TATA STEEL
CASE STUDY

How behavioural change is saving Tata Steel's Trostre site £500,000

Most businesses are aware that behavioural change can deliver energy savings – but understanding how you actually bring that change about can be far more challenging.

That was the situation at Tata Steel's Trostre plant near Llanelli in South Wales back in 2011, after a McKinsey analysis provided a philosophical approach and the methodology for undertaking a detailed energy efficiency review.

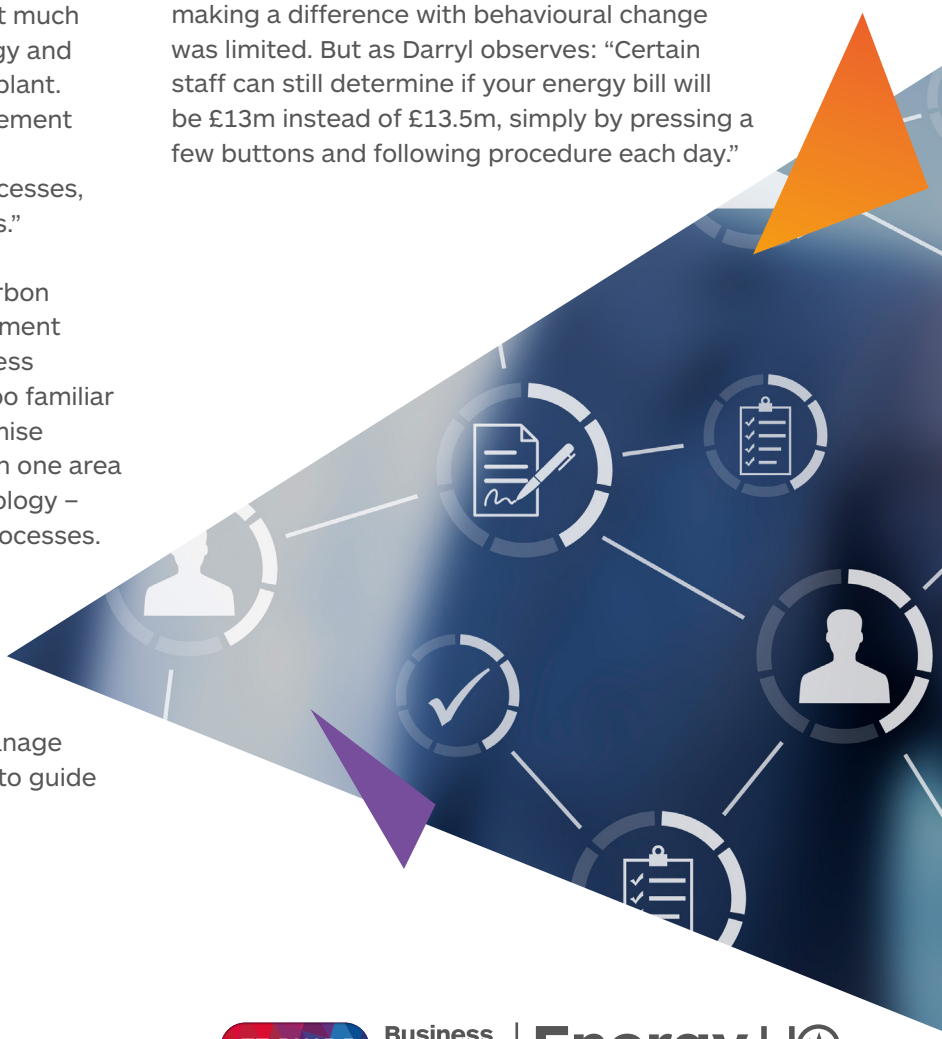
"This identified a lot of 'what to do' but not much 'how to do it'," explains Darryl Lewis, Energy and Environment Operations Manager at the plant. "While we had plenty of engineers to implement technological changes, when it came to interventions involving people and processes, there were no experts within the business."

