

***IDLE REDUCTION
IN
AIR FORCE SUPPORT EQUIPMENT
AND VEHICLES***

***ADVANCED POWER TECHNOLOGY OFFICE
ROBINS AFB
GEORGIA***



Bill Likos, Engineer



MISSION



Our mission is to “Provide world-class support equipment, technical expertise, and integrated logistics management for Automated Test Systems, Ground Support Equipment, Vehicles, Basic Expeditionary Airfield Resources, and Life Support Systems.”

Support Equipment is the Backbone of the Air Force.

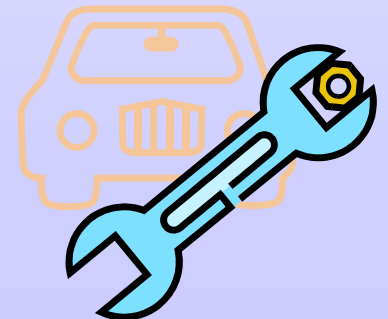
Every Mission Depends On Our Support.





WHAT WE DO

- **Help our customers understand and define their requirements**
- **Acquire equipment for existing and new systems**
- **Manage and sustain end items and spares**
- **Total engineering and technical support for acquisition and sustainment of all items managed**



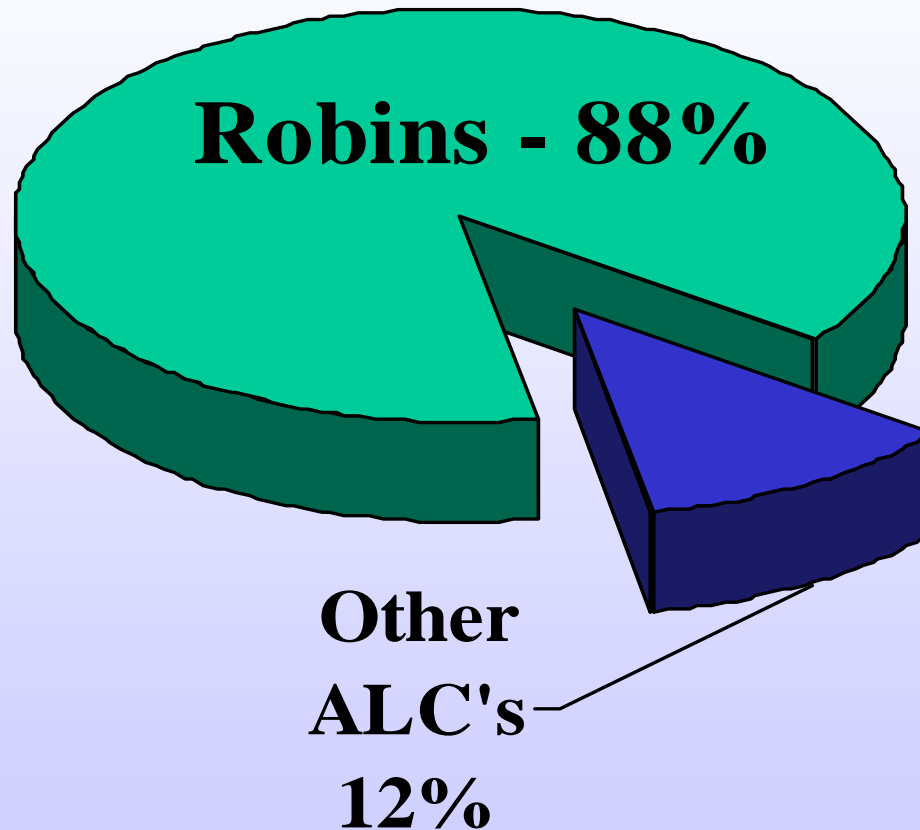


WHAT WE DO





AIR FORCE SUPPORT EQUIPMENT AT ROBINS



**53,538 (88%) Support Equipment Items
and approx 20,000 Spares/Support Items**



EQUIPMENT MANAGED



- *Aircraft Ground Support Equipment:*
air conditioners, generators, light carts, air compressors, engine start carts
- *Special Purpose Vehicles:*
refuelers, crash/fire rescue, tow tractors, high lift, deicers, military tactical M-series
- *General Purpose Vehicles:*
passenger, cargo, base maintenance, construction, and material handling
- *Materiel Handling:*
Munitions handling and loading equipment (MMHE)



