

## WINERY ENERGY SAVER TOOLKIT – OPPORTUNITIES REGISTER

### COMPRESSED AIR

#### Explore options to optimise equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Optimise operating settings</u>				
Use minimum discharge pressure	<input type="checkbox"/>			
Use minimum working temperature	<input type="checkbox"/>			
Use minimum inlet air temperature	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Load management</u>				
Schedule multiple air compressors in parallel	<input type="checkbox"/>			
<u>Repair distribution network</u>				
Repair leaks	<input type="checkbox"/>			

## Explore options to upgrade equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Rearrange pipe/hose network</u>				
Minimise the pressure drop of the pipe/hose network	<input type="checkbox"/>			
Relocate compressor	<input type="checkbox"/>			
<u>Install new air compressor components</u>				
Replace internal cooling with external cooling	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Install controls to operate compressors only when required	<input type="checkbox"/>			
Install a variable speed drive on compressors	<input type="checkbox"/>			
Install automated compressor staging and capacity control	<input type="checkbox"/>			
<u>Alternatives to air compressors</u>				
Use compressed air only when most appropriate	<input type="checkbox"/>			

## WINERY ENERGY SAVER TOOLKIT – OPPORTUNITIES REGISTER

### HOT WATER & STEAM

#### Explore options to optimise equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Optimise operating conditions</u>				
Use minimum temperature set point	<input type="checkbox"/>			
Reduce blow down	<input type="checkbox"/>			
Monitoring of flue temperatures to reduce flue heat losses	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Maintaining water treatment to reduce scaling	<input type="checkbox"/>			
Maintaining steam traps	<input type="checkbox"/>			
<u>Repair pipework network</u>				
Repair leaks in pipe network	<input type="checkbox"/>			

## Explore options to upgrade equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Retrofit boiler and pipework to improve heat recovery and efficiency</u>				
Blowdown heat recovery and flash steam recovery	<input type="checkbox"/>			
Economisers or heat exchange systems	<input type="checkbox"/>			
Air preheaters	<input type="checkbox"/>			
Install insulation on pipe network and boiler	<input type="checkbox"/>			
<u>Rearrange and resize boiler and pipe network</u>				

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Minimise the pressure-drop of the hot water pipe network	<input type="checkbox"/>			
Relocate boiler	<input type="checkbox"/>			
Match steam supply with demand	<input type="checkbox"/>			
Install accumulators	<input type="checkbox"/>			



## WINERY ENERGY SAVER TOOLKIT – OPPORTUNITIES REGISTER

### HVAC

#### Explore options to optimise equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Optimise operating conditions</u>				
Adjust temperature set points	<input type="checkbox"/>			
Use the economy cycle	<input type="checkbox"/>			

## Explore options to upgrade equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Install building seals	<input type="checkbox"/>			
<u>Rearrange duct network</u>				
Minimise the pressure drop of the duct network	<input type="checkbox"/>			
Relocate HVAC unit	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Install new HVAC components</u>				
Install insulation on HVAC and duct networks	<input type="checkbox"/>			
Install controls to operate HVAC only when required	<input type="checkbox"/>			
Install a variable speed drive or multi-speed motor	<input type="checkbox"/>			

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### LIGHTING

#### Explore options to optimise equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Load management</u>				
Use lights only when required	<input type="checkbox"/>			
Use minimum level of lighting	<input type="checkbox"/>			
<u>Maintain lighting equipment</u>				
Clean lights	<input type="checkbox"/>			

## Explore options to upgrade equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Use daylight</u>				
Install day-lighting devices	<input type="checkbox"/>			
Distribute daylight internally	<input type="checkbox"/>			
Install efficient lamps and luminaries	<input type="checkbox"/>			
Install LED or self-luminous exit signs	<input type="checkbox"/>			

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### PUMPING

#### Explore options to optimise equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Load Management</u>				
Schedule the most efficient pumps for a given load	<input type="checkbox"/>			
Schedule multiple pumps in parallel	<input type="checkbox"/>			

## Explore options to upgrade equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Minimise the pressure drop of the pipe network	<input type="checkbox"/>			
<u>Replace pump components</u>				
Trim or replace the impellor	<input type="checkbox"/>			
<u>Install new pump components</u>				
Apply precision castings, coatings and polishing	<input type="checkbox"/>			
Install controls to operate pumps only when required	<input type="checkbox"/>			
Install constant speed drives	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Install a direct drive (for pumps with variable loads)	<input type="checkbox"/>			
Install a variable speed drive on pumps	<input type="checkbox"/>			
Install a multi-speed motor on pumps	<input type="checkbox"/>			



## WINERY ENERGY SAVER TOOLKIT – OPPORTUNITIES REGISTER

### REFRIGERATION & TANK STORAGE

#### Explore options to optimise equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
<u>Optimise operating conditions</u>				
Use maximum temperature setting	<input type="checkbox"/>			
<u>Load management</u>				
Adjust the process schedule to flatten the cooling load	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Use variable chiller flow	<input type="checkbox"/>			
Use night time air for ventilation	<input type="checkbox"/>			
Schedule multiple refrigeration compressors in parallel	<input type="checkbox"/>			
<u>Repair refrigerator components</u>				
Manage and seal doors	<input type="checkbox"/>			

## Explore options to upgrade equipment

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Installing evaporative cooling or ice storage to pre-cool grapes and must	<input type="checkbox"/>			
<u>Install Insulation on refrigeration equipment</u>				
Install insulation on refrigerators and pipe networks	<input type="checkbox"/>			
Install insulation on tanks	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Replace insulation on cold store walls	<input type="checkbox"/>			
<u>Rearrange refrigeration circuit</u>				
Minimise the pressure-drop of the refrigeration circuit	<input type="checkbox"/>			
Deliver the primary refrigerant to the end use	<input type="checkbox"/>			
Install a second brine tank	<input type="checkbox"/>			
Relocate refrigerator	<input type="checkbox"/>			
<u>Replace inefficient refrigerator components</u>				

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Replace internal cooling with external cooling	<input type="checkbox"/>			
Install an electronic expansion valve	<input type="checkbox"/>			
Replace centrifugal fans with axial fans in condensers	<input type="checkbox"/>			
<u>Install new refrigerator components</u>				
Install an automatic purger	<input type="checkbox"/>			
Install variable speed drives on refrigerator, refrigerator compressors or fans	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Install a multi-speed motor on fans	<input type="checkbox"/>			
Install automated compressor staging and capacity control	<input type="checkbox"/>			
<u>Speed refrigeration time</u>				
Install a centrifuge	<input type="checkbox"/>			
Install a cross flow filter	<input type="checkbox"/>			
Replace refrigerator and components	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Install an efficient chiller	<input type="checkbox"/>			
Install an efficient evaporator	<input type="checkbox"/>			
Install an efficient condenser	<input type="checkbox"/>			
Use an effective primary refrigerant	<input type="checkbox"/>			
<u>Alternatives to refrigeration</u>				
Install an electrolysis unit for tartrate stabilisation	<input type="checkbox"/>			

Energy Efficiency Option	Pursue? (tick box)	Next steps & timing	Who responsible	Notes
Use additives for tartrate stabilisation	<input type="checkbox"/>			
Over cool the product at night	<input type="checkbox"/>			
Install an underground cool room	<input type="checkbox"/>			