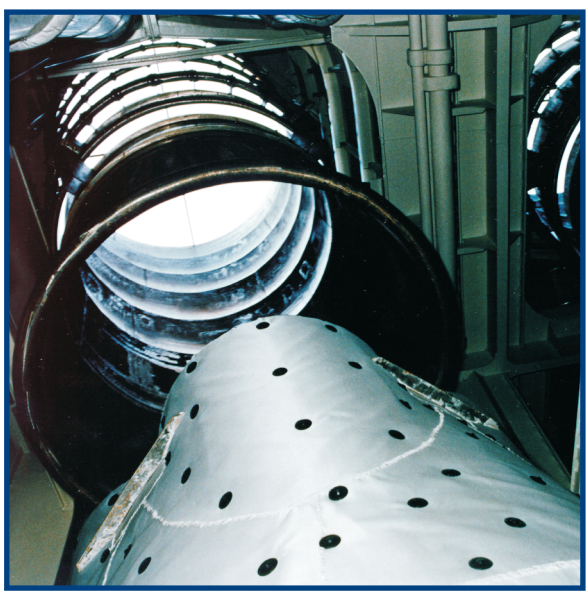


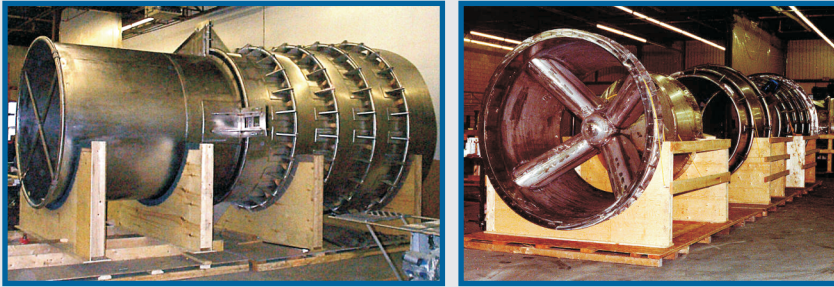
# Naval Infrared Stealth Technology



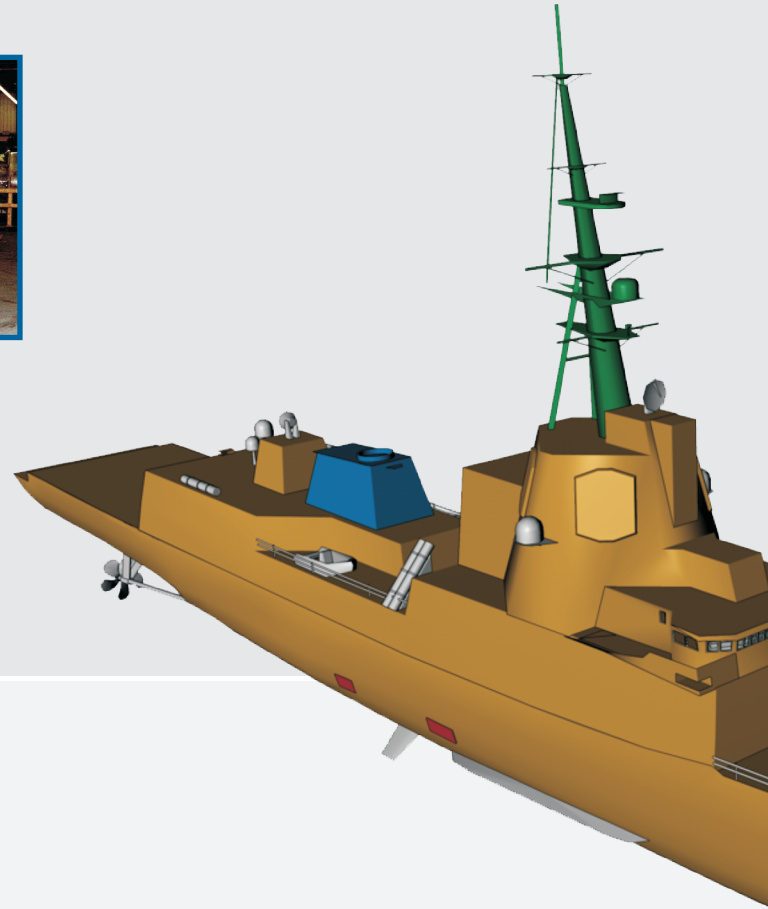
Davis supplies technology which enables the balanced reduction of all Infrared (IR) signature sources on a naval ship. Engine exhaust IR signature suppressors (IRSS) are supplied for both vertical and side exhaust configurations. The Active Hull Cooling (AHC) system automatically minimizes ship skin IR signature in the current environment using the Onboard Signature Manager (OSM).

