

Competition Between Synthetic and Natural Refrigerants: Contributions to the Art and Science of Thermal Systems

Pega Hrnjak^{C, S}

Department of Mechanical Science and Engineering, Air Conditioning and Refrigeration Center, University of Illinois at Urbana-Champaign, Urbana, IL, U.S.A.

The paper presents overview of expectations at the beginning of reconsideration of CO₂ systems vs. R134a (and other), and discusses the effect of thermodynamic properties on cycle and thermophysical on the system. Brief overview of SAE CRP project results, probably the most comprehensive and fair experimental comparative analysis is used as an illustration of the approach and provides real results. Paper also presents the influence of development of CO₂ technologies on R134a systems - transfer of technology. At the end paper presents development of performances of MAC systems with clear statement that the differences among two refrigerant in systems of the same size were significantly smaller than the improvement of all system. Regardless of the outcome the beneficiary of the competition is entire professional community and the mankind.