

De-icers keep the worst of winter at bay

Some tips on getting the most out of your de-icing equipment

By Bob Robinson

If you operate a marina in one of the northern regions of the continent, you'll appreciate the importance of de-icing. What many don't realize, though, is that de-icers require proper—and sometimes precise—installation to be fully effective.

Establishing the optimal flow of water to keep the ice off your boats and docks is not as simple as just dropping the equipment in the water and plugging it in. Rather, it involves a more careful analysis of your de-icing objectives and local conditions at your marina.

The first thing to understand about de-icing is that water behaves unlike most substances. That is, it has the unusual property of expanding when it becomes a solid, and the even more unusual property of becoming less dense as it approaches the freezing point. For most temperature ranges, water actually behaves like most liquids: As its temperature decreases, it becomes denser and sinks. So in most conditions, colder water will settle to the bottom, and warmer water will rise.

However, as water is chilled below about 39 degrees Fahrenheit it expands and becomes less dense, finally forming ice at the surface. This means that in freezing conditions, warmer water will settle lower and the coldest water, from 39 degrees down to 32 degrees, will rise to the top. This is important to consider when choosing a location and depth for your de-icing equipment.

Where does it go?

How and where to locate your de-icer depends on your objectives. If ice-expansion pressure is your concern, you may find it easier to have an open-water buffer between your dock and the ice

pack. In this case, you are not so much preventing the formation of ice as keeping an existing ice pack at bay. So, you will want to direct the flow of warm water in such a way to keep the encroaching ice away from your docks. If ice lifting is your concern, your goal will be to prevent the ice from forming in a specific location.

The next thing to do is determine the proper depth for installation. Around docks and boats, water is usually fairly shallow, so look for somewhat deeper water to install your de-icer. Up to a point, the deeper the water, the warmer the water; however, if your de-icer is installed too deep, the rising warmer water will not effectively spread at the surface, thereby reducing the de-icing effect.

A good guideline is to set your de-icer four to six feet below the surface, and slightly shallower in angled operation. In all cases, though, it should be at least one foot off the bottom. (Operating your de-icer too close to the bottom may increase the possibility of debris being picked up, causing the propeller to clog.)

Ultimately, it's recommended that you experiment with more than one possible location for the best installation.

Next, you should analyze the obstructions present at your de-icing location that could affect the flow of warmer water at the surface. Natural currents present should be taken into consideration as well.

Some helpful tricks

Once you have determined your external constraints, you can choose your installation point(s). Some useful tricks you may wish to consider are:

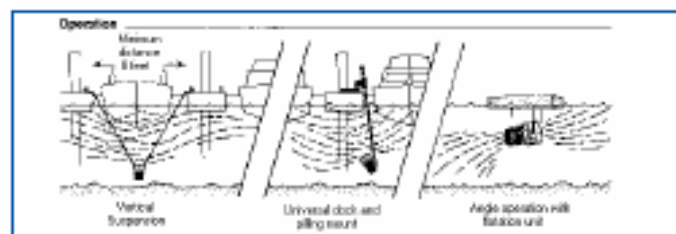
- De-ice from the upstream side and let the current help you.
- It is generally easier to de-ice a boat by installing the de-icer at or near the bow, angled to push the flow of

warmer water toward the stern.

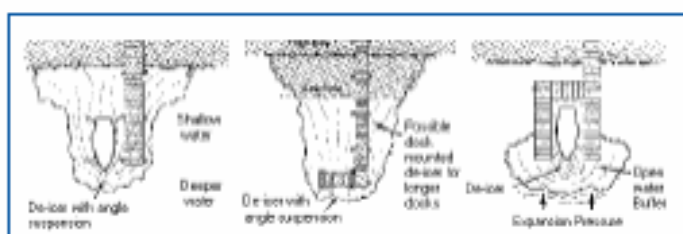
- It is easier to de-ice a shallow area by bringing the warmer water from a deeper area into the shallow area. Angle your de-icer from deeper water toward the shallow water.
- When using more than one unit, it is better to angle all units in one direction, creating a current rather than installing de-icers in opposing directions.
- You can use an obstruction to flair or spread the de-icing flow along the obstruction. (e.g. a de-icer aimed directly at a wall or shoreline may give you a desirable T-shaped flow pattern.)
- In tidal waters split the difference in water depth so the de-icer is in shallow water at low tide and deep water at high tide. If you are de-icing a boat, it is easier to tie your de-icer to the boat and allow the boat and de-icer to rise and fall with the tide.

A final word of caution: Under certain conditions, no circulator can prevent damage from ice movement caused by wind or current, or from extremely cold weather. If conditions are cold enough, ice will form all the way to the bottom, or the water on the bottom will be the same temperature as ice. Effective de-icing can also be retarded when used in extremely shallow conditions. For most marinas, though, a properly installed de-icing system will do the trick and keep your boats, docks, and other structures free from the worst that winter can send your way. ☺

Bob Robinson is marketing director for Kasco Marine Inc., a company with more than 30 years' experience manufacturing de-icers and aeration equipment. For more information, please visit www.de-icer.com, or call 715/262-4488.



Shown here are a few of the options for mounting a de-icer.



Effective de-icing requires an overall strategy for your docks.