

OPERATIONAL EXCELLENCE SERVICES FOR ENERGY COMPANIES -
DISTRICT HEATING

Is your company operationally excellent?



KPI

Improving the profitability of district heating companies with Operational Excellence

Many district heating companies are facing significant challenges when it comes to profitability: the market price of electricity is low, and warm winters have reduced sales of district heating. At the same time, the development of alternative and decentralised technologies – heat pumps in particular – is establishing completely new types of competition in the market. As a result, many district heating companies are under pressure to cut costs and reduce headcount, and money for new investments is scarce. Laying off people is often a burdensome process while similar savings could be made by developing operating methods, without any need for dismissals or investments.

In most highly competitive industries it has been necessary to optimise everyday operations for decades, and methods for continuous development of operations have been pursued actively. The application of principles is part of everyday activities in all successful international companies, and nearly every one of them has a function that is solely responsible for operational development. Additionally, the main international consulting companies are visibly offering similar services.

Decades of experience gained from highly competitive industries have shown that methods based on Operational Excellence (OE) offer improvements in operating margin, accounting for 3–8% of net sales. Because there has previously been no genuine competition in the district heating sector, most companies are still taking their first steps in making their operations more efficient. They have only recently started to raise their interest as a result of changes in the operating environment. Therefore, it is hardly surprising that, in Pöyry's experience, improvements

in the operating margin gained in the district heating sector thanks to OE are usually higher than in traditionally competitive fields.

On the basis of current results, every district heating company should consider their level of operations and their need to optimise the profitability of their business.

DIFFERENT APPROACHES TO REACH A SINGLE GOAL

There are a number of different approaches to improving the efficiency of operations,





but they are all ultimately aimed at changing operating methods and utilising modern digital technology in operational control. The applicability of different methods varies from one industrial field to another. In the energy industry, the number of employees is relatively low compared with the production volume, and technology plays a significant part in generating value. Considering this, the best results can be reached with an approach in which an improved operating culture is combined with solid technological expertise

DIFFERENT METHODS OF BOOSTING OPERATIONS

Pöyry
ExGap™

6Sigma

LEAN

Deming's
Circle-PDCA

Kaizen

TPS

Building a culture of continuous improvement

WHAT IS IMPROVEMENT POTENTIAL MADE OF?

Potential is made up of three factors: people, integrated management systems, and processes.

1. IMPROVEMENT POTENTIAL RELATED TO PEOPLE



Even the most motivated employee may not understand which activities lead to the best results in terms of the company's profitability. A general problem is that employees believe they are doing the right things, but in reality, they are optimising incorrect parts of the whole. For example, emphasising delivery reliability easily leads to excess use of expensive auxiliary fuels such as oil at many plants, without actually producing any significant improvements in reliability. Of course, this is not the fault of the employees; instead, the operational goals should be redefined.

In recent years, many energy companies have been forced to reduce head count. In many places, this has reduced the amount of time available, forcing companies to prioritise different tasks. Are they prioritising them correctly? Many companies openly confess that, while some aspects are significant in terms of finances, there is not enough time or resources to put them in order. Similarly, retirements have meant that key competence areas have been lost in many companies.

2. IMPROVEMENT POTENTIAL RELATED TO INTEGRATED MANAGEMENT SYSTEMS – 'BIG DATA, LITTLE INFORMATION'

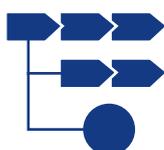
Companies are currently measuring a number of different indicators: the volume of data and number of reports are high. In this, the challenge is that indicators valuable in terms of



operational performance are either not measured at all or they drown in the massive flow of data. It is very common for management to monitor a number of key indicators monthly, but operational employees, who can impact the actual performance of the company, rarely receive information about their own success.

Furthermore, the possibilities offered by "big data" have not yet been widely recognised in the energy industry. New methods of analysing data, increased computing power and the increased availability of data open up new possibilities to identify the root causes of problems and to better control operations. Using different analysis methods, it is possible, for example, to detect recurring process control errors in a complicated system or any differences between shifts and to understand how different defects occur. Even though customisation and investments are needed to utilise all of the possibilities, it is achievable to get started quickly without any high initial investments.

3. IMPROVEMENT POTENTIAL RELATED TO PROCESSES – "WE HAVE A MAINTENANCE SYSTEM, BUT OUR EMPLOYEES DON'T UPDATE IT"



In the corporate culture of many energy companies, individual employees are provided with a lot of responsibility for organising and executing their tasks. Whilst this is a positive move, it often leads to a lack of uniformity and standardisation, also causing high variation in how different tasks are performed within companies. This poses a particular challenge for maintenance. If work processes are not uniform and not many systems are in place, it is difficult to measure the performance of the work and, in particular, to set any objectives for work performance.

