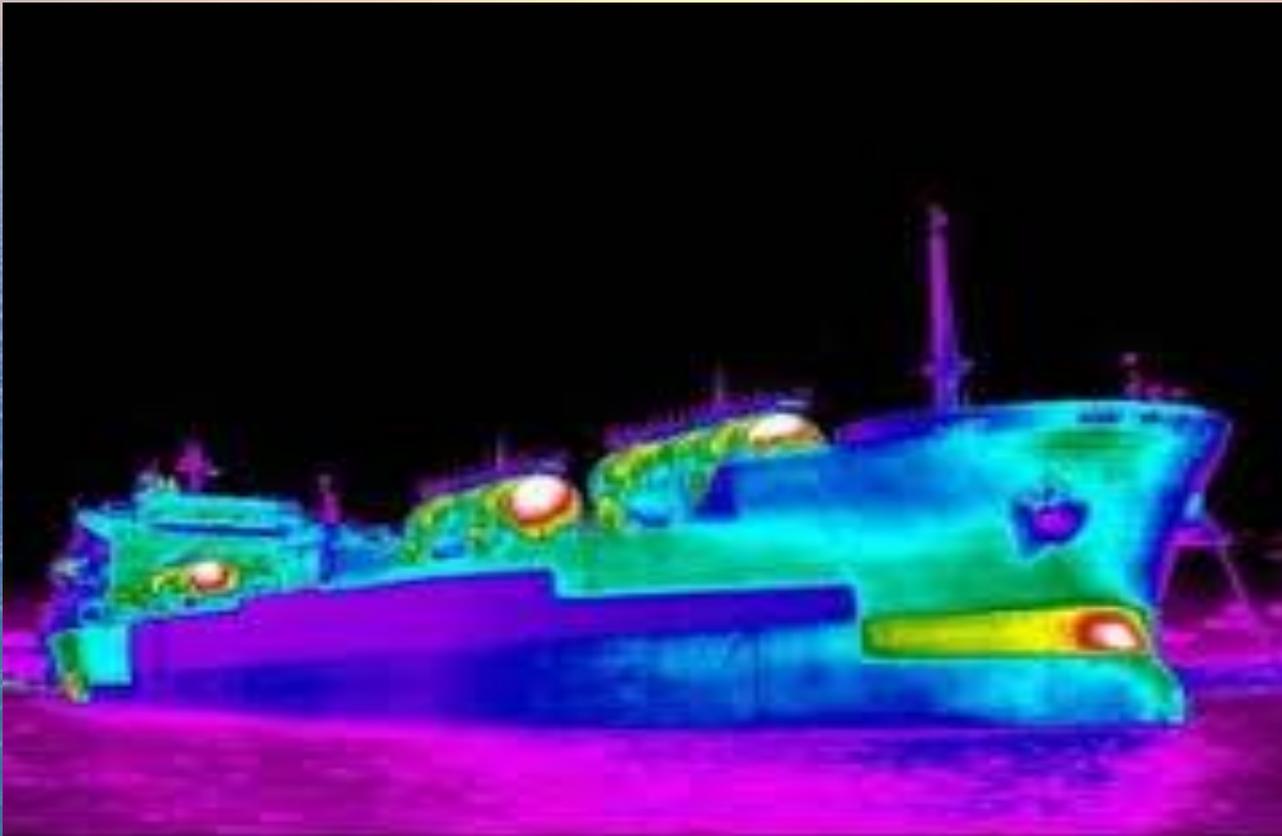
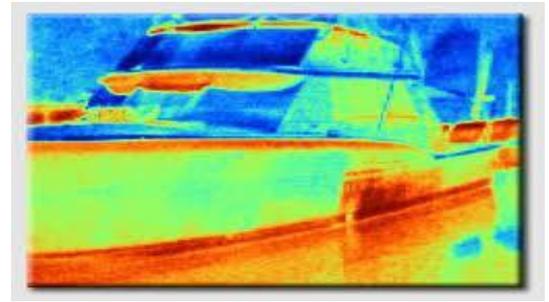
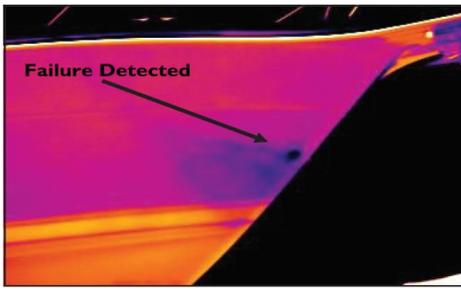


IRClass-Infrared Thermography

See Beyond Visual Surveys





Since the Ships Went into the Sea, Marine Surveyors have relied heavily on what they could see. Hear and felt to assess its sea worthiness and condition. Now the infrared thermal camera enable the surveyor to instantly scan the structural integrity of the vessel, as well as Electrical, on board electronics, Propulsion, Power generations, Boilers, fuel systems, Various Piping's and find problems that are invisible and difficult to detect. Finding these problems enables proactive maintenance plan that will avoid catastrophic failures underway.

