

INTERIM FINAL REPORT

DURATION: 00-00

WTFRC Project # **Battelle Project # 28836**

Project Title: **Development of Sensors for Improving the Energy Efficiency of CA/RA Refrigeration Systems**

PI: **Jeff Griffin**

Organization: **Battelle Northwest, Richland, WA**

Co-PIs and affiliations: **Gerry Posakony, Battelle; Thell Rooney, Greg Speer and William Osborn, WSU**

Cooperators: Tom Malissos, Stemilt Growers; John Cockrum and Wayne Gould, Doubl-Kold

Objectives: Demonstrate a new concept for demand defrost control on CA/RA refrigeration systems. Extend the sensor technology for monitoring mechanical performance and fault detection in evaporator and condenser units. The motive for this Commission-funded experiment is to obtain sufficient data for a major program proposal to the US Department of Energy for further development and commercialization of the measurement concept. Reduced energy costs accruing from deployment of the new refrigeration control system would increase the profitability of the Northwest tree fruit industry.

Significant findings: This project received funding in April, 2001. Efforts to date include: 1) a kickoff meeting with John Cockrum and Wayne Gould at Doubl-Kold, Yakima, WA (Doubl-Kold will provide out-of-service evaporator units for the early lab experiments); 2) collaborations with Kyle Mathison, Steve Shiflett, and Tom Malissos, Stemilt Growers to identify an operating storage facility where refrigeration system data can be acquired (most likely the Stemilt storage facility in Pasco, WA) and; 3) conducting a patent and literature search to assess the uniqueness of the Battelle measurement concept (this activity is being performed by Thell Rooney, an MBA student at WSU Tri-Cities).

Methods: Laboratory experiments will be initiated in July, 2001 using out-of-service evaporator units provided by Doubl-Kold. Initial field data will be acquired from the Stemilt CA/RA facility located in Pasco, WA. Based on the laboratory and field data, a prototype demand defrost system will be assembled and tested in the Fall of 2001.

Results and discussion: Initial laboratory results and field data are anticipated by the end of August 2001.

Budget: Budget for the current year (2000) is \$35K.

Project duration: One year.

Current year breakdown: Equipment and supplies: \$5K
 Student stipend: \$5K
 Battelle staff labor: \$25K