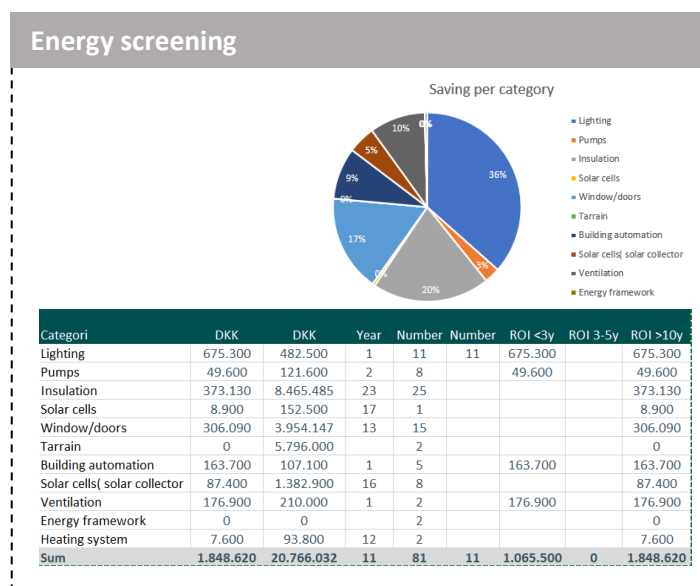
Ad. D) The result of the energy review, energy consumption and potential savings are made visible in a report.

Other requirements for Energy Review:

The energy review is updated both at regular intervals and in response to significant changes to facilities, equipment, systems or energy-consuming processes. Energy department must maintain methods and criteria used to prepare the energy review as documented information and must retain documented information about the results of the energy review.

“ISO 50001 is an effective tool for chasing energy savings, while at the same time it is powerful in terms of planning and involving stakeholders to bring awareness about energy consumptions and to ensure support and anchoring throughout the company”

—Nicki Pagh Børgesen, Energy Manager



Coop Energy plan 2022 2025	
Projects	Description
New EMIS-system	New monitoring and targeting system. 100% Integration with EnergiData increases cooperation between Coop and EnergiData will ensure better solutions both in the short and long term.
Heating strategy in shops, warehouses and offices	Better utilisation of excess heat in Coop’s stores – internally use or sell to external (saving up to 70% heat usage). Warehouses are changed from comfort heating to product security (saving up to 100% heat usage). New indoor climate standard for offices (saving up to 25%)
Phasing out of oil & gas	Phasing out of oil and gas in stores and storage facilities, which ensures that Coop goes from "black to green" energy
Excess heat	Coop's stores and storage facilities use "green" energy from refrigeration production, thereby minimising district heating taken from the public grid.

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Solar cells	Solar project 2.0 will contribute 3.8 GWh annually. Coop doubles renewable energy and covers increased electricity consumption for heat pumps.
“Smart grid”	Coop will contribute to the green transition - and ensure a long-term financial gain towards 2025 and 2030, by making parts of the electricity consumption available to the electricity grid.
Energy management phase 2. (Offices and storage facilities)	Ensure long-term goals, action plans, management focus and momentum. COOP can work purposefully and systematically to comply with the political climate and energy goals.
Behaviour and information about energy-efficient measures	Part of Energy Management. Employee information on what the individual store can do to reduce energy consumption, such as minimising impulse coolers, lowering the temperature, lighting control etc. There are greater potentials that have not yet been mapped
Demand management of light in warehouses	All warehouse lighting was replaced with LED in 2018. All locations are subject to replacement due to "end of life". By simultaneously updating with demand management, Coop achieves significant savings.
HFC roll-out	Statutory and previously approved replacement plan of HFC cooling system to natural refrigerants.
Total Energy Initiative	Overall action plan will reduce the Coop family's total energy consumption by -9 % towards 2025.

Do, Check and Act

The scope is 792 sites (stores) nationwide with 14.000 measurement points. The remaining sites are expected to be included in 2024. In order to ensure strategy alignment and streamline processes, collaborations across departments are required. Therefore, the Chief of Facility Management, Head of Construction & Establishment, Climate Manager, Technical Manager and Energy Manager sit in the steering group for energy, to ensure that energy projects become operationally reliable and are planned in the establishment phase. The steering group allocates resources in the following fields: CTS, EMS, Cooling, HVAC, project management (solar cells, lighting etc.) to ensure implementation of energy optimizing projects.

Employee: Coop only employs well qualified employees who, through training and education, have achieved a professional level. This means that employees and business partners who carry out tasks for Coop must all have the necessary knowledge if the task can give rise to significant energy impacts. This must ensure that harmful effects are minimised. This knowledge can be acquired through education, training or experience.

