

## HAC Cryogenics: Real Cool-Hughes News

Systems that used Ken Cowans inventions:

1. MA-1 infrared search-track
2. Interceptor Improvement Program
3. IIP program; parametric amplifier systems, for long range communications; masters, and other equipment
4. The Stirling cycle and its derivatives, the Solvay cycle
5. The Mark II, the Mark III, and Mark IV systems
6. Joule-Thomson system *Santa Barbara Research Center*
7. Variations of the Mark IV unit *Aeronautical Systems Division's Phoenix and Interceptor Improvement programs, Communication Division's Mark IB transportable ground station program*
8. In conjunction with an R&D Division-developed parametric amplifier and other programs *El Segundo Division is planning production*
9. Mark IV units
10. The Mark II system *Aeronautical Systems Division development for the U.S. Navy*
11. Mark III system
12. Future parametric amplifiers and masers