

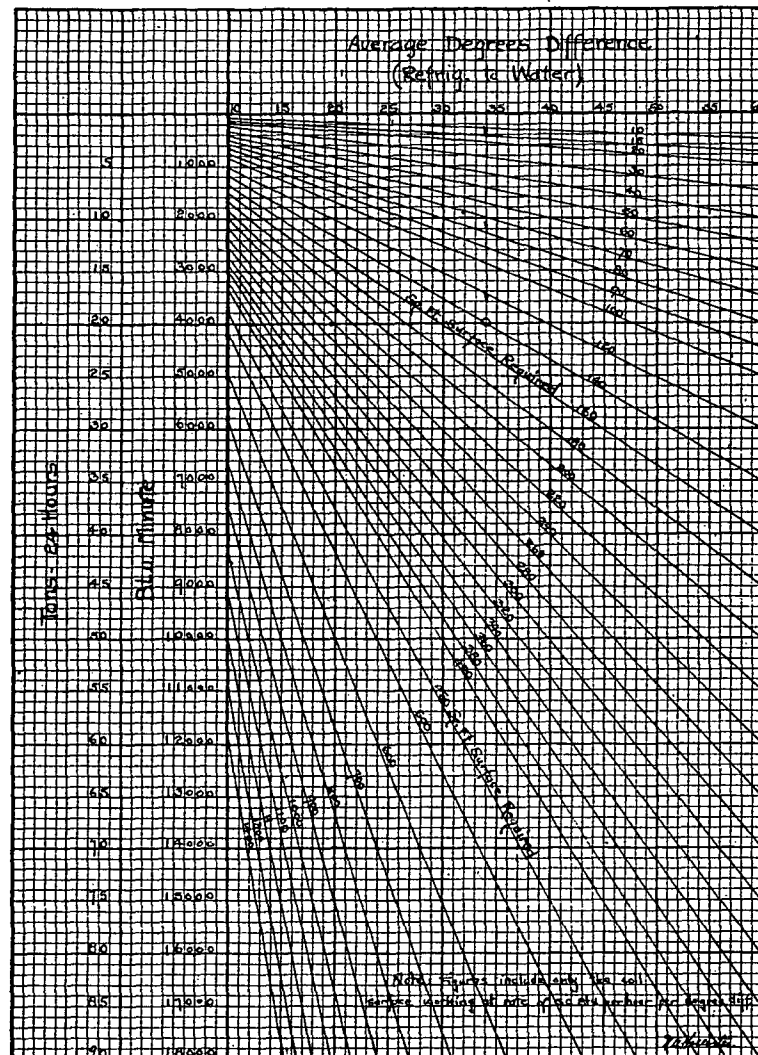


FIG. 78. SQUARE FEET WET COIL SURFACE

CONTROLLING EFFECT ON AIR

The control of outgoing air conditions, whether by hand or automatic devices is more rapidly changed in the spraying method than in the coil-to-air method. If an operator is cooling the air with coils covered with frost (and they are practically always covered with frost and ice) and he desires to remove the cooling effect he may shut off the refrigerant but the bunker room will continue to treat the air until the frost and ice are melted which may take quite a while. The alternative method of changing the air temperature is to use more space and increase the cost by providing a by-pass duct around the bunker room.

By using a small tank capacity in relation to the volume being pumped it is possible quickly to cool or heat the water and thus have quick effect on the air.

Cleaning of Air

Where dirt or gases carried by the outdoor air which would harm a product or be undesirable for persons, the coil-to-air bunker room does no cleaning and may even add unsatisfactory bacteria due to the unit not being easily kept clean. The spray unit is in itself an efficient air cleaning apparatus.

Humidifying of Air

When refrigeration is used in air conditioning work, whether primarily for lowering the dry bulb or for lowering the humidity the resulting moisture in the air is seldom as low as in the outdoor air during our many winter months. For many uses too low a humidity is as undesirable as too high a humidity and many times a constant humidity is desired all year to control yearly manufacturing conditions. The coil-to-air method offers no humidifying whatever while the spray type unit changes from a dehumidifier to a humidifier as soon as the water is not cooled. By air re-circulation or by heating the water or by both, even an excessive humidity may be readily produced by the spray type unit and the humidity controlled all year.

Coil and Spray Combined

Without study it might appear that placing the coils in the spray chamber would be the practical solution. It is seldom that this is advisable.

On light duty units, that is, where not much refrigeration is being used in comparison with the air being handled and in some small units coils may be placed in the spray chamber thus doing away with the lower coil chamber, tank, and troughs, but more coil surface and a large spray chamber must be used.

Unless the resistance of the unit is to be increased the spray chamber must be increased to allow for the space occupied by the coil in the air path. If much refrigeration is being used it will be found that the horizontal projected area of the coil is considerable.

Only a small fraction of the water sprayed hits or comes in contact with the coil surface. Some of the water is therefore not cooled during each cycle and to maintain a certain average water temperature some of the water must be cooled considerably lower. As it is not advisable to