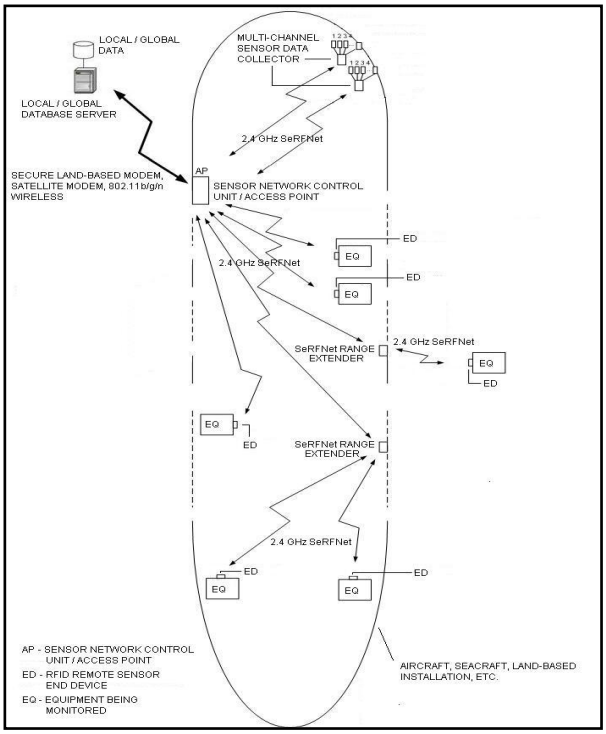
Dynasys Sensor RF Network

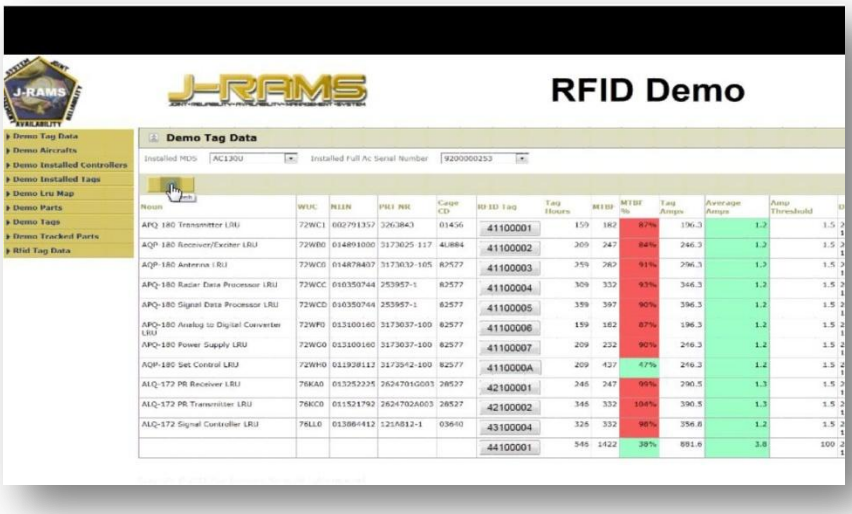
SeRFNet

RAMS- Reliability and Availability Management System

Lack of agility and flexibility in the Supply Chain system requires increased inventory volumes, transportation costs, and personnel. The ability to effectively measure the condition of systems through the use of technologies, such as RFID, and advanced analysis techniques can provide essential information for performing supply chain optimization and just-in-time re-supply. Item location is just part of the total solution. SeRFNet low-power radio frequency (RF) sensor network can monitor critical metrics such as power consumption, temperature, vibration, etc., and relay it, in almost real time via an existing secure infrastructure, to a global database.



An example of such a system is the USAF Joint Reliability Availability Management System (JRAMS). The JRAMS is an integrated information management system that provides a suite of analysis tools to aid personnel with decision support and equipment management. The system uses a variety of external system interfaces to obtain data for further processing and analysis. The data obtained, in conjunction with the internal processing of the system, enable system applications to provide users with the means to assess key metrics required like availability, reliability, maintainability, and operational performance for planning, decision support, and monitoring mission critical activities.



JRAMS RFID demo screen showing a given aircraft along with its location, inventory of critical items, unique ID, and on-time since commission based on a true measured MTBF. The system also has the ability to generate other alarms such as current overload and equipment overheating.

