ENTRAS

MINI GUIDE FOR INDUSTRIAL COMPANIES

How to cut your energy costs over the next 5 years

A focused guide for energy, plant, operations managers, and finance leaders.

“Measure first, understand the process. Then make it intelligent.”

What this guide covers

Follow the guide end to end, or open the step that matches where you are today.

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Frank Alaerts
CEO, Entras

Dear reader,

Somewhere in your plant, someone decides when your largest energy users run. They do it today, tomorrow and the day after, often with a forecast, a spreadsheet and a great deal of experience.

This decision has become much harder. It is why this guide exists.

We began Entras as a consultancy, working alongside industrial companies on energy projects, operational challenges and investment decisions. Different sites, same problem: energy was becoming less predictable, while production still had to meet fixed limits for quality, safety, capacity and delivery.

The electricity price can now change every fifteen minutes. Energy cost is therefore no longer only about how much a site consumes. It also depends on when it consumes, generates, stores or shifts energy and how those choices interact with production and market prices.

A plant cannot simply change its rhythm because electricity is expensive. Our clients needed a way to make better energy decisions without affecting the way their plant had to run. Not for one asset at a time, but across the entire site.

As consultants, we could calculate the opportunity. But every study raised the same question: who makes those decisions every day, every fifteen minutes, while production keeps moving? No one can do that consistently by hand.

That is why Entras evolved. We combined our industrial energy expertise with software that makes these decisions continuously. Our engineers identify where flexibility exists, define the operating limits with your team and help put the change into practice. The software then operates within those agreed boundaries.

Even when part of your energy is hedged, flexibility still matters: fixing a price does not remove the value of changing when your site consumes, produces or stores energy.

This guide follows the same approach. Start with your process. See what must stay the same, what can safely move and where that flexibility can create value.

Frank Alaerts
CEO, Entras



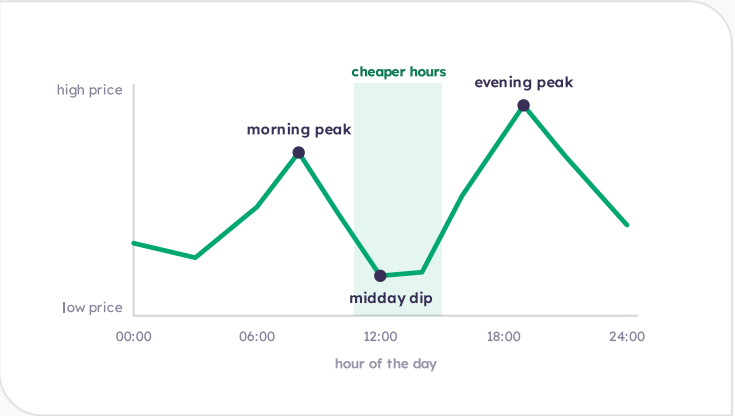
Why timing your electricity consumption matters more than ever

Your goal is not simply to use less energy. It is to operate your process using energy at the right moment. Electricity, a key part of your site's energy balance, is increasingly driving the need to respond to price signals.

Most industrial sites do not respond to the energy price at the time they consume or generate electricity. Yet that price can change every fifteen minutes. Sites that can align flexible energy use with those real-time prices can turn timing into lower costs and more value, without disrupting production. **This is why:**

1. Electricity prices fluctuate during the day

Electricity demand typically peaks in the morning and evening, while high solar production often creates a midday dip in prices. Energy flexibility means shifting suitable energy use to these cheaper hours, without disrupting production.





2. The spot price has become very volatile

Before 2021, electricity prices generally moved within a narrower range. Since 2021, price swings have become much larger: prices can fall below zero during periods of high renewable production and rise sharply again minutes later. As a result, when you use energy now matters much more.

4×/hour

The European wholesale market now sets a price for every 15-minute block of the next day. Whether and how far a site is exposed depends on its energy contract. If these price signals are not part of your contract today, they are likely to become increasingly relevant in future contract conditions. The underlying pattern is simple: the market can offer a different price four times an hour, while the production process must stay within fixed safety and quality limits throughout.

EIGHT STEPS

8 steps to reduce your energy costs over the next 5 years

Eight practical steps, in three stages: what you can do today with what you already have, how to build flexibility into new investments, and how to automate it all. For sites that consume energy, produce it, or both.

