



## EXECUTIVE SUMMARY

### FINAL REPORT ARTI-21CR/611-20080-01 CRITICAL LITERATURE REVIEW ON LUBRICANT INFLUENCE IN REFRIGERANT HEAT TRANSFER AND PRESSURE DROP

In conventional vapor compression cycles, the oil presence in the system components is unavoidable due to the oil carry over from the compressor lubrication. The oil existence in the heat exchangers influences the heat transfer and pressure drop performance. The influence of lubricants on the heat transfer and pressure drop characteristics during the condensation and evaporation of the refrigerants has been the objective of many studies. However, a large percentage of them focused only on narrowly defined objectives. In some cases, conflicting results between studies by different investigators were reported. To date, there has been little systematic summarization of this vast research area. Therefore, it is necessary to conduct this critical review and summarize the findings of these previous studies and to provide guidance for future investigations.

The research studies collected for this review were found in the **Compendex** (from 1987 to date) and the online articles at [www.sciencedirect.com](http://www.sciencedirect.com), as well as the Proceedings of the International Refrigeration Conference at Purdue (from 1986 to 2000). In this final report, most of the collected literature studies will be discussed and analyzed together in order to provide general conclusions and point out future research directions. In addition, design methods and predictive correlations will be introduced in each chapter of this report. In addition, independent reviews of the collected literature studies are presented at the website for this project: <http://tools.ecn.purdue.edu/~shen1>, which will exist until December 2005. Afterwards, the reader is advised to contact the principal investigator directly.