

The Envantage Newsletter

Guiding you to a more sustainable future

October 2022

Welcome to our second energy & carbon newsletter

Envantage and UKFT are working together to help businesses in the fashion & textiles sector to address the challenges around carbon and energy. We're here to help you to reduce costs and carbon whist complying with the various mandatory and voluntary schemes in the sector.

With this monthly newsletter, we will ensure you have access to the information you need to shape your energy and carbon strategies.

- Each month you'll receive a round-up of the key developments in the energy market from our energy trading expert, Richard King.
- We will also delve into the low carbon and energy hot topics of the moment to ensure you are up-to-date on the latest developments.

This month, we look into some practical ways that energy efficiency improvements can be made in your operations. While every business is different, we've selected a range of improvements that we have seen when we've worked with businesses in the textiles sector.

We hope this regular carbon and energy update will help you to identify the ways you can make savings, meet regulatory requirements and get on the right path to a more sustainable future.

If there is a particular subject you'd like us to address, please get in touch using the email on this page.

Government help to address rising energy bills for business.

The UK Government recently announced a price cap on energy costs to help businesses to cope with the huge price rises that have been seen in recent months.

The details of the scheme are still being finalised, but we do know there will be a six month period where electricity and gas prices will be supported, followed by the possibility of additional support for certain industry sectors.

If you are unsure how this scheme will affect your business, get in touch and we'll be able to discuss the latest developments with you.

Email our Senior Carbon Consultant, Jessica Harris:

jessica.harris@envantage.co.uk





Weaving efficiency through your operations

In the current energy market, the importance of the unconsumed kWh has never been higher. Here, we examine the principal areas where energy efficiency in the textiles industry can be improved:

Using compliance to your advantage

Mandatory energy efficiency schemes such as ESOS and voluntary schemes such as Climate Change Agreements are there to help you drive good practice and save money.

Revisit recommendations made during ESOS Phase 2 now and ensure ESOS Phase 3 is not a tick box exercise – approached in the right way it will save energy and money. ESOS Phase 3 needs to be met by 5th December 2023, but as there is a lot to do, actions need to be planned now.

Steam boilers and systems

Steam boilers are the mainstay of the textile industry, but we understand the challenges they present from an energy cost perspective.

Where possible, they should be switched off when not in use. Regular maintenance is also key, with an annual service in place and further regular checks to maintain efficiency:

- Check for and repair any leaks found immediately
- Ensure the steam distribution network is fully insulated and in good condition, don't overlook valves and flanges
- Complete a steam trap survey, repairing or replacing failing steam traps
- If you're investing in a new system, make sure you consider ease of maintenance as it will impact on overall efficiency

To maximise efficiencies and the opportunity to decarbonise your operations, consider conversion to non-steam solutions or the use of electricity boilers.

But there are significant savings to be made by modifying your existing approach. These include:

- Installing oxygen trim and variable speed drive (VSD) controls on the FD Fan to ensure the boiler maintains ideal air to fuel ratio
- Using a VSD on the feed water pump
- Retrofitting a boiler economiser
- If a new burner is being installed utilise modulating rather than on/off or hi/low control
- Using a flue gas damper to reduce heat loss when a second boiler is kept as a hot standby

Motors and drives

Energy consumption typically accounts for over 95% of the motor's lifecycle cost and therefore ensuring optimum efficiency is key. When not in use they should be switched off and, as with all equipment, being on the front foot with maintenance will deliver savings. Check bearings, belts and alignment regularly, and investigate if they are noisy or hot.

- Consider the use of VSD controls on all fan and pump applications
- Induction motors are now approaching their maximum efficiency, consider upgrading to permanent magnet motors for smaller fan applications

It's usually not cost-effective to replace a working motor with a more efficient model until it fails, but replacement is preferable to rewinding. A rewind loses a couple of percent in efficiency.

Ensure what you have in place is fit for purpose because electrical motors and drive systems are routinely oversized. Compile a comprehensive list of all electrical motors on site and implement an audit. Log high electricity consuming motors to ensure they are sized correctly, replacing oversized motors or resizing on failure as appropriate.