1

Start with what you already have

1. Understand where your energy goes

Identify your biggest energy users and producers, and when they run.

go to page 6 →

2. Fix unnecessary energy losses first

Remove avoidable waste before you invest in smarter control.

go to page 7 →

3. Identify flexible energy use

Find out what can safely move in time, and prove it with data.

go to page 8 →

4. Use flexibility with the right energy contract

Match what your site can do with the prices your contract exposes you to.

go to page 9 →

2

Build flexibility into new investments

5. Check flexibility before buying new technology

Judge an investment by how it can be controlled, not only by what it can do.

go to page 10 →

6. Plan your own energy at the right moment

Coordinate on-site production with consumption and storage.

go to page 11 →

3

Automate and steer assets together

7. Automate real-time execution and make all assets work together

Turn a decision you already trust into a coordinated, automatic one.

go to page 12 →

8. Make energy part of everyday business decisions

Review energy alongside production, quality, cost and service level.

go to page 13 →

1 Understand where your energy goes

Before you save energy, first find out what uses energy, when it happens and whether you can safely change that timing.

An energy bill only shows how much energy you use and what it costs. To find ways to use energy more flexibly, you need more detail: which machines use energy, when they run and what production is taking place at the same time.

Electricity | Gas | Heat | Steam | Cooling | Compressed air

CHECK QUESTION

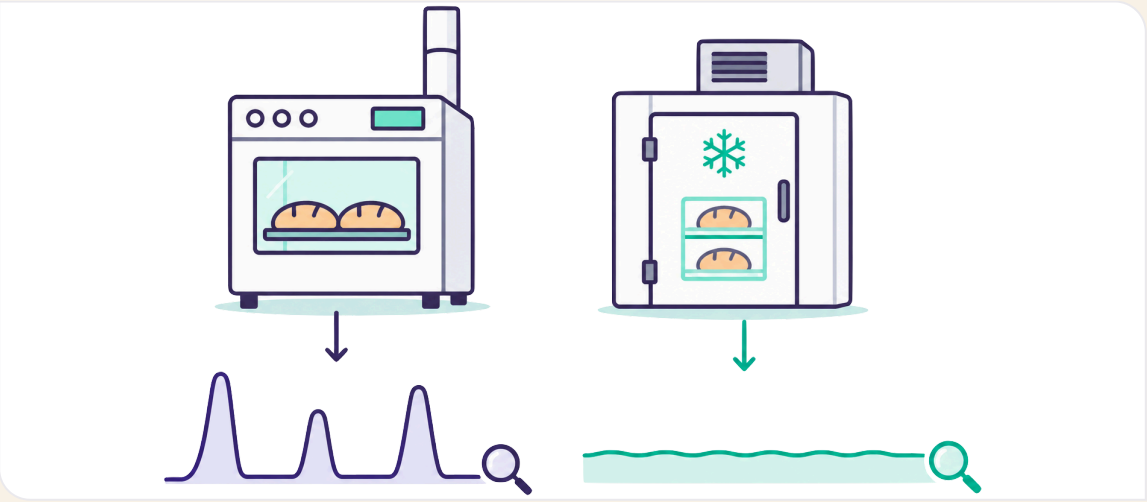
Can we see our largest energy users and their load profile over time, alongside production activity?

BAKERY EXAMPLE

The bakery sees two very different electricity patterns.

Its **ovens** create high, predictable peaks when it bakes bread. Its **cold storage** uses a smaller but steady amount of electricity day and night.

By tracking these patterns over time, the bakery can spot unusual consumption, investigate avoidable waste and identify which processes may be flexible, without affecting product quality or production.



Once you know what uses electricity and when, Entras can assess what can safely be shifted, reduced or controlled and where that flexibility creates the most value.

2 Fix unnecessary energy losses first

Before shifting energy use to a different time, first remove the energy you do not need. Moving unnecessary consumption to a cheaper hour adds little value. First make sure your equipment uses only the energy required for safe production. Then Entras can optimise when the remaining energy is used.

Flexibility means shifting energy you still need, not moving waste.

EXAMPLES

Setpoints
Cooling colder or heating hotter than the process actually requires.

Air leaks
Compressed air escaping continuously, often outside production hours.

Heat losses
Uninsulated pipes, tanks and doors giving away heat or cold.