## Stack Exhaust Systems

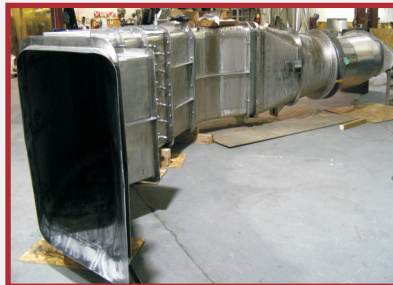
Davis supplies both passive and active IRSS devices for cooling the engine exhaust plume and uptake metal. Passive systems can achieve plume temperature reduction to below 200°C, while active systems reduce the plume to below 100°C. Variable geometry systems can be utilized to achieve a zero engine fuel penalty during non-threat situations.



Top Left: Mixing Tube and Diffuser of Eductor/Diffuser;  
Bottom Left: Entraining Diffuser;  
Right: DRES-Ball.



Left: Sea Water Injection (SWI) system;  
Middle: Exit-end view of horizontal exhaust system;  
Right: Engine-side view of horizontal exhaust system.



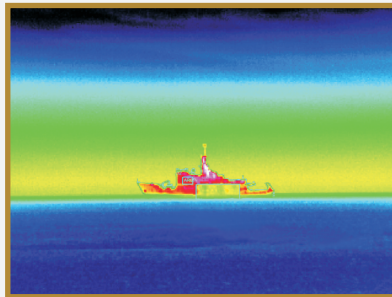
Davis supplies complete horizontal exhaust systems which include: isolation valves; silencers; drains; seals; a sea water injection (SWI) system; control panel; hull penetration fairings; and ducting. The controller interfaces to the ship machinery control system. The systems are made from material which is highly robust to thermal cycling, vibration, and shock, and can be operated with or without the SWI system activated.

## Side Exhaust Systems

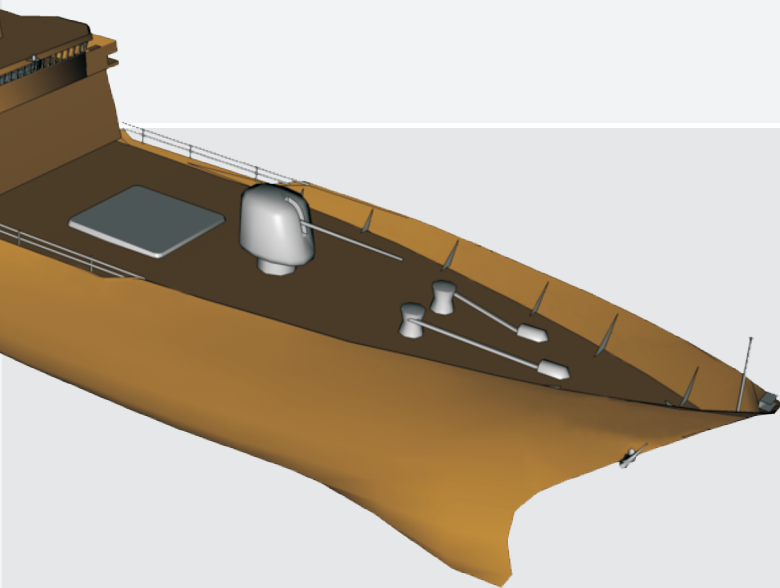


# Active Hull Cooling (AHC)

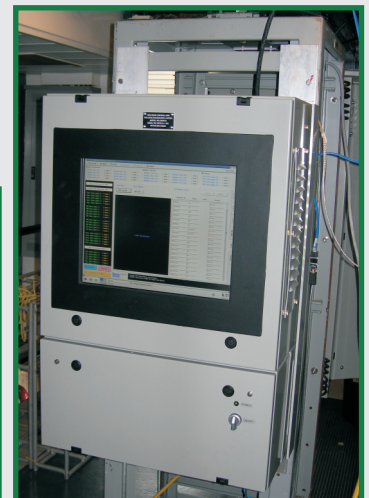
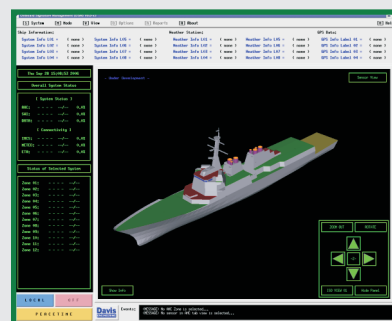
Full coverage ship hull and superstructure skin cooling is achieved with both standard and custom designed Davis water sprinklers. Water flow to the sprinklers is automatically controlled in order to minimize the ship signature in the current environmental conditions. Davis supplies the complete AHC system including: the Onboard Signature Manager (OSM); valves/actuators; skin temperature sensors; and sprinklers.



Left: MWIR measurement of ship with AHC on hull section (~ 10 km range);  
Middle: Fan nozzle;  
Right: Hull cooling on experimental ship.

