THERMOGRAPHY INSPECTION OF THE MONASTERY HILANDAR ELECTRICAL INSTALATIONS

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Introduction

- Thermography control can achieve significant effects both in preventing failures and in reducing energy losses.
- Thermography control ensures the detection of poor connections at the terminals of the generator, contactors, switches, and other key elements of the power plants ensuring the interventions in time, reducing the number of deadnings and the risk of fire.
- In order to determine the current condition of the equipment and its analysis from the aspect of exploitation, preventive, current and accident maintenance, preventive thermography recordings of all of the power devices of the Hilandar Monastery have been carried out.
- The characteristic recordings, selected among hundreds, are presented in this paper.

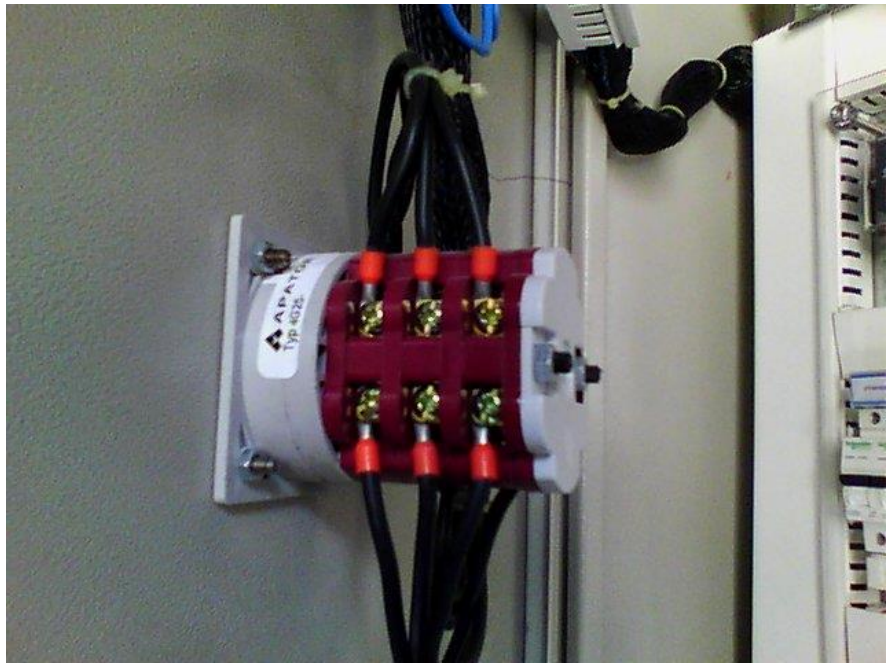
Equipment for infrared thermography measurements and monitoring

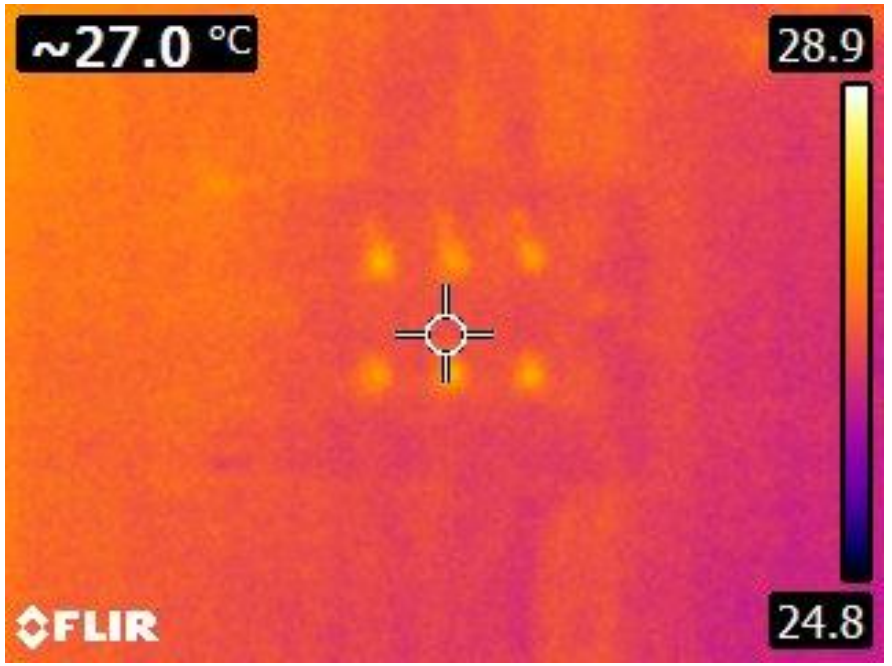
- The digital thermal imaging camera FLIR E6 was used based on a non-cooled microbolometer detector.
- It forms a thermal image by measuring the infrared radiation of a particular object or the entire scene.
- The software contains the necessary correction when converting the thermal image into an appropriate thermograph.
- Thermograph represents the approximation of the exact temperature of the recorded object, or the temperature distribution in the scene.
- The advantages of the E6 camera is a wide temperature range, and to show the high differences in temperature.