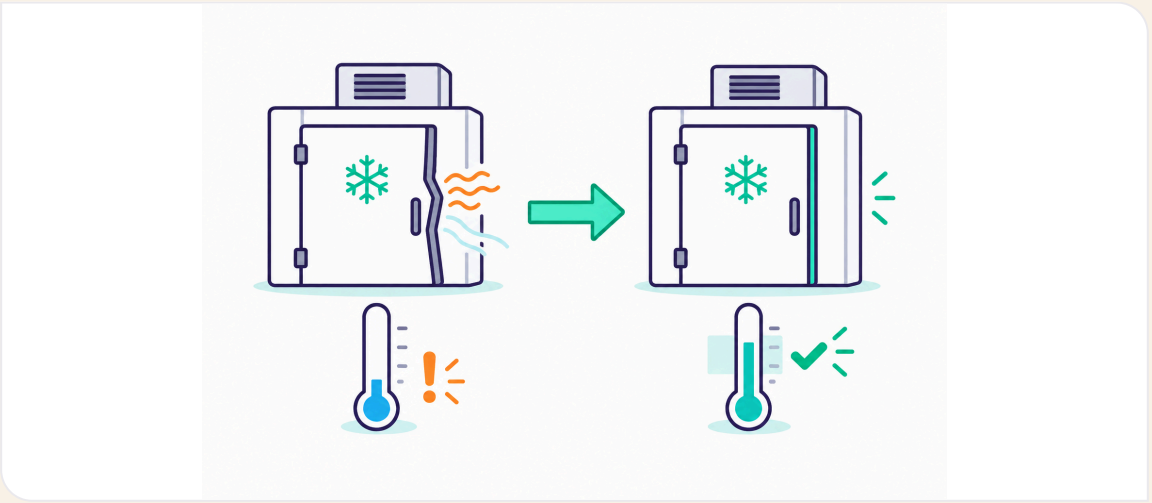
Idle equipment
Machines, pumps, fans or compressors operating when they are not needed.

CHECK QUESTION

Which energy users are consuming more than production actually requires, and what would it take to fix them?

BAKERY EXAMPLE

Before changing when the cold storage operates, the bakery repairs damaged door seals and corrects an unnecessarily low temperature setting. The bakery first removes the waste, then looks at how the remaining cooling demand can be shifted.



3 Identify flexible energy use

Identify what can safely move in time, and use process data to define its limits.

Flexibility, in plain terms, means a process can: run earlier or later, run faster or slower, temporarily use another installation, store energy as heat, cold or product stock.

Meter data shows when energy is used. Process data shows what can safely change.

CHECK QUESTION

For each major energy user, can it run earlier, later, faster or slower, and do we have the data to see its safe operating limits?

BAKERY EXAMPLE

The bakery stores frozen bread in a cold room that must remain between -18 degrees Celsius and -25 degrees Celsius.

The cold room can act like a thermal battery. It can be cooled to -25 degrees Celsius in advance, then need less cooling for a limited period afterwards while the temperature gradually rises, but never exceeds -18 degrees Celsius. The bread remains safe because the temperature stays within this required range at all times.

This is flexibility: shifting the cooling load, not changing the product's safety requirement.



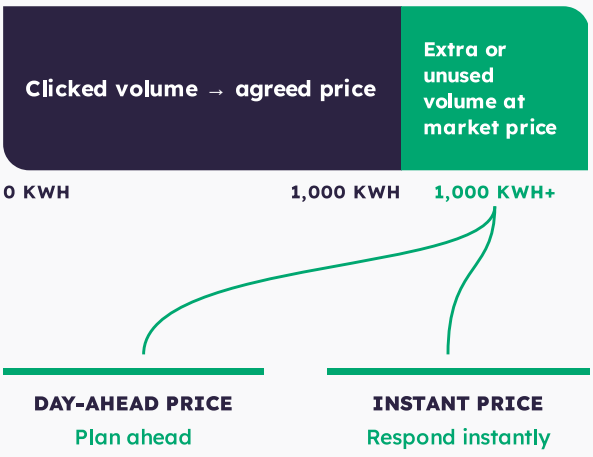
4 How your energy contract changes where flexibility creates value

First identify which electricity volume keeps a price agreed in advance, and which volume is exposed to market prices.