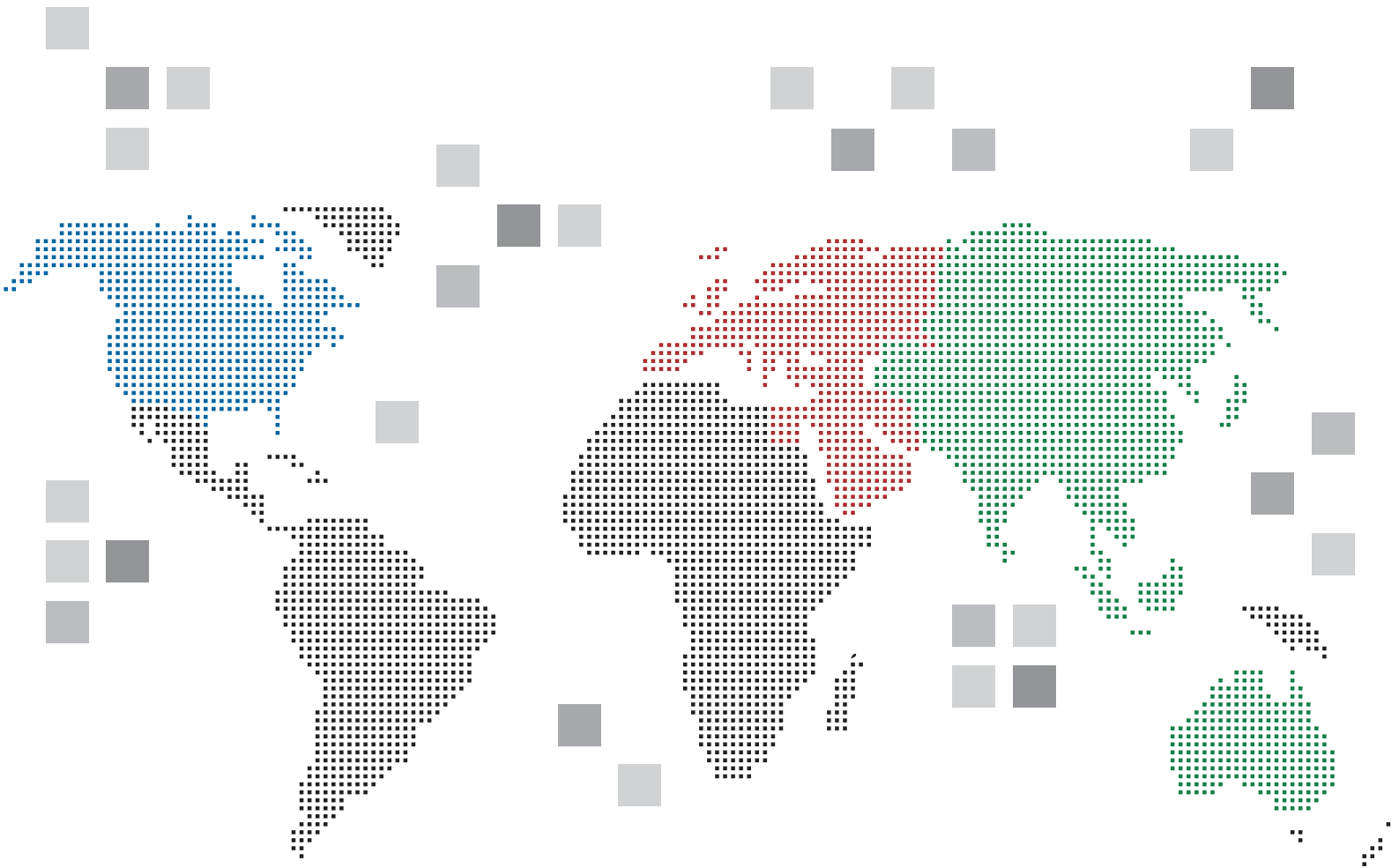


Bottom: OSM user interface;  
Right: OSM main control unit.



The Davis OSM system is the controller for the AHC and SWI systems. OSM calculates the optimal temperature of the ship skin in order to minimize its IR signature in the current environment. It then controls the water supply to the ship sprinklers in order to achieve the optimal temperature. OSM interfaces to the ship machinery control system, and is comprised of the main control unit, distributed data acquisition system, and ship and environmental sensors. OSM is built upon the international standard naval IR signature prediction code, ShipIR.

# Onboard Signature Manager (OSM)



## North America

CPF (Canada)  
Tribal Class (TRUMP) (Canada)  
US Coast Guard NSC  
LHD-8 (United States)

## Europe & Middle East

Type 45 (UK)  
F100 (Spain)  
Italian ACC  
Horizon (France/Italy)  
F310 (Norway)  
Absalon (Denmark)  
MEKO (Greece)  
SA'AR 5 (Israel)

## Asia

Asuka (Japan)  
KDX-II (South Korea)  
KDX-III (South Korea)  
PKX (South Korea)  
LPX (South Korea)  
Delta (Singapore)  
Project 17 (Shivalik) (India)

**Davis**

For further information, please contact: W.R. Davis Engineering Ltd., 1260 Old Innes Road, Ottawa, ON, Canada K1B 3V3

Tel: (613) 748-5500 Fax: (613) 748-3972

E-mail: [marketing@wrdavis.com](mailto:marketing@wrdavis.com) Website: [www.wrdavis.com](http://www.wrdavis.com)

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