This can also be seen at management level: management teams monitor results, expense budgets and in many companies production efficiency ratios monthly, but no indicators that measure performance at any given time have been set at an operational level. The focus of OE should be on monitoring operational performance indicators and objectives, and on activities carried out according to them; after all, it is no longer possible to affect the previous month's results. Any defects identified in operations should be fixed as quickly as possible.





HOW CAN PROFITABILITY BE IMPROVED USING OE?

OE is based on systematic and tested methods that can be applied to any industrial field.

When applying these methods at the beginning of an OE project, the processes and functions of the company in question are analysed in detail. Based on this analysis, functions significant to the company being able to generate value are prioritised and, to guide activities, key performance

indicators (KPIs) are set for them to monitor performance. In the implementation phase, employees and management members are taught how to react actively to any deviations in KPIs and to develop everyday operations by investigating root causes. The objective is to build a culture of continuous improvement in which employees understand what is important for the success of the company, and where they are encouraged to actively develop and improve related activities.

Experience has shown that, in order to achieve good results in the energy industry, managing OE methods is not enough. There must also be knowledge of the industry and extensive technological expertise in order to challenge and change deep-rooted operating methods.

In district heating companies the potential has been 8% of net sales

IMPROVEMENT POTENTIAL BY SEGMENT

The potential for improvement usually increases along with the complexity of operations. Similarly, when analysing different functions, potential increases the farther we go from the company's key operations which employees are the most familiar with.

In the case of a district heating company, the most significant improvement potential is in three main segments: operation (of the power plant and the district heating network), maintenance and procurement.

1. OPERATION



- Improved energy efficiency in power plant processes
- Reduced use of auxiliary fuel
- Improved efficiency of the district heating network
- Optimised use of auxiliary boilers
- More effective utilisation of existing agreements
- Improved efficiency of the "from measurements to invoices" process
- Less secondary optimisation

2. MAINTENANCE



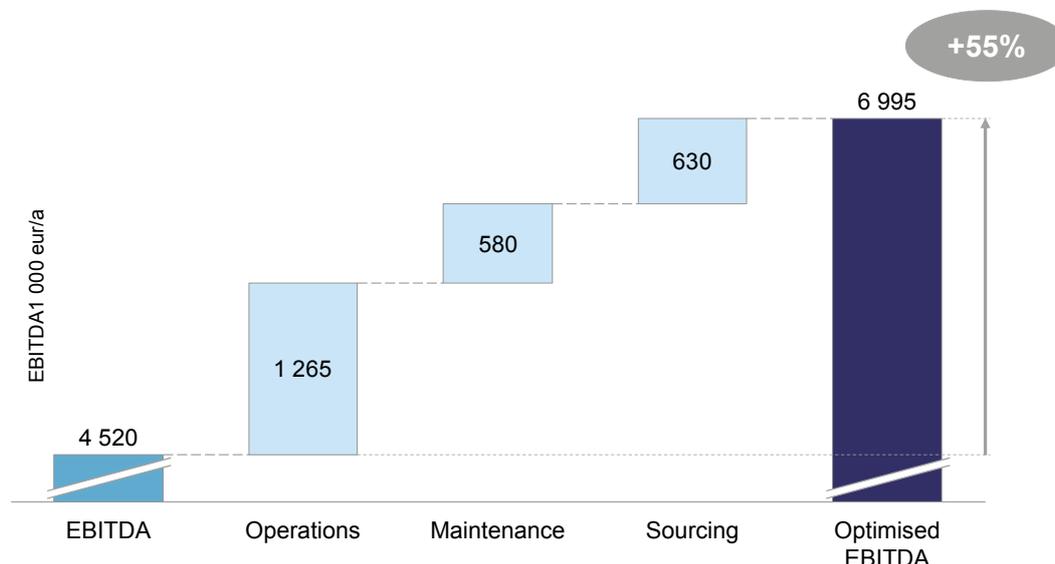
- Improved availability
- Reduced use of external services
- Optimised stock levels
- Improve efficiency of the maintenance system

3. PROCUREMENT



- Improved efficiency in fuel procurement
- Categorisation and development of cost allocation
- Improved management of suppliers

CASE STUDY: DISTRICT HEATING PLANT IN A MEDIUM-SIZED FINNISH TOWN
(ANNUAL NET SALES 150 MEUR)



OE OFFERS AN IMPROVEMENT POTENTIAL OF 3–8% OF NET SALES

Intuitively, it is evident that the aforementioned examples impact the profitability of companies.

