

# Energy Efficiency **Good Practice**

*Laundry cost saving basics plus infrastructure and processing hints & tips!*



**Commercial laundries provide great economies of scale and efficiencies to almost every primary and secondary sector.** We have expertly optimised the use of textiles, energy, water and chemicals in our operations for many decades. An energy crisis such as the one we are now going through, makes us think differently and find ways to implement new radical changes. However, this can take time and significant investments which is important for mid to long-term commitments.

This checklist is aimed at identifying your 'low-hanging fruit' where time and money can be saved by changing inefficient systems and practices relatively quickly and easily. The first 20% - 25% of efficiency improvements are often the simplest. We hope the following will provide you with ideas to achieve further resource efficiencies and some significant savings. Having efficient, correct processes in place now can make a real difference in the future.

## 1 SITE REVIEW

**Electrics** - thorough review of current supply, tariff selection, metering, distribution, equipment demand, isolation, power factor correction, voltage optimisation

**Gas** - thorough review of supply, tariff selection, metering, distribution, equipment demand, isolation

**Boiler Plant (& associated equipment)** - safe & efficient steam generation, utilising O<sup>2</sup> trim, stack economiser, blow-down & flash steam/condensate heat recovery, heat exchanger direct to boiler feed inlet

**Steam** - consider carefully how the steam is generated, the timing, how it is distributed, equipment demands and the overall steam performance by identifying/fixing any leakage and pressure loss in critical areas of the laundry

**Hot Water** - review hot water generation for non-laundry use such as toilets etc.

**Compressed Air** - review generation, distribution, equipment demand, performance, leakage detection, air supply quality, distribution system correctness. Consider adding airline meters, record and fix 'idle' losses

**Water & Effluent** - recycling systems, metering (in/out where viable and useful), distribution, equipment demand, water softeners, iron filtration, water hygiene control, effluent recycling design, maintenance. Review water volumes in toilet flush times

**Utilities** - monitoring and targeting, daily meter reading of all supplies and sub-metering where justified

**Energy Supply** - use a competent energy consultant for advice. Avoid paying large commissions on usage savings – you may be able to review several areas yourself

**Overall Site Performance** - measure overall energy consumption in kWh/kg (for both heating fuel and electricity) and water consumption in litres/kg. Set targets, monitor and fine-tune to achieve the targets

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## 2 OPERATIONS

**Switch off when not in use** - lights (use motion sensors if possible), office equipment, air conditioner, all local electrical heating, and processing equipment where applicable aligning carefully with breaks and shutdown times combined with temperature adjustments

**Review equipment start-up times** - help avoid non-demand idling (particularly, high energy consumption equipment such as boiler, compressor, water pumps)

**Ensure maximum output on all energy processes** - fully staffed calenders etc.

**Review operation of low-energy activities** - particularly implementing 'cold processes' such as packing and sorting in dedicated time slots to efficiently run 'hot injected processes' such as tumbling, washing, ironing

### **Ironers (calenders) and Feeders/Folders** -

- Productivity targets, well-targeted training for staff, finish quality, drive motor current, bed pressure and waxing regime, exhaust vent observation
- Utilise the heated areas in ironing machines to the maximum avoiding gaps between pieces fed into the machine
- Effective training and performance tips for the staff can help such efficiencies significantly. The smaller the gaps between the pieces being fed, the better the efficiency.
- Ensure to have a weekly/daily maintenance regime to clear wax from vacuum fans and ducts on the ironers.
- The tuning of the ironers is vitally important for the best production efficiencies - adjust the roll-to-roll stretch at the ironer to improve the heat transfer between the rolls. Ironer lines should be adjusted to give as near to full coverage over the heated beds as possible.
- This means automatic feeders are adjusted to give edge-to-edge feeding and roll-to-roll speed. Speak to the manufacturer or a laundry efficiency consultant if you believe your ironers and other equipment are running inefficiently.
- Where you have adjustable bed temps slow the ironer & reduce the temperature if the feeders can't keep up with no gaps (mostly smalls)

**Tunnel Washers** - try to achieve longer Continuous Tunnel Washer (CTW) cycles to allow for a longer press Time At Full Pressure (TAFP). A longer TAFP reduces moisture retention. Lower moisture retention reduces energy consumption in finishing processes. The energy consumption of the press is 5-10 times lower than ironers and tumble dryers – try to exploit this. Identify any worn pressure pumps or leaks in the system, and repair urgently as this can cause big inefficiencies in water extraction. Utilising TAFP can sometimes cause the idling of tumblers in the downstream process. Ensure to maximise TAFP without compromising tumbler efficiency and without altering shift patterns.

