

# Anti Icing Solutions - Marine & Offshore



Protecting crew and passengers - Saving energy with Anti Ice Slip deck pads and stairways from SwedeSafe

SwedeSafe's Anti Ice Slip (A-IS™) system is an innovative Swedish technology, enhancing safety for nearly all marine boot surfaces needed to be kept free from ice, frost and snow - protecting crew and passengers alike.

## Heat what you need to heat - don't waste energy in heating un-necessary objects.

Marine and offshore operations in cold climates gets more common and the demand for personnel and vessel/rig operation safety is increasing. Traditional solutions such as salt, manual de-icing, cable heat tracing, heating of steel decks or even anti-skid mats for critical areas will surely do the job in one way or the other but they also tend to waste massive amounts of time and energy, or corrode the super-structures – for no good.

A major advantage of SwedeSafe's climate resistant A-IS™ system is that only the direct surface is heated, and only when need be. In combination with the climate sensors (pad surface temperature as well as ambient humidity) and the unique insulation feature with very little heat dissipation downwards or sideways, energy savings are up to 40% compared to traditional heat tracing by cables on deck. Compared to heat tracing installations below steel deck, savings will typically be around 70%. In other words, tons of fossil fuel can be saved yearly on a typical arctic drilling rig during cold climate operations – payback time on a SwedeSafe investment is very quick.

- ⇒ Extra safe with extra low voltage supply: 24V or 48V (other voltages available on requests)
- ⇒ Produces perfectly even heat distribution on surface. No risk of hot-spots or cold spots
  - ⇒ Energy savings 70% compared to other electrical heating techniques
  - ⇒ Environmental friendly – no leakage of chemicals into surroundings
  - ⇒ Extremely high resistance to corrosion, chemicals, salt, etc.
    - ⇒ Ergonomically friendly by the built-in cushion feature
      - ⇒ Easy and cost efficient installation
      - ⇒ Enhanced anti skidding surface
      - ⇒ Does not absorb moisture
      - ⇒ Sound dampening
      - ⇒ Light weight



## A-IDP™ – Anti Ice Deck Pads

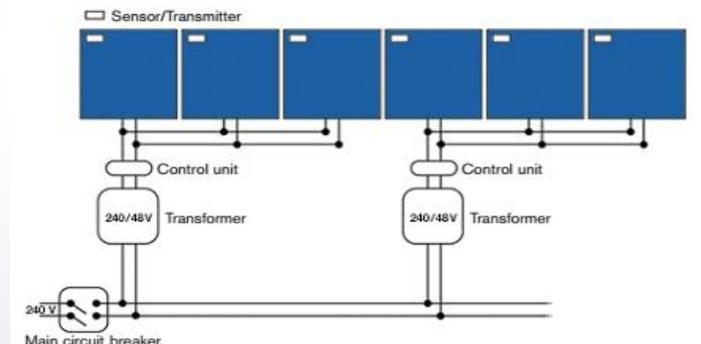
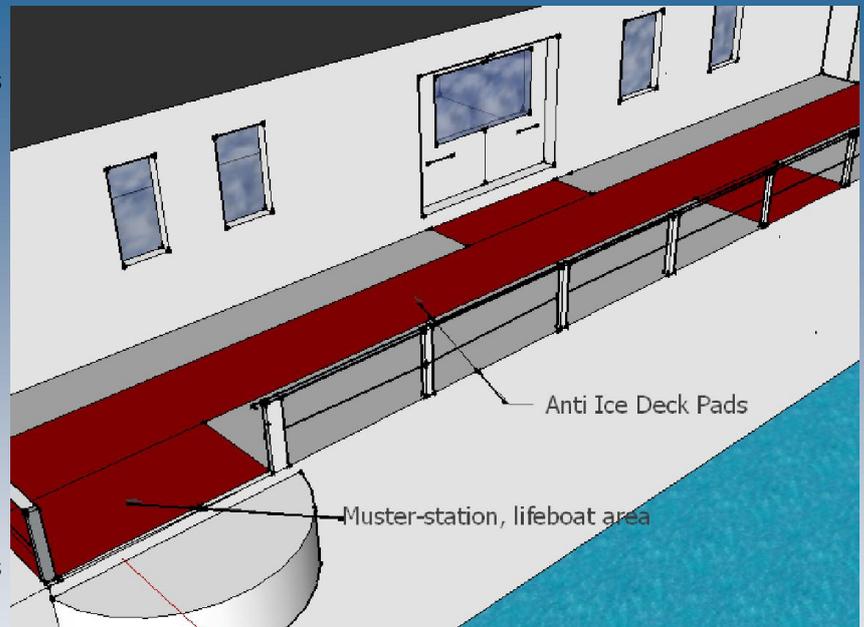
A typical installation consist of a series of pads laid out alongside each other in groups of 2-5 units and electrically connected with a parallel system (48V). Anti Ice Deck Pads can be combined with equally heated access ramps and stairways, allowing for safe passages wherever needed.