Inspection of the installation and equipment condition

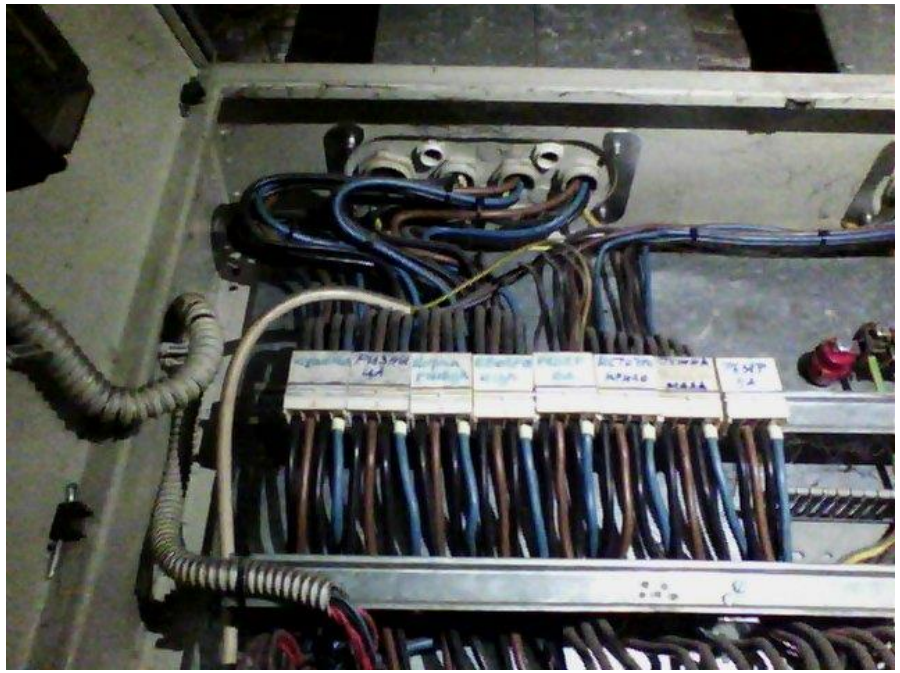
- Thermographic recording have been performed on all objects to diagnose the condition of electrical installations and equipment.
- Diesel aggregates, solar panels, batteries, inverters, distribution boxes, floorboards, etc. have been monitored. The characteristic recordings are presented.

