

A novel cylinder cooling system of air-cooled engines

Jana Selih

*Department of Civil Engineering, University of Ljubljana, Jamova 2, 61000 Ljubljana,
SLOVENIA*

Franco B. Damjanić

*Faculty of Civil Engineering, University of Split, Matice hrvatske 15, 21000 Split, CROATIA,
and FAGG - IKPIR, University of Ljubljana, Jamova 2, 61000 Ljubljana, SLOVENIA*

Ferdinand Trenc and Rajko Pavletić

*Department of Mechanical Engineering, University of Ljubljana, Murnikova 4, 61000 Ljubljana,
SLOVENIA*

SUMMARY

An axisymmetric thermal finite element analysis of a cylinder liner subjected to time dependent thermal load is presented. The influence of the magnitude of heat transfer coefficient on fins and variability of thermal conductivity is assessed. Numerical predictions are compared against experimental values yielding good agreement during the entire experiment. The results for two sets of cooling systems are presented; namely, basic air cooling on fins only and with additional cooling by oil flowing in a channel. The final purpose of the numerical model developed is its implementation in the design of a novel additional cooling system leading to enhanced cooling rates on the liner. The presented verification of the model is a step in ensuring its reliability in the optimisation design of cylinders.