CLICK PRICE CONTRACT

You click a price in advance for a defined volume and period. If consumption differs from the agreed volume, the difference is paid based on the quarter-hour price.

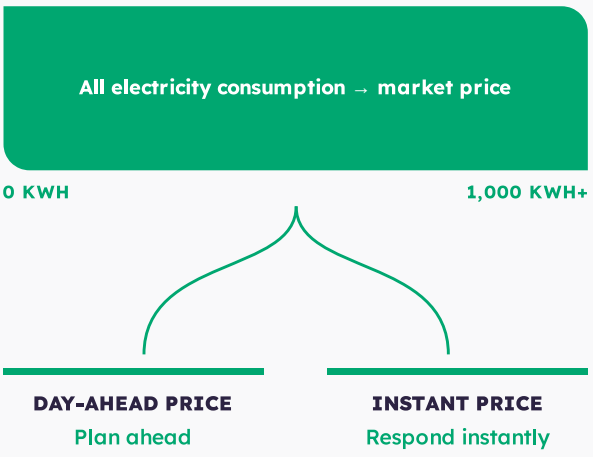
How your energy consumption is priced



DYNAMIC PRICE CONTRACT

No volume is clicked in advance. All electricity is bought at the market price, which changes throughout the day. This means when you consume directly affects what you pay.

How your energy consumption is priced



FAQ

What is the day-ahead price?

Tomorrow's electricity prices are known today, for every 15-minute period. This lets Entras spot cheaper and more expensive moments in advance and plan flexible processes around them. Planning ahead like this is what we call Slow Flex.

What is the instant price?

Not everything can be predicted a day ahead. Prices and market conditions can change in real time. Entras can detect these changes and adjust flexible processes within their operational limits. Responding in real time is what we call Fast Flex.

Why does the 15-minute price matter?

A day does not have one electricity price: it has 96 different 15-minute periods, each with its own price. That means moving electricity consumption by even a short amount of time can make a difference. Entras continuously looks for these opportunities while keeping production requirements in place.

So, what does Entras actually do?

Entras adjusts your production processes to changing market prices, so electricity is consumed or sold at the most favourable moments. It determines which processes can shift, when they can shift and within which limits, without compromising production.

5 Check flexibility before buying new technology

An e-boiler, heat pump, battery, cold store, heat buffer or electrolyser is only useful if it can change how and when it uses energy without affecting production, quality or safety. Flexibility should therefore be considered from the start, not added afterwards. The asset must be controllable, and the process must allow it to respond at the right moments.

The best investment is not always the largest machine. It is the solution that meets the site's production needs while leaving enough safe room to decide when energy is used. That room may come from storage, a wider operating range, a different schedule or better control.

Technology creates the opportunity. Your process and contract turn it into value.

EVERY INVESTMENT DECISION SHOULD CONSIDER:

1 Technology	2 Process	3 Flexibility	4 Contract

CHECK QUESTION

Have we quantified the asset's flexibility, and checked whether our energy contract allows us to capture that value?

BAKERY EXAMPLE

Before buying a larger cooling installation, the bakery studies how much extra cooling capacity it actually needs and how long the cold storage can act as a buffer. The best investment is not necessarily the largest machine, but the one that can operate flexibly within the bakery's real production limits.



6 Plan your own energy at the right moment

Coordinate local production with consumption and storage instead of operating each installation separately.

Solar panels, wind, biogas and combined heat and power (CHP, which produces electricity and useful heat at the same time) installations affect more than just the amount of energy purchased from the grid. Their value increases when local generation, flexible demand, and available buffers are planned together, rather than when each installation runs on its own.