Through diagnostics carried out at the beginning of the OE project, all parts of business operations are analysed in full, and any areas to be improved quantified in terms of finances. In general the improvement potential offered by OE is at least 3% of net sales, regardless of the industrial field. Then again, it is rarely higher than 8%. In this case, the operational inefficiencies would be so significant that some corrective measures would already have been carried out even without any focus on a more effective management system.

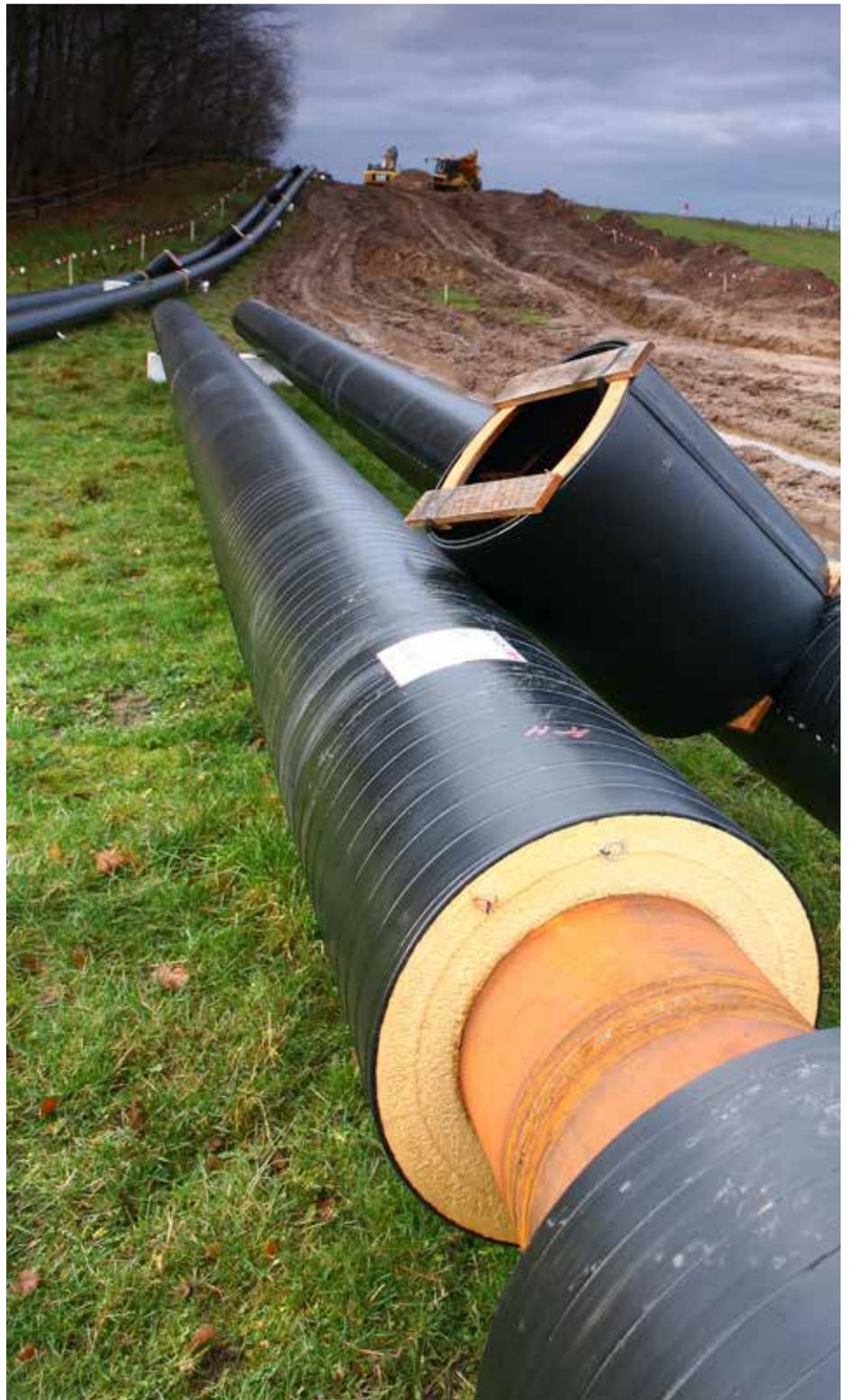
Because of the local aspect of operations and historically limited competition in the energy industry, the improvement potential in the district heating sector often settles at the top of the aforementioned range, or even above it. Diagnostics conducted recently regarding district heating companies have revealed that the potential has been roughly 8% of net sales on average. So far, this improvement potential has been seen in all of the companies analysed, regardless of their ownership base. In practice, this implies that there are significant improvement opportunities waiting for capture in district heating companies.

HOW WE CAN HELP

Our global team of specialised management consultants and technical experts partner with our clients to deliver rapid and sustained results through our unique approach to operational process management.

Contact our experts today.

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