Engine Reconditioning

Automotive Industry Energy Efficiency Project

Engine re-conditioning workshops are one of the bigger energy users amongst the automotive industry; with lighting, heating ventilation and air conditioning (HVAC), and the air compressor being the biggest energy contributors. An audit of engine re-conditioning workshops identified that an average engine re- conditioning workshop used 109,775kWh of electricity per year. That is a cost of $26,383, slightly more than the industry average.

There are many energy saving opportunities that can be made, which could potentially help engine reconditioning businesses achieve considerable financial savings.

Major energy users

Lighting

All businesses could reduce the amount of electricity being used by making smarter choices on lighting.

There are many improving lighting technologies such as fluorescents and LED lighting that could improve your business' efficiency. Lighting used for security and marketing purposes is often left on throughout the day unnecessarily, wasting both energy and money.

Quick and affordable tips to save you energy:

Install sensors – One of the easiest and smartest ways to reduce your energy consumption is to install timers or sensors on your lighting. This will curb the businesses use of artificial lighting and also reduce your electricity bills. For example, an area with ten twin fitting 36W T8 fluorescents controlled with motion sensors can save you up to 1200kWh per year. At the end of the day, low cost timers and sensors is just smart business!

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Regularly clean skylights – Having skylights in workshops, showrooms and offices are a bonus many dealerships don't utilise or notice, especially when they are dirty. Clean skylights can provide plenty of natural light throughout the day, particularly during summer, minimising the need for artificial light.

Display switch off signage next to light switches – This is an easy and cheap way to reduce energy consumed by lighting. Displaying signs next to switches will remind everyone to turn off the lights when leaving an area or room. Don't underestimate the simplest of initiatives; as little reminders help people, when trying to change inefficient habits.

Replace inefficient lighting—Assess the current lighting and replace with more efficient choices that are suitable to your business. The below table outlines the energy savings a engine reconditioning workshop achieved in metropolitan Victoria, when a few lighting changes were made.

Existing lighting	Energy Saving Opportunity	Savings (kWh) / ($) per year	Pay back period
2x 400W high bays	LED or T5 Induction high bay	570kWh / $140*	5.7 years
	Install motion sensors in kitchen area	330 / $80*	3.8 years

*Calculated savings ($) may vary depending on the business' electricity rates

Heating Ventilation and Air Conditioning (HVAC)

Heating and cooling is another big energy user that many businesses use without thinking about the consequences.

Quick and affordable steps to save you energy:

Reset your thermostats – Setting your thermostat to 23°C in summer and between 18°C to 20°C in winter will still give you a comfortable environment to work in and make your business much more energy efficient. Each one degree increase in temperature can increase your HVAC energy consumption by 10%.

Program HVAC controllers to match operating hours– This will prevent heat pumps operating outside of normal hours, and avoid wastage. If there are several controllers controlling a large area, make sure they are all set with the same temperature to avoid HVAC units competing.

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Draught proof doors and windows – Draughts can increase your heating and cooling costs by up to 25% by allowing cold air into an area during winter and hot air during summer. Identify your draughts by listening for whistling and rattles; then try to seal the gaps and cracks by blocking or filling them.

Turn off HVAC systems only when needed—Ensure HVAC systems are turned off when the building is not occupied, including overnight, weekends and public holidays. Not only that, turning off air conditioning 15 minutes before the end of the day will cut your energy usage and cost and should not affect the comfort of the work environment.

Air compressos

Air compressors are one of the most inefficient pieces of equipment in the workshop; with approximately 90% of the energy input becoming waste heat.

Quick and affordable steps to save you energy:

Check for leaks – It is important to perform routine maintenance, to detect for any leaks in hoses and coupling, pipes and pipe joints, pressure regulators and threaded fittings. A hole as small as 0.8mm can cost your business over $100 per year if left unrepaired.

Purchase an air compressor that is the right size for your business—When it comes to replacing your air compressor, it is important to consider what you are using it for. Air compressors should run as closely to a full load as possible. In some instances having several smaller sized compressors may be more beneficial than having one large compressor. Purchasing a compressor that is bigger than required will cost you more money to run.

Turn off the air compressor when not required—As basic as that sounds, air compressors are often left on after hours cycling on and off. To avoid having the air compressor running at night or on the weekend, install a 365 day time clock to control the running of the air compressor.

Reduce the system pressure— Running an air compressor with a pressure that is too high can damage the equipment as well as increase energy usage. Businesses can potentially save on electricity bills if they assess the pressure settings, and adjust it to run in line with the equipment that requires the highest pressure.

Recover the waste heat— With up to 90% of the energy used by an air compressor becoming waste heat, recovering the waste to heat water can provide significant savings.

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