Your complete

CHECKLIST

for your cooling tower winter operations - preventing ice damage

- [ ] **Complete a fall inspection.** An inspection will help to identify any broken or clogged distribution headers, laterals, and nozzles. If any of these are broken or clogged, the water flow rate will be too low, thus causing localized ice buildup in areas of your tower and creating further damage.

- [ ] **Protect the air inlet opening or louvers, if installed.** If the water temperature falls below 55 degrees Fahrenheit, begin winter operating procedures. This starts with installing tarpaulins at the windward side of the tower.

- [ ] **Operate plant heat load at the highest possible level.** This is to ensure a full warm water wash of the internal components. Additionally, water flow circulation should also be maintained at the highest possible rate by operating all usable pumps. This is where clear and non broken distribution headers, laterals, and nozzles are important, so that water can flow at the highest rate, to prevent ice formation.

- [ ] **If heat load is not available:** the circulating water should be bypassed directly to the cold water basin. If your tower is not equipped with a bypass capability, then shutdown your cooling tower completely.

  *** For more information about shutting your tower down for the winter, see our* **Winter Shutdown Checklist**

- [ ] **Visually inspect your tower every 2 or 4 hours.** If the ambient temperature is in the rage of 20 - 40 degrees Fahrenheit, complete an inspection every 4 hours. If the temperature falls below 20 degrees, inspect your tower ever 2 hours.

- [ ] **Regulate the air flow.** Air flow regulation is the most effective way to control ice formation. To regulate your air flow cycle your fans from full speed, half speed, or turn them completely off.

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- [ ] **If airflow regulation does not work:** switch to reverse fan operation. Reverse mode should be monitored continuously and should only be used for severe ice buildup.

  This option will help drive warmer air out through the louvers and melt any ice buildup. Be sure to familiarize yourself with the documentation provided by the motor starter and controls vendor for further information.

- [ ] **Before beginning reverse operations:** allow 2 minutes from the time of fan shut off to time of reverse start. Additionally be sure there is no ice build up on fan blades before starting reverse operations.

- [ ] **Only operate fans in reverse direction for a maximum of 20 -30 min.** When reverse fan operation is complete, let the fan come to a complete stop before re-starting.

  Now with the fans shut off, flow water for 15 min to prevent ice buildup in the plenum area. Again, visually check the fan blades for ice buildup before starting back in the normal or forward direction.

- [ ] **Any ice buildup on the perimeter columns or the bottom of the fill should be frequently monitored.** If ice buildup becomes excessive, **Begin Shutdown Procedure.**

- [ ] **Do not in any case try to physically remove or strip the framework of ice.**

  ****Remember: melting will leave components in good condition where as physical removal of ice will generally cause more damage.**

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