A central control unit will activate heating in the pads surface layer when risk of ice formation is palpable (ambient set temperature in combination with humidity). As an optional alternative sensors can be built-in into each pad, thus regulating each pad separately.

A distribution box/transformer supply the pads with extra low (safe) voltage electricity, 24V or 48V (other voltages available).

Anti Ice Deck Pads are currently constructed in three standard sizes for easy installation on decks, 0,5x0,5 mtr, 1x1 mtr and 2x1 mtr., but other specific sizes can be made as per clients request. Thickness of pads, including insulation is 30 mm and weight is only 13 kg/sqm.

Tests show that only 270W/sqm is sufficient to keep a surface free from ice, frost and snow at -30 C (minus degr. C). However, for marine and offshore installations the Anti Ice Deck Pads are supplied with a standard power rating of 300W/sqm, as per DNV requirements.



A schematic illustration on an A-IDP™ arrangement



Access ramp with integrated heating function on a small passenger ferry in the Baltic sea.



An elevated access ramp with the A-IST™ technology from SwedeSafe, onboard Stena Danica.



## A-ISS™ - Anti Ice Stairway System

Stairways are often the areas where most accidents occur. SwedeSafes' unique Anti Ice Stairway System with efficient and easy anti icing will take care of the problem with slippery ascends/descends. A-ISS™ is a heavy duty and energy efficient solution to keep stairways ice-free at all times. Power ratings for stairways are available between 180W and 350W/sqm. A-ISS™ is available with Dynagrip® aggregates for enhanced security, or coarse sand for a smoother surface.



A-ISS™ access stairway for airport in cold climate. Approximately 1.000.000 passengers have used this stairway over ten years of time, still in mint condition.



Boarding stairway with smooth anti-skid surface and integrated heating function from SwedeSafe.

Anti Ice Stairway Systems from SwedeSafe relies on the same technical solution as our Anti Ice Deck Pads with integrated heat and is easily connected in an electrical parallel system - a natural choice for operators of green class winterized vessels.

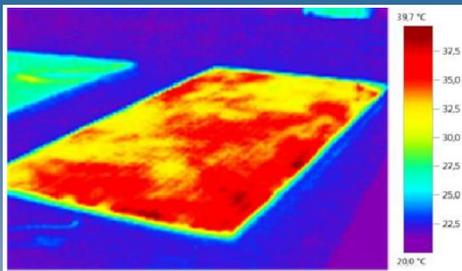


A dry surface with Dynagrip aggregates makes it virtually impossible to slip and fall due to ice, frost or snow.

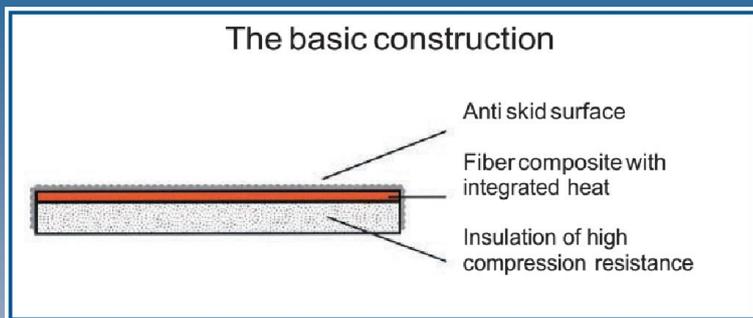


An A-ISS™ stairway from SwedeSafe (sand coated) versus a grid stairway step.





The SwedeSafe A-IS™ system gives a perfectly even temperature distribution on the surface.



SwedeSafes' Anti Ice Slip system is a non-ferrous, non-magnetic, non-toxic composite material with a built-in conductive fibre-technology which is re-inforced by an isoftal polyester fire resistant polymer, three times more resistant to compression, wear and tear compared to e.g. B30 concrete. Insulation is by Divinycell® and anti-skid protection is best ensured with Dynagrip® aggregates, available in optional sizes.

### About us

Accidents and injuries due to slips and falls caused by ice, frost and snow are costing our society and healthcare systems enormous amounts of money and personal sufferings every year. SwedeSafe's mission is to minimize these accidents. From the very start we have been working with anti ice slip techniques whereas healthcare and municipality centres, bus stations, ports and logistical centres etc. in Sweden have used SwedeSafe's anti ice pads for increased safety during several years.

Other industry applications catered for are e.g. train switches, textiles, pipes and handrails. R&D is being carried out also for wind power plants (turbines and blades), and more.



SwedeSafes products are tested to conformity by SP Technical Research Institute of Sweden and Nemko of Norway.

A-IS™ products from SwedeSafe are available in various colors, sizes, thickness, voltages and materials at requests.

Safe work – save energy – the SwedeSafe way



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