

Laser Projection System for Continuous Operation in Manufacturing and Educational Use Cases

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The paper discusses the creation of a new laser projection system intended for continuous operation. Appropriate application scenarios are considered and some of the problems related to the design and implementation of the system are discussed. The paper proposes and tests an innovative technical approach to the control of the thermoelectric cooling module used in the system. A new electronic unit is designed, developed and tested. It is a major functional block of the system and its main tasks are the temperature regulation, the control of the laser diode brightness and the provision of communication capabilities for remote monitoring and management. Our initial experiments show that the temperature control works very well during long-term operation. The protocol for remote monitoring and management and the desktop software program developed by us provide nice insights into the performance of our temperature management algorithms in the firmware of the system.