This is a situation Phil Griffiths, former Carbon Psychologist and current Energy Management Services (EMS) Manager at npower Business Solutions, Energy HQ (nBS, EHQ) is only too familiar with. "Companies often struggle to maximise efficiencies because they tend to focus on one area of the energy management triad – technology – and ignore the other two – people and processes.

"For example, you can install sub-metering technology to identify inefficiencies. But machines won't optimise themselves, processes won't change themselves, and people won't manage themselves. You still need someone able to guide those changes."

When Phil and Darryl started exploring what a Carbon Psychology approach could achieve for Tata Steel, Darryl was sceptical at first. "It's not a domain we were familiar with in terms of understanding or job requirement. We don't employ any psychologists on site! But despite mindset and behaviour being on every Energy Manager's radar, it wasn't clear how to implement change. So we decided to grasp the bull by the horns."

Like many of Tata Steel's plants, the Trostre site is highly automated, so in theory, the scope for making a difference with behavioural change was limited. But as Darryl observes: "Certain staff can still determine if your energy bill will be £13m instead of £13.5m, simply by pressing a few buttons and following procedure each day."



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Understanding what can influence even formulaic behaviour was where Phil and the Carbon Psychology process came in. “We analysed a targeted section of the plant, which included most key production stakeholders, and undertook what’s called a ‘Thematic Analysis’ to understand the behavioural drivers (or ‘constructs’) among these staff members. We also conducted a semantic questionnaire, which helps us drill down further into the underlying constructs. The following chart provides an example of the key constructs influencing staff behaviour.

Key behavioural constructs

Attitude	Good versus bad subjective judgements
Perceived behavioural control (PBC)	Belief in our ability to make a difference
Subjective norms	Expectations of significant others
Moral regret	‘If-only’ retrospective analysis/guilt
Foregone wins and losses	How you equate wins against losses
Feedback	How am I doing? Did something happen?

“This then led to our developing a model of behaviour that would activate the relevant constructs to produce an energy-saving outcome,” explains Phil.

A key intervention was having Tata install a large ‘smart dashboard’ in the open plan area where production stakeholders operate. This shows the live status of all the manufacturing lines and whether they are running or have stopped. When stopped, the dashboard tracks the line against a baseline energy consumption which clarifies whether or not it’s been optimally stopped. “This provides real-time feedback that shows staff if energy is being wasted – and what action can then be taken,” says Phil.

Darryl explains the outcome. “It’s easy for any site to be at its most efficient when it is fully loaded. But when you reduce this loading, typically your cost per output can increase dramatically – and it’s here where we’ve made the biggest savings,” he says.

Analysis by Tata Steel Trostre comparing energy use post intervention, against the McKinsey baseline year, shows that behavioural change contributed significantly to overall savings of £500,000.

“During the intervention, we were recording some of our lowest energy consumption per tonne of production,” explains Darryl. “And post intervention, it’s really helped us achieve a step change and allowed us to maintain the savings, rather than regress, which is common after other behaviour-type initiatives. At one point, the dashboard was turned off to test the mindset and behaviour philosophy, but so many team members complained – and demanded it be turned back on!”

Darryl is clearly a convert to the benefits of behavioural change. “The role of an Energy Manager should be to create lots of other Energy Managers at your site. What Phil and the Carbon Psychology approach have helped us do is convert our key production stakeholders to this mindset. What’s more, with the right tools, this can be achieved with relatively little capital expenditure.”

In this instance successful behaviour change required:

Sub-metering and software	To identify opportunities for, and measure the impact of, interventions.
Real-world application	Interventions need to be based on a combination of academic theory, your employees and their working environment to create a bespoke solution.
Board level credibility	Financial and carbon savings must be ‘actual’ data-driven and not self-reported measures.
Roll out	Energy Managers need a method of selection, to make behavioural change scalable.