Coop increases the individual store employees' awareness and skills through the employee app and newsletters. These often feature videos about good and energy-efficient behaviour and other inspiration for how energy savings can be achieved. Information on other ways employees can help support the company's energy goals and Coop's energy policy are also made available.

The overall EnP and EnPi for Coop's main energy target is based on 2018. In connection with the establishment of an energy management system, a number of analyses have been prepared to identify which variables affect energy consumption and are therefore relevant in relation to the establishment of Baseline and EnPIs. The analyses show that outside temperature and heating degree days are variables that have a large influence on energy consumption. Thus, for each store, a baseline will be established that matches the energy utilisation of the unit and or address. Changes compared to the baseline will be measured and with this the energy savings can be calculated and the development in the energy savings measured and recorded. As a rule, Coop will not change a static baseline once it has already been determined and is working. However, situations may arise requiring the baseline to be changed. For example, the energy baseline must be adjusted in the event of one or more of the following conditions:

- EnPIs that no longer reflect the company's energy utilisation and energy consumption, or

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- significant changes made to process, operating patterns or energy systems, or
- according to a predetermined method

In addition, a number of EnPIs are prepared to spotlight both the company's overall energy performance and the energy performance of the individual stores.

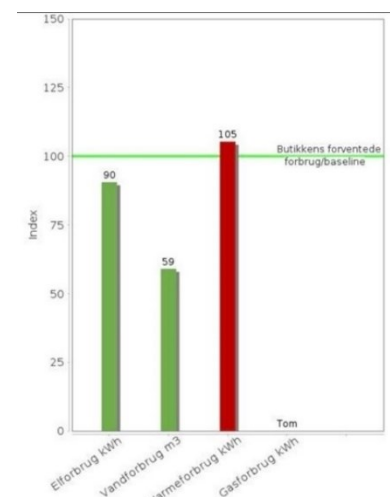
On an over-arching level, Coop's total energy savings will be calculated and reported in connection with management reporting. Savings are calculated on the basis of data from EnergiData, where realised savings initiatives are registered, and based on their budgeted savings make a bottom-up calculation of the realised savings. The total energy savings are calculated, and a comparison is made on a sample basis against the energy performance measured in Enacto. In connection with this, it is verified that the expected savings are in line with the savings realised. The savings measured in Enacto will also be used to create a top-down approach where the company's realised and measured savings in Enacto are calculated on the basis of samples. As a starting point, the difference savings will be attributed to initiatives that cannot be immediately quantified/attributed to the implementation of technical initiatives such as EMS, CTS and Energy Management. This procedure will also to some extent function as a check procedure. The calculation of the net savings is based on the following:

$$\begin{array}{l} + \text{ Savings that cannot be quantified/attributed to the implementation} \\ \text{ of technical measures such as EMS, CTS and Energy management} \\ \pm \text{ Adjustment factors} \\ \hline \text{Net Savings} \end{array}$$

Adjustment Factors: Circumstances such as changed conditions or significant changes in technique or operation, etc. or matters over which Coop's energy management team or individual store managers have no control - for example: change of requirements, customer relations, market and competition conditions, etc. – and that have an effect on energy consumption and/or energy costs will result in an adjustment factor that must be factored into the calculation of the savings. In case of significant changes, e.g., major changes in store operations, facilities, etc. that affect energy consumption, the baseline and EnPI must be updated. For each meter in the Enacto energy management system, the system will automatically identify relevant variables and establish a relevant baseline based on this. As a starting point, a baseline is established based on linear regression between the measured consumption data and one or more relevant variables. As a starting point, 1 year's data is used, typically neighbourhood values, but monthly, weekly or daily data can also be used to establish a baseline. Data for weather, including outside temperature and degree days, will be available. The established baseline for the individual meters is registered in Enacto. Another important EnPI is the total energy consumption that comes from the CO2 targets. Total consumption and CO2 emissions from energy consumption are thus also important EnPIs that are continuously monitored.

Monitoring, measurements and analysis of energy consumption are handled in the energy management program Enacto. Operation of Enacto is handled by EnergiData, who analyses optimisation options. In the future, the EMS system must be integrated into EnergiData to provide a better database and reporting. Furthermore, EnergiData continuously monitors energy performance and conducts analyses on daily basis. If a consumption pattern stands out or deviates in some other way, alarms will be raised, and the store will be contacted to identify and solve the problem. Energy consumption is continuously measured and made visible via intranet and the employee app.