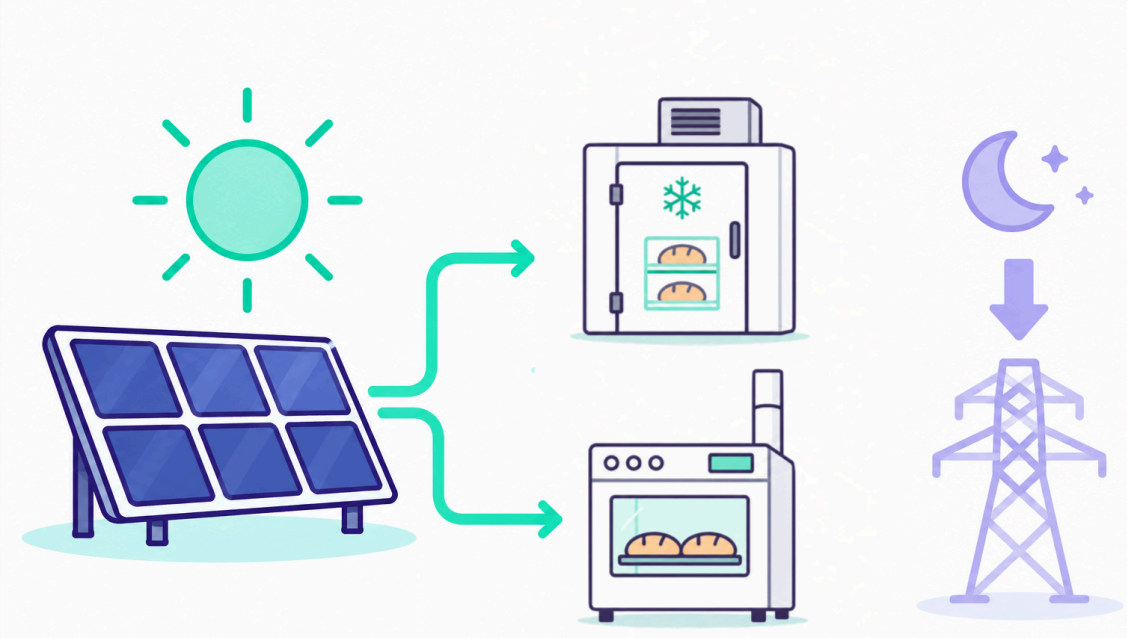
Running them together also matters for cost: assets that all draw power at the same moment can create an expensive new site peak. Step 07 covers how to coordinate that.

CHECK QUESTION

Are local production, consumption and storage planned separately today, or as one site-wide system?

BAKERY EXAMPLE

The bakery's solar panels produce most around midday. Instead of exporting all surplus electricity, the bakery can use part of it to cool the cold storage or prepare another flexible process, reducing the amount of electricity it must buy later.



7 Automate real-time execution and make all assets work together

Automate proven decisions and coordinate installations for the right outcome across the whole site.

Manual steering cannot keep up with changing prices, forecasts and production limits. Automation applies the same calculation consistently, around the clock. It is only as good as its data and operating rules, so start with a decision your team understands, clear boundaries and a manual override.

Coordination matters too. Distribution tariffs make peak demand expensive, and optimising assets separately can increase costs across the site. EV charging and solar control may each appear optimal in isolation while together creating a higher site peak.

Assess assets together. The next step is to coordinate electricity, heat, cooling, storage and generation in an integrated way.

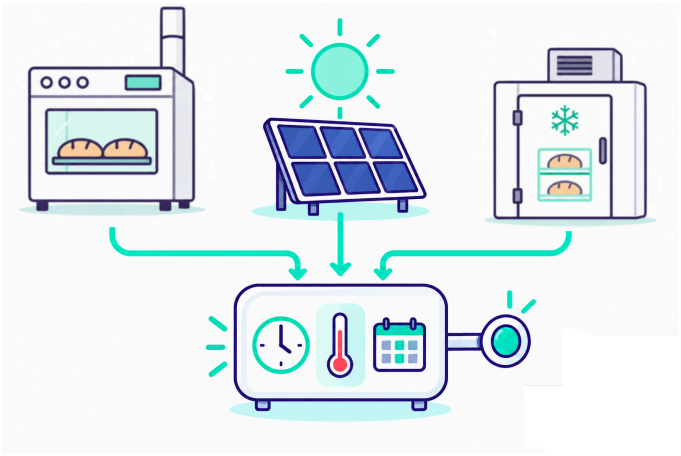
Already steering by hand? Automate those decisions first. It is fast, low risk and creates a baseline you trust. Then add flexibility one asset at a time.

CHECK QUESTION

Which recurring decision do we already make manually, and which installations must be coordinated for the best site-wide result?

BAKERY EXAMPLE

The bakery should not optimise its ovens, solar panels and cold storage independently. An automated system can decide when to cool, bake or use local electricity, while respecting the production schedule, food-safety limits and the operator's right to intervene.