What is Infrared Thermography?

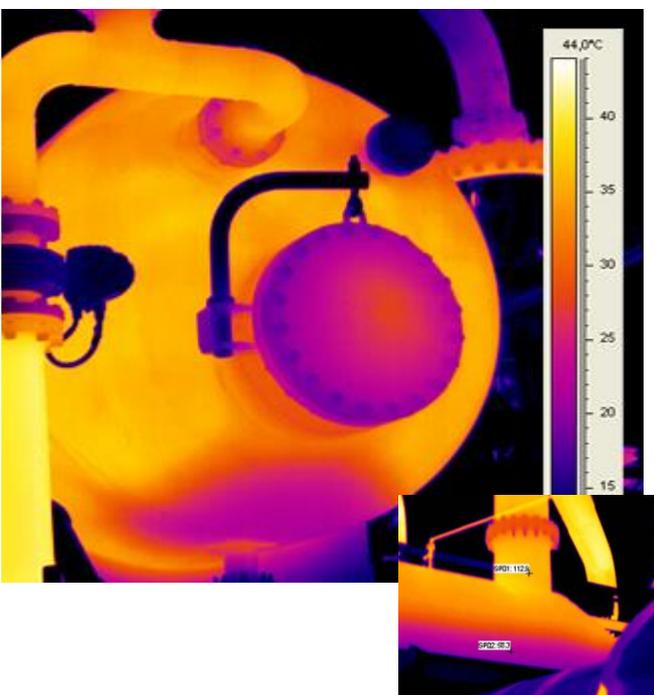
Infrared thermograph is the science of acquisition and analysis of thermal information by using non contact thermal imaging devices. It is based on measuring the distribution of radiant thermal energy (heat) emitted from a target surface and converting this to a surface temperature map or thermogram. As a result, temperature can be a key parameter for monitoring and diagnosis the condition of machines, Process and installations.

Applications of Thermography

- Leak Detection (e.g. Boilers, Safety Valves Steam Pipes, Heaters, Coolers, Condensers, Pumps, etc)
- Hull Structural Surveys
- Electrical Maintenance
- Fluid Flow Problems
- Condition Based Maintenance
- Research & development
- Process Monitoring
- Condition based Maintenance
- Civil Structures, Moisture Detection
- Furnaces & Boilers, refractory insulations
- Others



Boiler Tubes defects identification



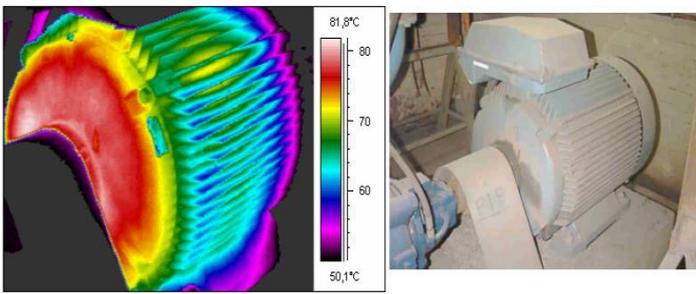
Pressure Vessels & Piping Condition Monitoring

IRS has developed an infrared Thermography analysis Program to meet these requirements. It provides independent and thorough evaluation of the ships & Installations based on actual condition, in line with requirements towards the Pre Docking Strategy to identify & target Equipments, Pre Purchase Inspections to know the Overall condition, safety Audits of Ports and oil terminals, Offshore Installations. And in more general terms, infrared Thermography allow fast and secure inspections in line with the tight loading, unloading and delivery times

In general IRClass Thermography can widely be used in all Marine and Industrial Environment.