**Tunnel Finishers** - performance targets, temperature controls, garment residual soil (blue haze), exhaust vent observation, filter cleaning. Each and every peg that goes through the finisher should be utilised for the best energy performance. Conveyor pegs should be maintained well enough to avoid larger or random distribution of garment pegs – the target is to run one garment per peg going through the finisher. Batch fabrics by weight groupings where possible to allow tailored temperatures. (e.g. FR cotton separate from polos etc.). In the same manner as the ironers, if you can't load every peg, slow it down and reduce the temperature.

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## 2 OPERATIONS CONT'D

**Tumble Dryers** - being the least energy-efficient equipment in a typical laundry, this is an important aspect to manage. Review loading practices, cool-down cycles, infrared temperature and humidity control, vent recirculating, heat recovery control and filter cleaning. Most of all, avoid over-drying in a tumbler as only a third of the energy input is used to dry and the rest is lost as hot air. Weekly/daily maintenance to repair holes in grills above the tumble dryer heater batteries to prevent lint blockage.

**Efficient Load sizes** - a washer extractor or a CTW that is under-loaded utilises the same amount of water, steam and power as a fully loaded one thereby reducing efficiencies per unit processed

**Tariff and Lowest Cost Purchase Analysis** - this may prove to be a worthwhile investment identifying significant savings in a structured manner

**Lighting** - surveys often identify solutions that may demand high capital expenditure, but have the potential to return significant consumption savings and attractive pay-back periods

**Compressor** - a leakage survey can easily be undertaken at night or over the weekend when the laundry processes either do not take place or are running at a reduced scale

**Chemicals** - supplier to audit and optimise wash processes for energy consumption depending on the mix of products, soiling levels and specific customer requirements. Review wash programmes and consider innovative ways to lower temperatures

**Boiler** - competent boiler water treatment, servicing burners, operation hours, combustion efficiency, modulation control, monitoring and service routine. Don't turn the boiler on earlier than necessary. Check when the plant is being turned on to get accurate timings. Review shift patterns and avoid overlaps for efficient shift handover.

**Sorting and Segregation** - place work into the exact correct load sizes for CBW and washer extractors to ensure optimum processing

**Hot Rinsing** - if applicable, ensure work is processed quickly to maximise retained heat

**Idling Equipment** - review work waiting times and lunch breaks, maintaining continuous processing with equipment always fully utilised to eliminate idling. Combine this with good staff awareness training and workshops

**Record** - take daily meter readings, undertake trend analysis and periodic auditing. Take meter readings when lights and water are all turned off and ensure. This helps identify any unexplained readings and narrow down the leakages. Try to get the electricity readings to zero with no parasitic drains.

*Read on for more useful hints and tips to help create significant savings around your laundry operation...*



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## **3 ENGINEERING** SHORT-TERM, LOW CAPITAL INVESTMENT

**Interlock** - high-demand equipment (washer/extractors) to reduce peak demand and spread the load

**Power Factor Correction systems** - install to achieve unity power factor

**Soft Start/Inverter** - install controller to all motor drives on wash/exts, ironers etc

**Condensate** - return heat recovery direct to boiler feed-water inlet

**Water Ring Main Pumping systems** - convert to inverter variable speed drive and link to demand optimisation

**Air Handling systems** - convert to inverter variable speed drive controlled by process or ambient conditions demand

**Pipework** - remove all redundant pipework and ensure all steam distribution lines are correctly drained and insulated. Identify any lagging pipework and valves.

**Steam Traps** - Maintain traps as a priority.

## **4 DESIGN** LONGER-TERM CAPITAL INVESTMENT

**Effluent** - heat recovery to be used to pre-heat process water at various key stages, both in washer/extractors and continuous tunnel washers

**Tumble Dryers** - should ideally be direct gas heated with exhaust heat recovery/recirculation and temperature and humidity control to ensure optimum drying

Seek expert guidance to ensure all opportunities are appraised for energy saving through investment in alternative technologies. Refer to paper on Carbon Trust awareness. Consider options on solar, hydrogen fuel, heating with ground source, LED lighting wherever possible.

All of the above are sound practices for you to consider and implement across your operations. However, if you need a helping hand, the TSA is offering subsidised energy audits from Opeque. For £300 you will receive a brief audit and preliminary report to address the most important aspects in your laundry. If you would like an audit to help you find ways to achieve energy efficiency, please contact: **OPEQUE Richard Newton** **M** 07831 873 355 **E** richard@opeque.com **W** opeque.com