Operational:
FCC: 2394 - 2507 MHz ISM Band

Network Protocol:
Dynasys Modified SimpliciTI

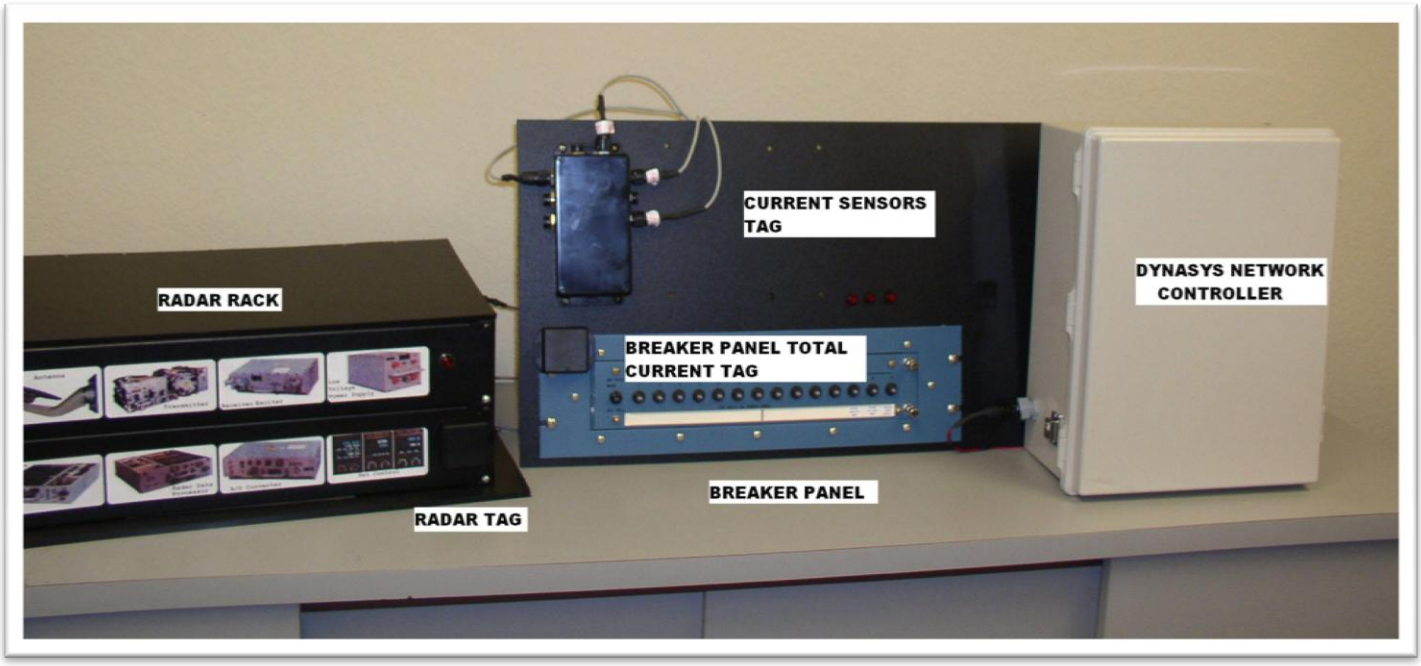
Communication Interface:
Standard: RS-232 serial
Optional: Ethernet LAN, WiFi 802.11 b/g wireless LAN

Components:

1. JRAMS Software- Information Management Database System by SwRI.
2. SeRFNet Controller- Controls Local communication and data uploads to Central Database
3. SeRFNet Collector- Collects sensor data and uploads to the Controller.
4. SeRFNet Current Sensor- Fast response sensor to monitor current and ON/OFF times.
5. SeRFNet RFID Tag- Identifies unique items, also collects data like temperature and RF signal strength. High Temperature rated.
6. SeRFNet Range Extender- Extends local network range and connectivity.

Dynasys Technologies Inc.
2106 Drew Street, Suite 104
Clearwater, FL 33765
727-443-6600

www.rfidusa.com



PICTURED JRAMS RFID DEMO EQUIPMENT INCLUDES A NETWORK CONTROLLER, A MULTIPLE CURRENT SENSOR CHANNEL TAG, A RADAR RACK AND TWO RFID TAGS.

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```

Example XML batch file transferred from the controller to the JRAMS system.

-Each LRU part is uniquely identified by an RFID tag that also keeps the ON time and its current consumption data.

-Shown are 2 collector units with 8 channels each, supporting 23 LRU's.