Induction motors are classified according to their efficiency, IE1 (Standard Efficiency) through to IE4 (super Premium Efficiency). This is the new standard, the old one was the opposite way around (i.e. IE3 was the most efficient).

NB if there is no IE/EC level on the name plate then it's the lowest efficiency.



Weaving efficiency through your operations

Motor Efficiency classes

2 pole motor running at 3,000 RPM at 50Hz:

Power kW	IE1 Standard efficiency %	IE2 High efficiency %	IE3 Premium efficiency %	IE4 Super premium efficiency %
0.75	72.1	77.4	80.7	83.5
1.5	77.2	81.3	84.2	86.5
3.0	81.5	84.6	87.1	89.1
7.5	86.0	88.1	90.1	91.7
15	88.7	90.3	91.9	93.3
30	90.7	92.0	93.3	94.5
75	92.7	93.8	94.7	95.6
132	93.5	94.6	95.4	96.2
200+	94.0	95.0	96.0	96.5

Operation and equipment

Even if your entire plant is equipped with energy efficient equipment, it must be operated correctly to deliver savings. This requires comprehensive staff training to ensure that equipment is set up correctly and running according to demand.

All non-essential equipment should be switched off after hours and over weekends – even if this is automated, there needs to be ownership among the team to ensure it happens.

Addressing liquor ratios is the most significant energy saving opportunity in pressure dyeing, reducing hot water heating by up to 70%. Reviewing dyeing processes can allow temperatures to be lowered from 120°C to 60°C, minimising water heating, fabric losses and thermal losses. Similarly, reviewing dye cycle profiles and formulations can reduce processing times.

Insulating machines to reduce heat losses can save up to 9%. Ensure atmospheric systems are covered with lids as well as insulated. Recover direct cooling water for use as hot water.

Maximise the use of mechanical pre-drying systems. Rather than relying on steam cylinder dryers alone, consider hybrid dryers, combining cylinders with warm air and avoid intermediate and over drying. Finally, maximise utilisation factors and minimise idling times.

When drying in stentors, as well as mechanical pre-drying, consider pre-heating with either electrical or gas infra-red. This maximises the drying zones within the stentors, allowing processing times to be reduced, by increasing line speeds by up to 50%.

Ensure line speeds reflect the actual cloth being processed and are not default for the worst case. For hank drying consider the use of radio frequency drying. Once again avoid over drying and idling, closing exhaust streams while idling. Optimise exhaust humidity levels and install heat recovery.

Heating

Ensure a 4°C hysteresis between heating and air conditioning (i.e., heat to 20°C and cool to 24°C), that way the two systems do not fight each other with both on at the same time.

During the heating season ensure loading bay and service entrance doors are open for the shortest possible time – plastic curtains can help keep heat in.



Weaving efficiency through your operations

Ensure thermostats are set to an appropriate temperature:

Offices	19 - 21°C
Workshops	16 - 19°C
Heavy work	11 - 14°C
Stores	10 - 12°C

A 1°C reduction in average temperature typically cuts consumption by 8%

Dirty fans, filters and other components increase running costs. A poorly maintained heating system typically uses 10% more energy than a well maintained one. Check time settings are appropriate for occupancy times. Consider upgrading to optimised control systems.

When replacing aging equipment to minimise carbon emissions, consider electrical and zero carbon alternatives to natural gas, including hybrid solutions.

Compressed air

As with steam, start in the factory not in the plant room. Is compressed air needed or are there alternatives? As with steam distribution systems, identify and fix leaks.

Enrol the help of your compressed air service company, some will even survey your system, identify and tag leaks, and sell the components you need to mend the leaks in individual kits for each leak.

- Review operating pressure, a reduction in pressure of 1 bar reduces consumption by 7%
- Improve compressor house ventilation, high inlet air temperature increases both compression electricity consumption and water content
- Upgrade compressor sequencing controls and the use of a VSD compressor, (best with a modular system comprising a lead VSD compressor and several smaller fixed speed units to pick up the baseload)

- Note that a VSD unit is less efficient than a fixed speed air compressor if operated typically above 85% load
- Consider retrofitting heat recovery to make use of the compressor's heat output instead of allowing it to go to waste

Refrigeration systems

As with motors, compressed air and heating systems, regular maintenance is essential for the efficient operation of refrigeration systems.