Since energy is not Coop's core business, Coop pays great attention to how we can ensure energy optimisation without affecting the day-to-day business operations. This is where the development of the employee app has been an important focal point in our work. The purpose of the app is to create an energy universe with two-way communication, on the one hand, where we can provide information about EMS and Coop's work with energy in general, whilst on the other hand



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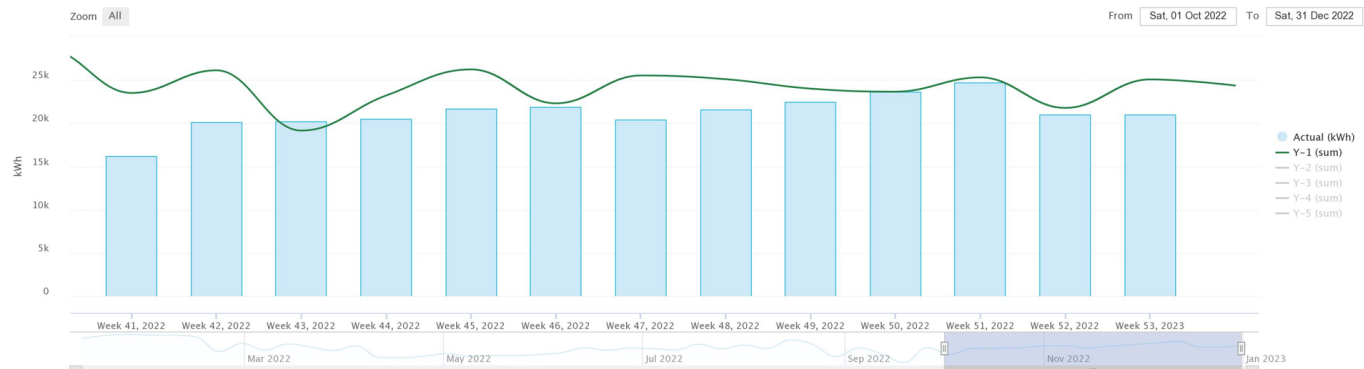
interactively involving employees and receiving their feedback and improvement proposals regarding energy. In the employee app, all 40,000 employees have access to energy data, which is displayed on a weekly and monthly basis. Stores that want a more detailed insight into their energy consumptions, can use Enacto, which can show consumption down to 15-minute intervals. Every month the chain management receives a report of the chain's total energy consumption compared to the same period in the previous year, allowing constant tracking of their energy performance.

Links to Enacto: <https://buildings.honeywell.com/us/en/brands/our-brands/enacto>

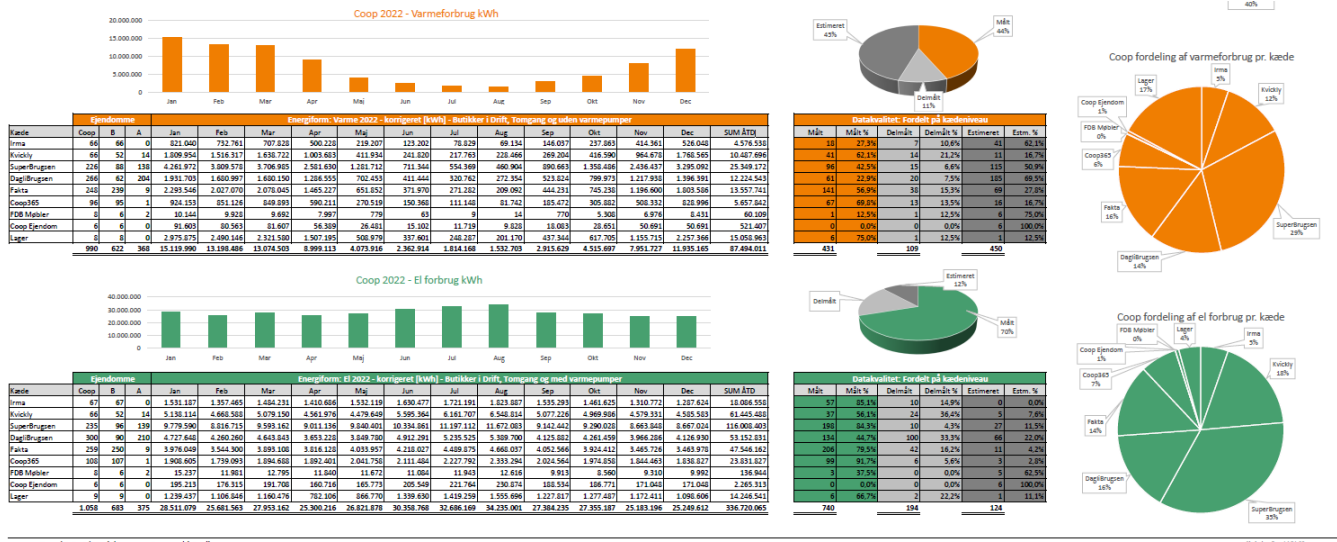
Links to EnergiData: <https://energidata.dk/>

