MINNESOTA TECHNICAL ASSISTANCE PROGRAM

Fact Sheet

UNIVERSITY OF MINNESOTA

Energy efficiency opportunities for dry cleaning facilities

This fact sheet provides energy efficiency tips to help your dry cleaning facility identify areas to conserve energy through process changes and best practices.

Dry cleaners consume electricity and natural gas to operate cleaning processes. With rising energy prices, utility bills can reach up to 25% of the total operating costs for a dry cleaning facility.

Energy costs are among the few expenses that can be cut without influencing product quality or service labor needs. A variety of energy efficient equipment, technologies, and operating practices are available to achieve energy conservation and reduce costs.

Note: The information in parentheses are estimated potential energy savings.

Benchmarking

To better manage energy costs, it is important to understand your energy consumption at your facility. Cooling, lighting, water heating, and ventilation account for nearly 85% of a facility's energy use.

Professional wet cleaning (PWC) is the most energy efficient of the five most common cleaning techniques: silicone (also known as Green Earth), perchloroethylene, carbon dioxide, petroleum, and PWC. Carbon dioxide cleaning uses nearly 31 kWh per 100 pounds of clothes, while PWC uses approximately 9 kWh. Changing cleaning techniques is one option dry cleaners have for reducing energy consumption.

Steam Systems

Boilers can account for 20-80% of energy costs. Maximizing efficiency in your boiler for water heating and steam production can reduce natural gas use.

- Purchase boilers that are Energy Star rated.
- Size the boiler to meet your facility needs. A modulating power burner is most efficient.
- Perform boiler tune-ups and upgrades (3,050 therms per year for two 30 hp boilers), add insulation (100 therms per year), and perform boiler cleaning to remove scale.
- Install VFDs on boiler fans and circulation pumps.
- Install piping and steam trap insulation (2,300 therms per year per 100 feet of 2" pipe).
- Check and maintain steam traps annually (100 therms per trap per year).
- Use turbulators to mix up the laminate flow and create equal heating (12 – 18% savings).
- Set differential to minimize cycling losses.
- Replace the packing in the ball valves on steam lines.
- Install timers to shut down boilers when not in use.

Hot Water

If your water heater uses natural gas, consider switching to a high-efficiency version. Ultra-efficient and condensing natural gas models are available that are 18% to 36% more efficient than conventional gas water heaters.

- Insulate water heaters and reduce set temperature ($100 per 1,000 gallons).
- When replacing your hot water system, switch to a high efficiency version.
- Install a solar hot water heater.

Reuse Waste Heat

Energy and money are wasted when heat escapes from a facility. Dry cleaners may be able to implement waste heat recovery strategies to capture waste heat and reuse it in process operations or for space heating.

- Reuse heat from the boiler room and compressor exhaust to heat building space (5,000 therms per year).
- Heat water by using a heat exchanger from the condensate lines (eliminate hot water heater—28 therms per year).
- Install recuperators for steam/hot water lines to recover heat.
- Use waste heat to preheat boiler makeup water.

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Perchloroethylene Machine

Proper operation of perchloroethylene (perc) machines can reduce energy consumption.

- Evaluate inlet/outlet temperatures on your perc machine.
- Insulate all hot surfaces around and on the bottom of the machine to reduce steam use for perc recycling (8 therms per year).
- Run full loads through the perc machine.
- Maintain chiller systems by checking for refrigerant leaks and proper temperature and pressure settings.

Finishing Equipment

Operate finishing equipment according to the manufacturer's specifications for the best results. Talk to your vendors about ways to reduce energy use on this equipment.

- Insulate or cover hot surfaces and steam hoses (156 therms per year).
- Turn equipment off during breaks, lunch, and downtime.
- Keep the temperature within the recommended operating range.

Air Compressor

Compressed air is essential to the proper operation of your shop equipment.

- Check and repair leaky hoses and valves. A poorly maintained system can waste between 25% and 35% of its air due to leaks alone.
- Clean intake vents, air filters, and heat exchangers regularly to increase both equipment life and productivity.

Motors on Compressors and Machines

Replacing standard efficiency motors with energy efficient models will likely save money. The U.S. Department of Energy Efficiency and Renewable Energy has developed a free interactive program to assist you with calculating pay back for one or many motors. You can find information at <http://www1.eere.energy.gov/industry/bestpractices/pdfs/motormaster_fs.pdf>.

- Install a soft starter, a motor starter designed to gradually bring a motor up to speed by distributing the power. Soft starters help motors handle a high current load or a high starting torque (new machines have VFDs to do this).
- Develop an emergency, premium efficiency motor replacement plan.
- Evaluate your motor maintenance program, and establish criteria for replacement versus rewinding motors.

Lighting

Lighting upgrades are often overlooked, and while not always a quick payback, utility rebates are readily available.

- Turn off lights during non-operating hours.
- Upgrade from T12 to T8 lighting and save 8,677 kWh per year.
- Switch to energy saving bulbs with reflectors ($50 per 1,000 kWh reduced).
- Install motion detectors for lights in seldom used areas such as storage, conference, and break rooms ($50 per 1,000 kWh reduced).

Building

Your facility may have areas unrelated to the dry cleaning operations where energy efficiency could be improved. Identify energy-consuming equipment and consider the following tips.

- Minimize space heating in unoccupied areas and buildings.
- Change "EXIT" signs from incandescent bulbs to LED signs ($50 per 1,000 kWh reduced).
- Turn off soda machine lights ($75 per machine year).
- Install programmable thermostats; set energy-saving temperatures for non-operating hours ($50 per 1,000 kWh reduced).
- Turn off office machines when not in use and during non-operating hours.
- Install timers for coffee makers to turn off machine when not in use ($50 per 1,000 kWh reduced).
- Install low-flow toilets and showers ($50 per toilet per year).
- Install extra cover/insulation at loading dock to minimize heat loss during the winter.
- Install a solar wall or white roof tops to reduce energy purchases and increase reliance on renewable energy.

Additional Resources

The following resources are available for more information about energy efficiency opportunities for dry cleaning facilities.

Business Energy Advisor

<www.esource.com/escrc/0013000000DP1ArAAL-1/BEA1/CEA/CEA-11>

Dry Cleaning and Laundry Institute

<www.ifi.org>

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For More Information

MnTAP has a variety of technical assistance services available to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, increase energy efficiency, and reduce costs. Our information resources are available online at <mntap.umn.edu>. Please call MnTAP at 612.624.1300 or 800.247.0015 for personal assistance.