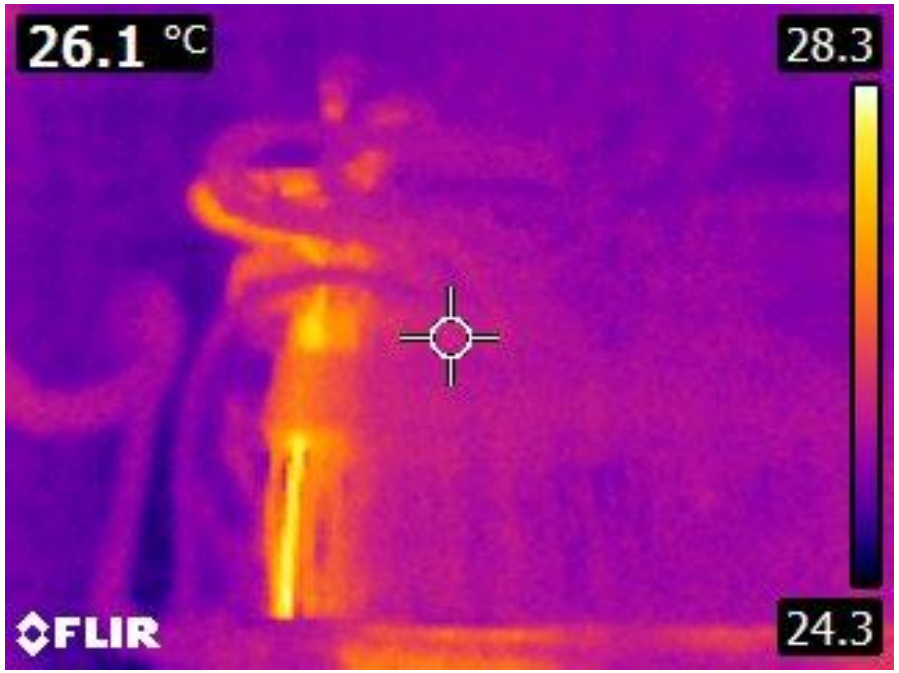
Cam switch



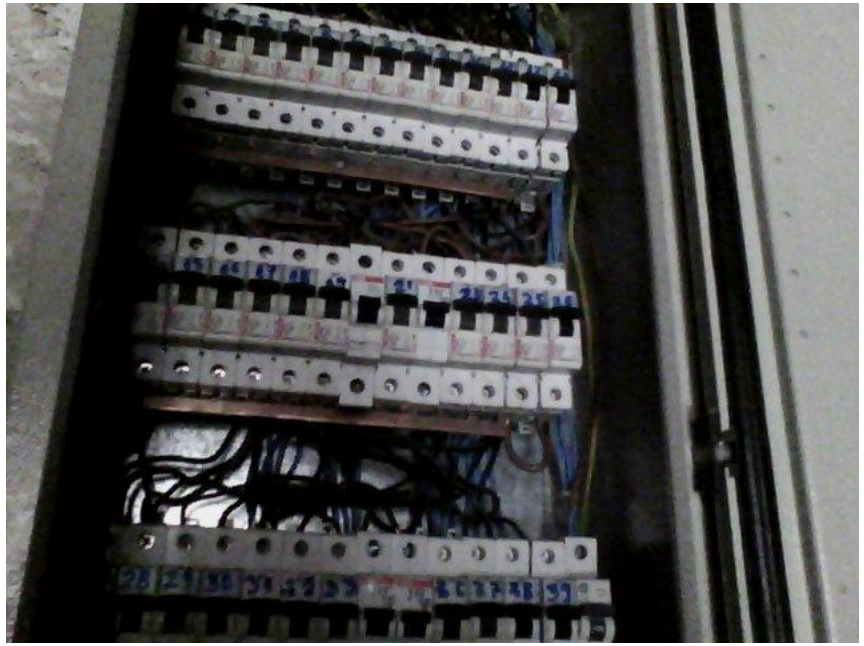


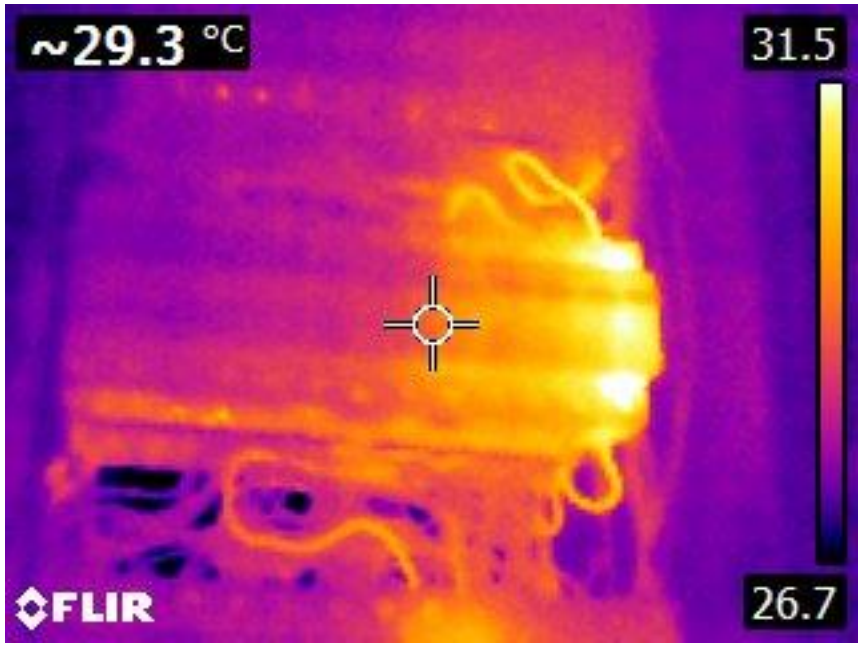
GRO where one phase is overloaded



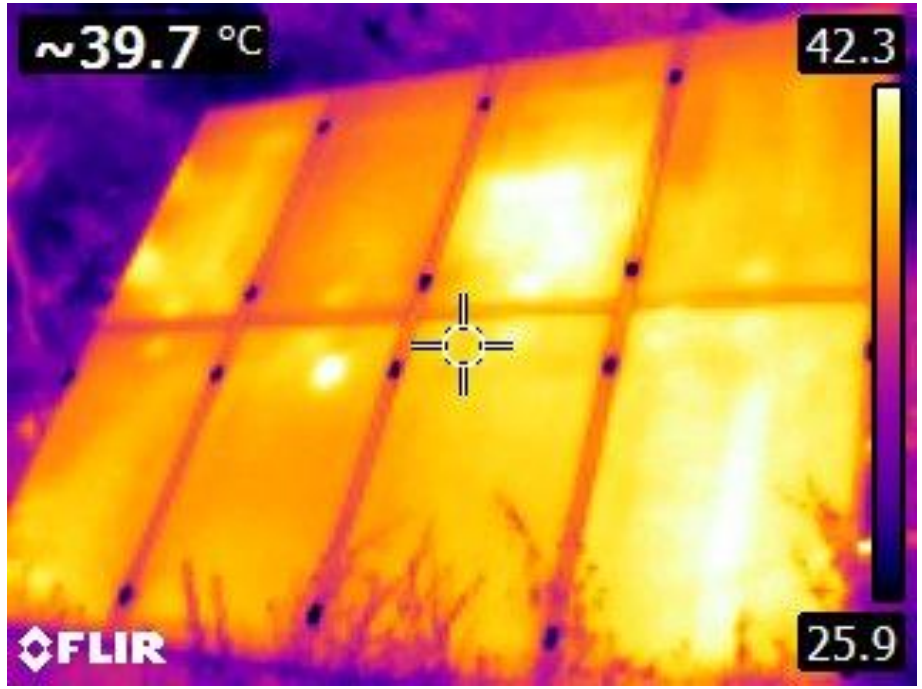


Distribution box

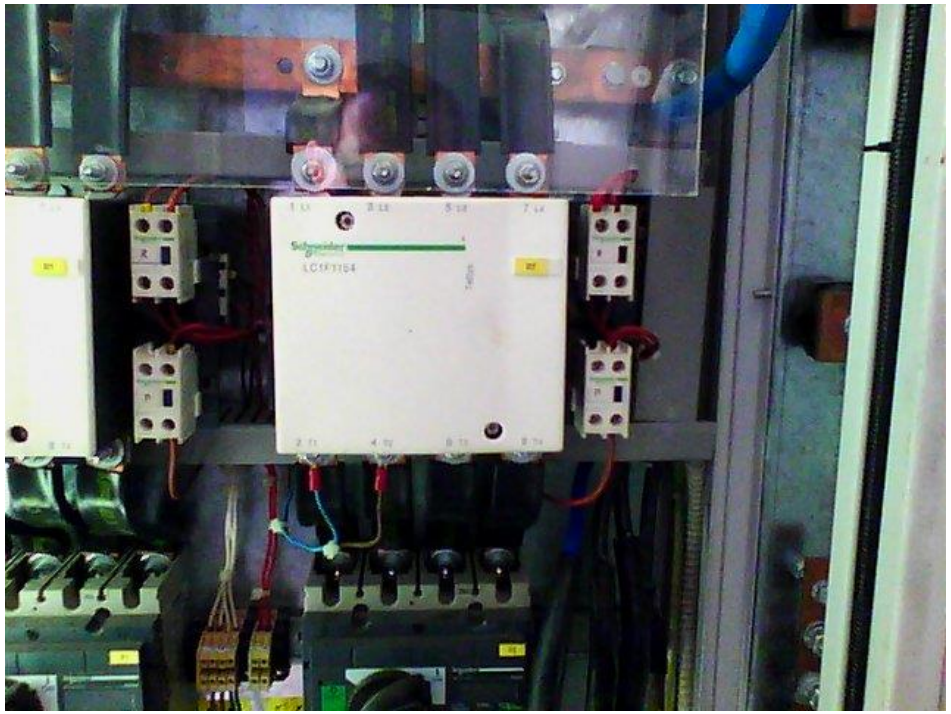


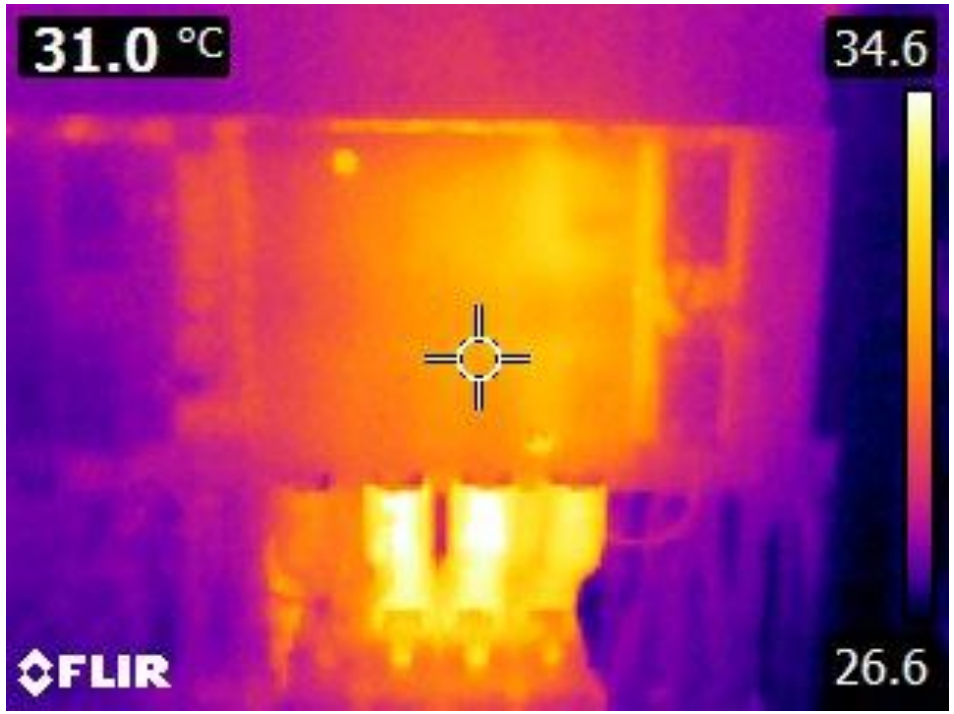


Solar panel with damaged solar cells

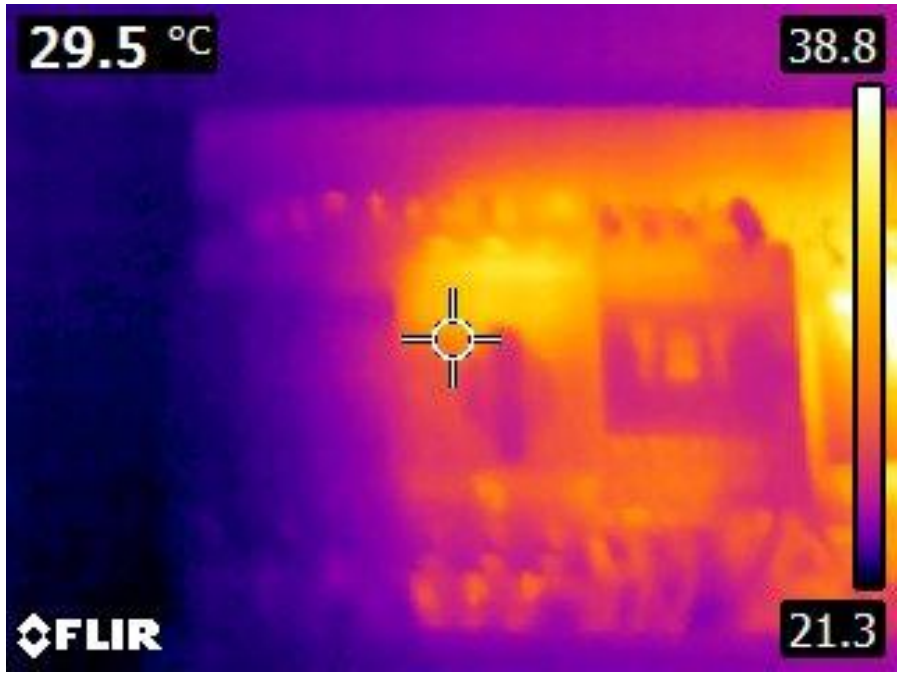


Overheated connectors of the LC1F in GRO agragate station





Contacter with poor terminals



Conclusion

- Termography is a very powerful technology for monitoring, diagnostics, preventive maintenance and management of various technological processes.
- Very complex infrared thermography process can, with the help of relatively simple and not so expensive equipment, be applied in real-time systems such as island power supply systems.
- The analysis of the results of the recordings enabled detection of defects and potentially dangerous places on almost all objects.
- On this basis, necessary measures have been taken to prevent serious damages.
- For critical sites, such as aggregate stations and all GROs, permanent thermography control should be foreseen.