

NASA TECH BRIEF

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Removal of Ice and Marine Growth From Ship Surfaces: A Concept

The problem:

Ice and marine growth are common problems to sea vessels. Ice forms on ship decks in cold stormy seas. It is normally removed by one of the clumsy methods of chopping, applying steam, or pouring antifreeze. Barnacles are usually prevented from accumulating by painting ship hulls periodically with expensive protective paints.

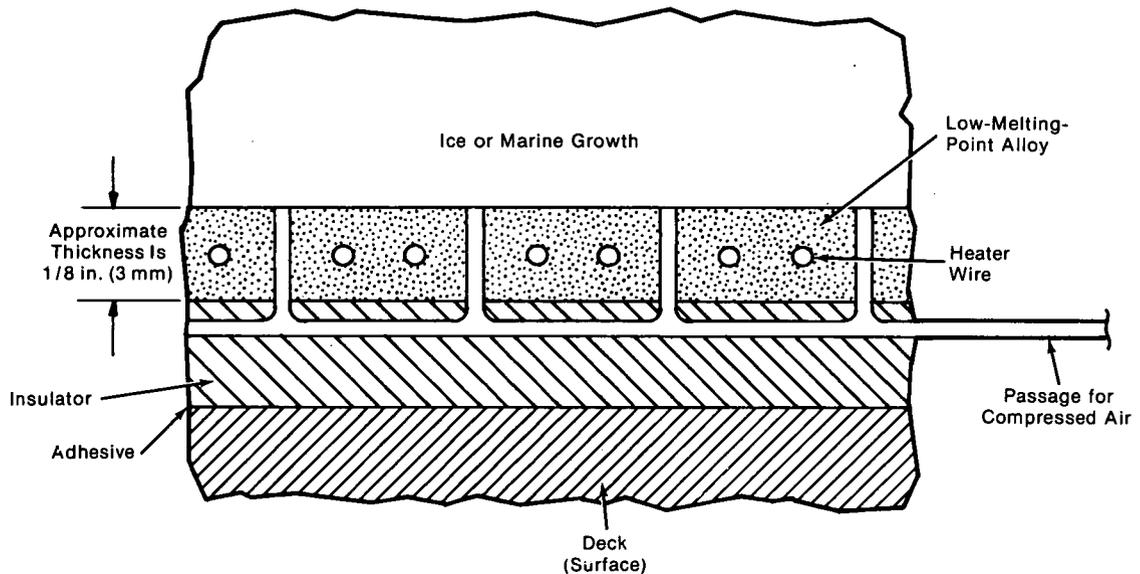
The solution:

Both ice and marine growth can be removed from ship surfaces by the use of a special surface structure.

How it's done:

The proposed surface is structured from sections of a low-melting-point alloy. Embedded in this alloy are electrical heater wires. The sections are separated by a network of passages for compressed air.

The entire structure is laid on the ship surface directly or on top of an insulator layer. An appropriate adhesive is used to bond the structure to the ship surface. When ice or barnacles form, they are removed from the ship surface by simply passing electrical current through the wires. As the alloy melts, ice or barnacles clinging to it will have no firm support. They then are removed by bursts of compressed air through the passages.



New Surface Structure for Removal of Ice and Marine Growth

(continued overleaf)

Notes:

1. Similar problems are encountered in the intake siphons of nuclear or steam power plants that use sea water as a coolant. Thus, similar methods might be used to keep such siphon walls free of marine growth.
2. No further documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
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4800 Oak Grove Drive
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Patent status:

NASA has decided not to apply for a patent.

Source: Albert J. Bauman of
Caltech/JPL
(NPO-13658)

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Categories: 06 (Mechanics)
03 (Physical Sciences)
02 (Electronics Systems)
04 (Materials)