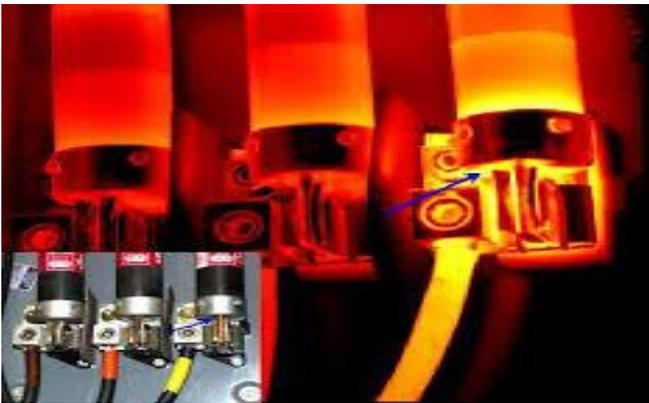
IRCLASS
Indian Register of Shipping



Motor Drive End Bearing fault Detection

Advantages of Thermography

- It is non-contact –uses remote sensing
- It can be used to measure or observe in areas inaccessible or hazardous -Keeps the user out of danger
- Does not intrude upon or affect the target at all as It is a non-destructive test method
- It shows a visual picture so temperatures over a large area can be compared
- The image allows for excellent overview of the target
- Thermal patterns can be visualised for analysis
- It is capable of catching moving targets in real time
- Enables very fast scanning of stationary targets
- Enables capture of fast moving targets
- Enables capture of fast changing thermal patterns
- It can be used to detect objects in dark areas
- It is able to find deteriorating, i.e., higher temperature components prior to their failure



Electrical Connection Defects

Early Identification of deficiencies

Our IRClass Thermography includes inspections which can identify areas of deficiency. Early identification of these areas provides an opportunity for targeted maintenance, which in turn can reduce the risk of unplanned downtime and increase the time available for operation.

IRClass Thermography Programme

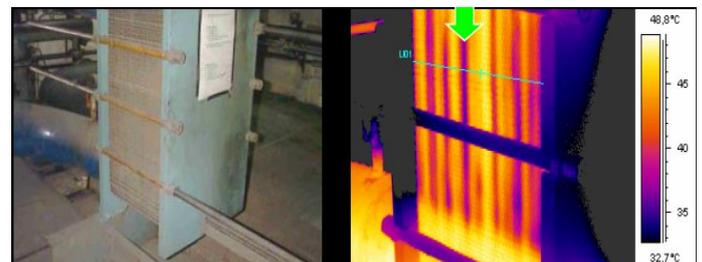
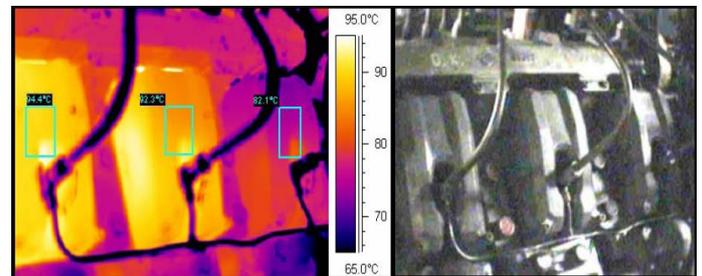
Provide minimal disruption to Ships operational schedule by combining Thermography with the Ships regular survey. Thermography can be carried out during Operational Voyage or at Port as per the requirement of client.

IRClass Thermography gives you a detailed view of your ship, Installations and establishes a sound basis for decisions on repairs or investments in order to enhance the condition of structural areas, Electricals and machineries

IRClass Thermography Programme can efficiently be utilised for any industrial installations and process plants towards condition monitoring.

After completion of Thermography a set of comprehensive reports including detailed observations and possible solutions are issued to Client in time.

Improper Running of Ships Diesel Engine



Blocked Heat Exchanger Section

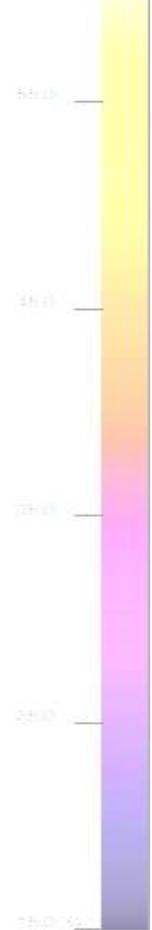
Asset value enhancement

Use of The IRClass Thermography will indicate to prospective purchasers and financial institutions that the Condition has been well maintained & can help maximise its residual value.

We have extensive experience of undertaking Thermography Inspections and, as a result, the IRClass Thermography is preferred by many Shipping and Industrial Companies.

IRClass Thermography Advantages

- **Experience and Knowledge**
- **Prompt Services Response**
- **Quality and excellence**
- **Overall Operational Cost Reduction**
- **Reduce spare parts inventory**
- **Identifies Optimum structural renewal for ships**
- **Safety**
- **More Efficient Inspections**
- **Cut Back on Machinery Breakdowns**
- **Up gradation in Machinery condition**
- **More Detailed Thermography Report with solutions**



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