- Again, consider VSD on fans for both evaporators and condensers.
- VSD control is preferable for compressors as against slide valve control.
- For high temperature applications, consider free cooling and/or adiabatic cooling systems.
- Ensure evaporator fins are not fouled.
- Finally, don't overlook the opportunity to install a liquid pressure amplification system, especially on systems operating throughout the year.

On site generation

If you have previously considered a Solar PV installation and discounted it, be prepared to look again. Paybacks are now typically 5 years or less and power purchase agreements are once again readily available.

As more businesses seek to minimise reliance on grid electricity, components and installers are in short supply so expect to wait for projects to commence.

Your business could benefit from an energy audit. Contact Envantage today to identify where savings can be made - jessica.harris@envantage.co.uk

UKFT and Envantage will soon be hosting a webinar on energy efficiency for the textiles sector. Look out for more details and registration instructions to join this event and learn how to make your operations more efficient.



Energy Markets Monthly update

With energy prices firmly in the spotlight right now, our energy trading expert, Richard King, provides a snapshot of the issues affecting the market each month.

Following on from the major correction in energy markets after the late August bank holiday weekend with the announcement of rapidly filling European gas storage inventories leading to the de-risking of the supply situation for the upcoming winter, UK power and gas prices continued to see further falls through the early part of September as both the EU and UK governments indicated that they were prepared to intervene in the functioning of energy markets which forced many participants to assess the market was overbought and subsequently sold contracts to secure profits.

Some help for business energy costs

As part of its package of assistance, the UK government announced that it would place a cap on domestic energy supplies at an average annual rate of £2,500 for 2 years, with confirmation later in the month of their Energy Bill Relief Scheme from October for UK businesses that would implement a Supported Wholesale Price of £211 per MWh (21.1p/kWh) for electricity and £75 per MWh for gas (7.5p/kWh). The scheme will run for six months and will be reviewed in three months' time to determine if the help provided should be more targeted towards certain industries.

At the end of the six-month period in March '23, additional support will be provided for "vulnerable industries" which is likely to centre on the hospitality sector. Longer term measures will also include a review of the market structure to determine whether generators with lower marginal costs such as renewables and nuclear should be barred from received electricity prices that are set by the marginal cost of gas in favour of a contrast for difference (CfD) arrangement where they will receive a strike price lower than current market in exchange for a longer-term guarantee of these contracts.

Wholesale energy market movements

The conclusion of much of the maintenance program at Gassco's gas assets in the Norwegian sector of the North Sea, the scheduled return of a number of French nuclear reactors and stronger renewable output from higher wind speeds also helped to reduce spot prices through the month, as did milder temperatures reducing the early onset of autumnal heating demand.

UK energy prices saw a partial recovery through the middle of the month, due partly to the slump in the value of the pound meaning that all imports of energy were higher as a result. The fall in Sterling followed UK Prime Minister Liz Truss' announcement that the government would intervene to help reduce soaring energy costs for British households and businesses in a £150bn package funded by increased government borrowing.

What can energy buyers do?

Businesses with flexible energy contracts and exposed positions over the medium term may wish to consider accelerating their hedging strategies to take advantage of the recent downwards correction in prices. Further downside to markets may be limited given the political uncertainty surrounding the remaining supply of natural gas from Russia following the sabotage of the two Nord Stream gas pipelines under the Baltic Sea and Russian annexation of four provinces of Ukraine.

With the October renewal round having concluded, smaller businesses with fixed term contracts due for renewal in April may wish to assess the market before committing to new contracts, although they also have some time to consider entering into an aggregated collective procurement strategy via a purchasing basket as they are likely to offer greater value and strategic purchasing options compared to fixed term supply contracts with suppliers still reluctant to offer attractive terms given wholesale market volatility.

Our experts are here to help and explain all your options.

If you would like to learn how you can protect your business from energy market fluctuations, speak to our risk-managed purchasing team on **0161 448 7722**

Richard King
Trading and Risk Manager
richard.king@envantage.co.uk