Examples of energy performance and baseline shown for each store

08500 Prøvestenscentret STORE – Electricity consumption (kWh)



Display of energy consumption and baseline in Enacto



Monthly report to chain management from EnergiData

Evaluation: Once a year, an evaluation of EMS is prepared in connection with management's evaluation, which contains proposals for changes to elements of EMS in accordance with the company's commitment for continuous improvement. The energy targets are subject to regular review and amendment at steering group meetings. The development is continuously monitored through continuous evaluation of the system (the departments' own control, internal audits, external audits, records of various measuring points). The planned and systematic monitoring and evaluation of the system must form the basis for an assessment of the system's suitability and effectiveness

contributing to improve the system. It must also ensure that the system is coordinated with the organisation's strategic direction.

Standardisation: Coop is a complex size in the sense that we have many locations. Once we have identified the potentials, an action plan is drawn up for the various areas of action. We select a number of stores where we run pilot projects. When these have been adjusted, evaluated and validated with the desired effect and quantifiable data, it is written into our building programme for the store chains in order to ensure that we are always updated with the most optimal and sustainable solutions for renovations and establishments of new stores. Coop is DGNB certified, which is a Green Building certification for sustainable building. Coop commits to a systematic approach to planning and optimising by using sustainable building materials in our building programme for store concepts. Similarly, using our Dalux System, a maintenance programme has been set up for our assets in order to avoid resource wastage and expensive repairs of our assets.

Links to DGNB: <https://www.dgnb-system.de/en/system/international/denmark/index.php>

Transparency

In order to reach all 40,000 employees nationwide with different backgrounds and functions, Coop chooses to differentiate the news of acquisition of ISO 50001 on various channels.

The certification is announced on Coop's intranet, in the employee app and in newsletters. Together with business partners, Coop has initiated cases of energy projects and how integration of energy management system support these. We created screen savers with the news and prepared energy certificates, which are sent to the stores to showcase on the windows. Coop also announced these developments on social media such as LinkedIn and Facebook, where the stores receive a marketing package to deliver the news. In the lead-up to the certification, a quiz has been prepared about Coop's work with energy and videos with best practices to inspire energy performance improvements.

What We Can Do Differently

Looking back on our journey with energy management, we realised that in our eagerness to measure everything, we had set up too many measurement points, making the picture of energy consumption more complex than intended. Communication and user involvement (employees, suppliers, business partner etc.) are important for the understanding and anchoring in the work of energy optimisation. Coop has allocated resources to facilitate supplier workshops and joint meetings to ensure common ground but should have prioritised this much earlier in the implementation process and to all employee categories in order to minimise resistance to changes.

Energy mapping, for example, showed a greater potential by removing or lowering the space heat in the warehouse and distribution centre. When first introducing the heat strategy, it was poorly received – especially in the warehouses – and was almost dropped. The energy crisis in Europe entailed rising prices that exerted pressure on the business and senior management demanded tools to meet the politicians' goals for energy reduction and demand for cost reductions on the business side. The proposal to remove or reduce space heating was then welcomed, as it could be carried out immediately and without further investments. Even the strongest opponents had to realise that the initiative had to be implemented. Reception of the strategy might have been easier if we had focused more on creating a common understanding of the purpose – from both financial and climate perspectives.

Going forward, Coop will focus more on introduction materials about Coop's work with energy when onboarding new employees.

ISO 50001 is Coop's work tool for systematic energy optimisation. In addition to looking at savings and reductions, we also use it as leverage to look at sustainable potentials to contribute to the green transition, not only for Coop's benefit, but for its responsibility to the communities and society as well. Among other things, Coop is looking at the possibility of utilising excess heat to completely or partially phase out the need for external heat sources.



The Energy Management Leadership Awards is an international competition that recognizes leading organizations for sharing high-quality, replicable descriptions of their ISO 50001 implementation and certification experiences. The Clean Energy Ministerial (CEM) began offering these Awards in 2016. For more information, please visit www.cleanenergyministerial.org/EMAwards.