8 Make energy part of everyday business decisions

Review energy alongside production, quality, cost and delivery performance. Do not treat it only as a monthly invoice. Energy should be managed as a business input. Operations, finance, supply chain and the energy lead should review the same results and decide together what to improve.

Compare expected and actual energy use, cost, production output and site peak. This shows whether a change created value for the whole business, not just a lower electricity bill. When energy is a significant cost, it belongs in normal business decisions alongside cash, cost and service level. Review new investments and process changes for their effect on energy use and flexibility.

CHECK QUESTION

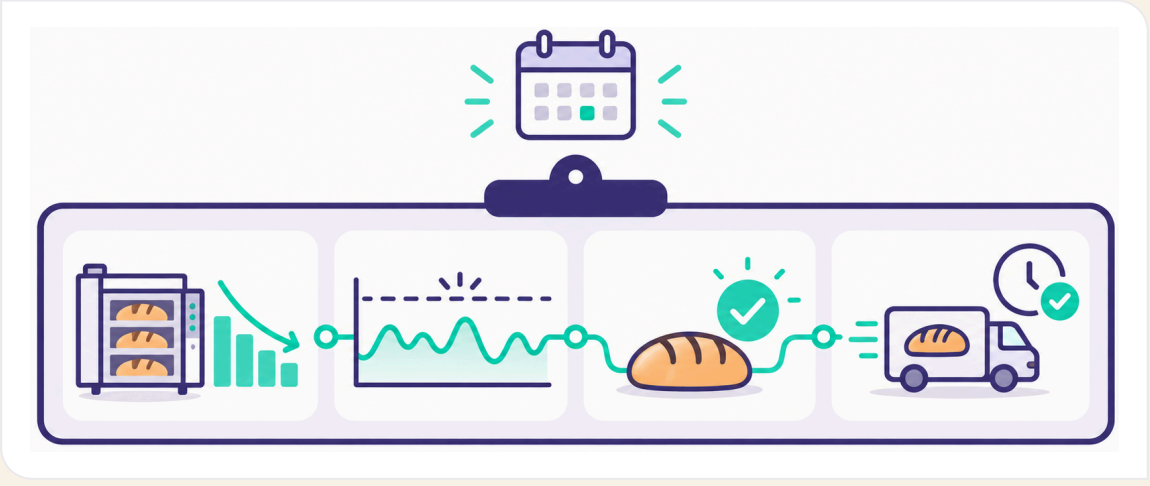
Do operations, finance, supply chain and energy management regularly review energy cost, cash impact and service level against production output?

BAKERY EXAMPLE

Each month, the bakery compares its results with its normal operating baseline. It reviews electricity use per tonne of bread, energy cost per tonne, its highest site peak, product quality and on-time delivery.

For example, Entras may have scheduled the cold store to pre-cool at selected moments. The monthly review checks whether this reduced electricity use or cost without creating a higher site peak, affecting bread quality or delaying deliveries.

If the bakery uses fewer kWh per tonne, keeps quality and delivery performance stable, and avoids a higher peak, the change is working. If one result worsens, the team adjusts the settings or operating plan.



HOW MATURE IS YOUR ORGANISATION?

Your flexibility potential score

Tick every statement that describes your site. Every tick is worth one point. Add them up for your score out of 8. This is a simple first indication of whether Entras can help identify a valuable flexibility opportunity.

- ☑ Electricity cost or site peak charges have a meaningful impact on our business.
- ☑ We have at least one major electricity user, such as cooling, heating, charging, pumping or compressed air.
- ☑ At least one process can safely run earlier, later, or temporarily use more or less electricity.
- ☑ We have buffer capacity, such as heat, cold, storage or production inventory.
- ☑ The timing of our electricity use affects what we pay, earn or avoid.
- ☑ We measure the electricity use of our main energy users.
- ☑ Someone already decides when an installation runs, manually or through existing controls.
- ☑ We are considering local generation, electrification, storage or new energy technology.

0–2

0 TO 2 POINTS

Start with the basics

First measure energy use, remove avoidable waste and identify the main energy users.

3–5

3 TO 5 POINTS

Potential worth exploring

Your site shows useful flexibility signals. Entras can help identify the first safe and valuable use case.

6–8

6 TO 8 POINTS

Strong potential

Your site has several signals that flexibility could create practical value. Entras can assess the business case and define the next step.

This score is a first indication, not a technical assessment or an ROI calculation. Entras validates the actual process, contract and commercial opportunity before recommending action.

ORIENTATION

What problem are you actually solving?

Your score told you *whether* there is something worth doing. This page is about *where* your gap actually sits: measurement, flexibility, coordination, automation, or investment decisions. “EMS”, “flexibility platform” and “market party” are often used interchangeably, which makes that hard to see. Each layer does a different job.

Which layer currently makes the economically optimal, process-safe decision across all of our relevant assets?

IF YOUR MAIN NEED IS	THE LAYER THAT DOES THIS JOB	WHAT IT DOES
Energy data, dashboards and reporting, including for energy-management certification	**Energy monitoring / EMS**: energy management system	Makes energy flows visible, reportable and auditable.
Control of one battery, PV installation or single asset	**Asset-specific controller**: local control system or plant monitoring system	Operates one technology well, within its own limits.
Access to balancing or flexibility markets	**A market party that bundles flexibility** from several sites	Pools flexibility and provides the route to market.
Buying energy, fixing prices ahead, or carrying responsibility for planned volumes	**Your energy supplier**	Provides the commercial route to energy and settlement.
The lowest total energy cost across all assets, within process constraints	**Master optimisation layer**	Calculates one site-wide economic decision across assets, markets and operational limits.

These layers are complementary. Entras is a master optimisation layer. It connects with the relevant existing control systems and market partners rather than replacing your EMS, local control systems, supplier or flexibility partner. It decides what your site should do; existing suppliers and market partners can often remain in place.

From your process to lower energy cost

Your production comes first. That is why Entras starts by understanding your site before recommending a technology or automating a decision.

STEP 1

Analyse your site data

Our engineering team works with your team to understand your energy use, production schedule and operating limits. Using historical data and process knowledge, we identify which assets may safely change and where the first opportunities may be.

Our methodology has been applied across 100+ industrial sites, including companies such as Puratos, Prayon, Tessenderlo Chemie, across food, chemicals, waste treatment, horticulture, logistics and manufacturing.

OUTCOME **A clear view of your main energy users, safe flexibility and the opportunities worth testing.**

STEP 2

Build the business case

We investigate the strongest opportunity in detail. This includes technical feasibility, process limits, energy-contract conditions and financial value. Together, we determine whether better operating rules, improved controls, a buffer or a new asset is the right next step.

OUTCOME **A site-specific business case and implementation plan. You know what to do, why it creates value and how success will be measured.**

STEP 3

Optimise on auto-pilot with Entras software

Once a use case is validated, Entras software works with available site data and control systems to coordinate connected energy assets in real time. It operates only within the production, safety and quality limits agreed with your team. Your operators remain in control and can always intervene.

OUTCOME **Less manual steering, coordinated energy decisions and measurable results over time.**

THE SIMPLE IDEA

1 First understand the opportunity.

2 Then prove the value.

3 Then optimise it every day.

ENTRAS

GET IN TOUCH

Two ways to start

Where you begin depends on your score on the business-case potential page. Both routes end in the same place: a clear view of what your site can safely control and what it is worth.

IF THE POTENTIAL IS STILL UNCLEAR

Identify my flexibility potential

An Entras study maps the flexibility you can safely use, quantifies what it is worth under your current contract, and defines the first use case. Including when the answer is “not much, yet”.

Request a study →

START HERE IF YOU ALREADY STEER BY HAND

Explore what we can automate now

You have the assets, the data and a use case in mind. We scope what Entras can take over first, and what it is expected to deliver.

Book an intake call →

www.entras.be/contact

CLIENT STORIES:

puratos
Food Innovation for Good

CLIENT SINCE OCTOBER, 2024

Puratos makes chocolate at large scale, which takes a lot of heating and cooling around the clock. Entras automatically steers energy use across three of its production sites based on 15-minute electricity prices, using both Slow and Fast Flex.

Result: lower energy costs across three major production sites in Belgium.

plantlovers

CLIENT SINCE DECEMBER 2024

Plantlovers, a horticulture business, generates and uses a lot of its own energy on site. Entras automatically steers the site’s energy production based on 15-minute electricity prices, using both Slow and Fast Flex.

Result: higher returns from its on-site energy production.