Vehicles





Idle Fuel Reduction Strategies

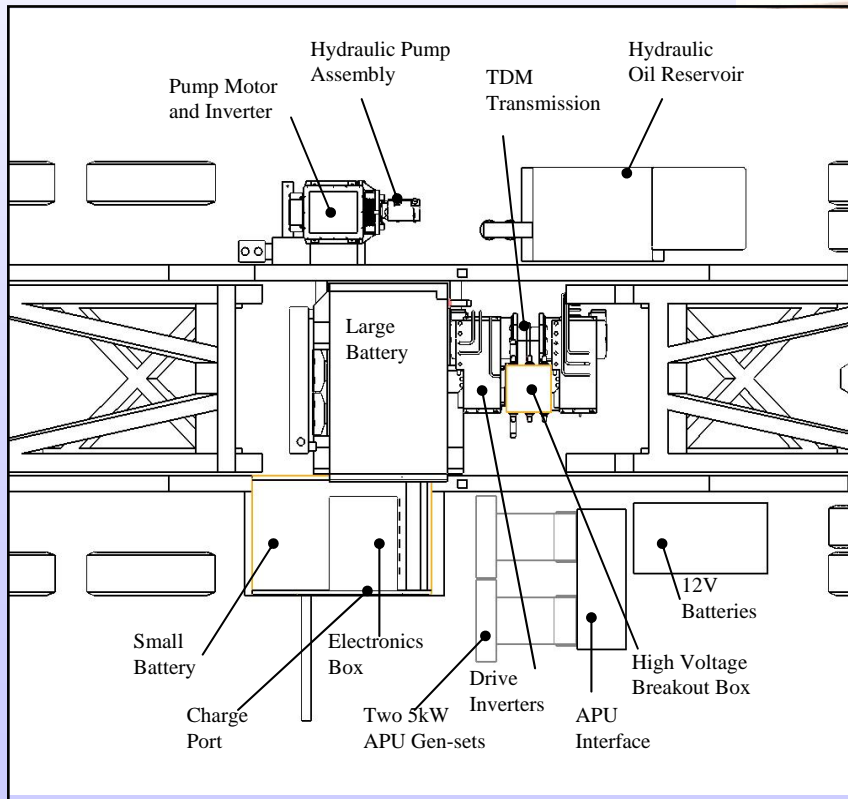


- **Idle Reduction by Use of Hybrid Vehicles**
- **Commercial trend towards Electrification of Vehicles and GSE**
- **New control algorithms for GSE**



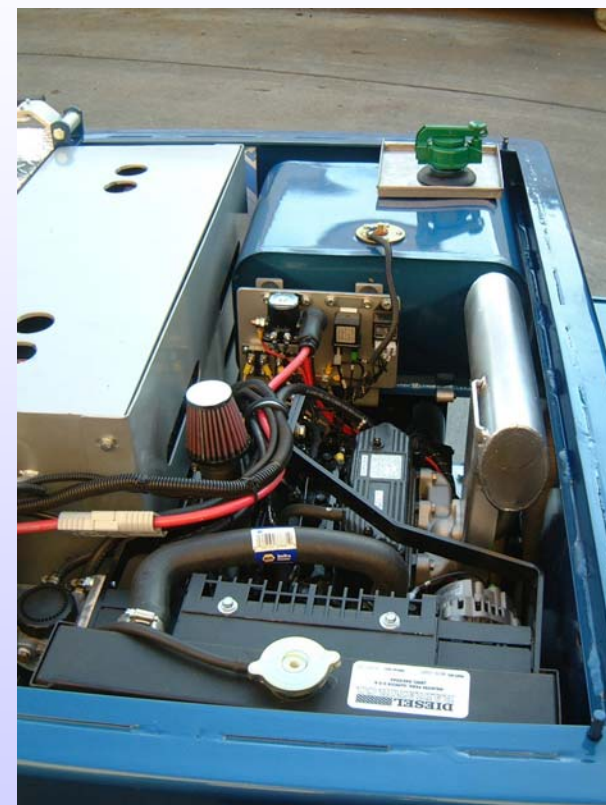


Hybrid 25 K Loader



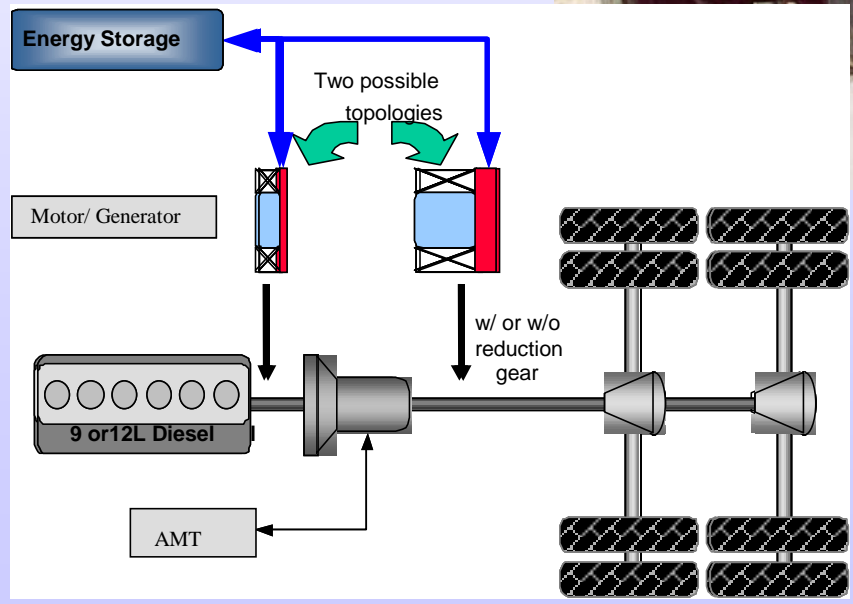


Diesel Hybrid Aircraft Tow Tractor





Hybrid R-11 Refueler





Predicting Fuel Savings



- **Load Factor Data for GSE is scarce**

Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (IERA-RS-BR-SR-2001-0010)

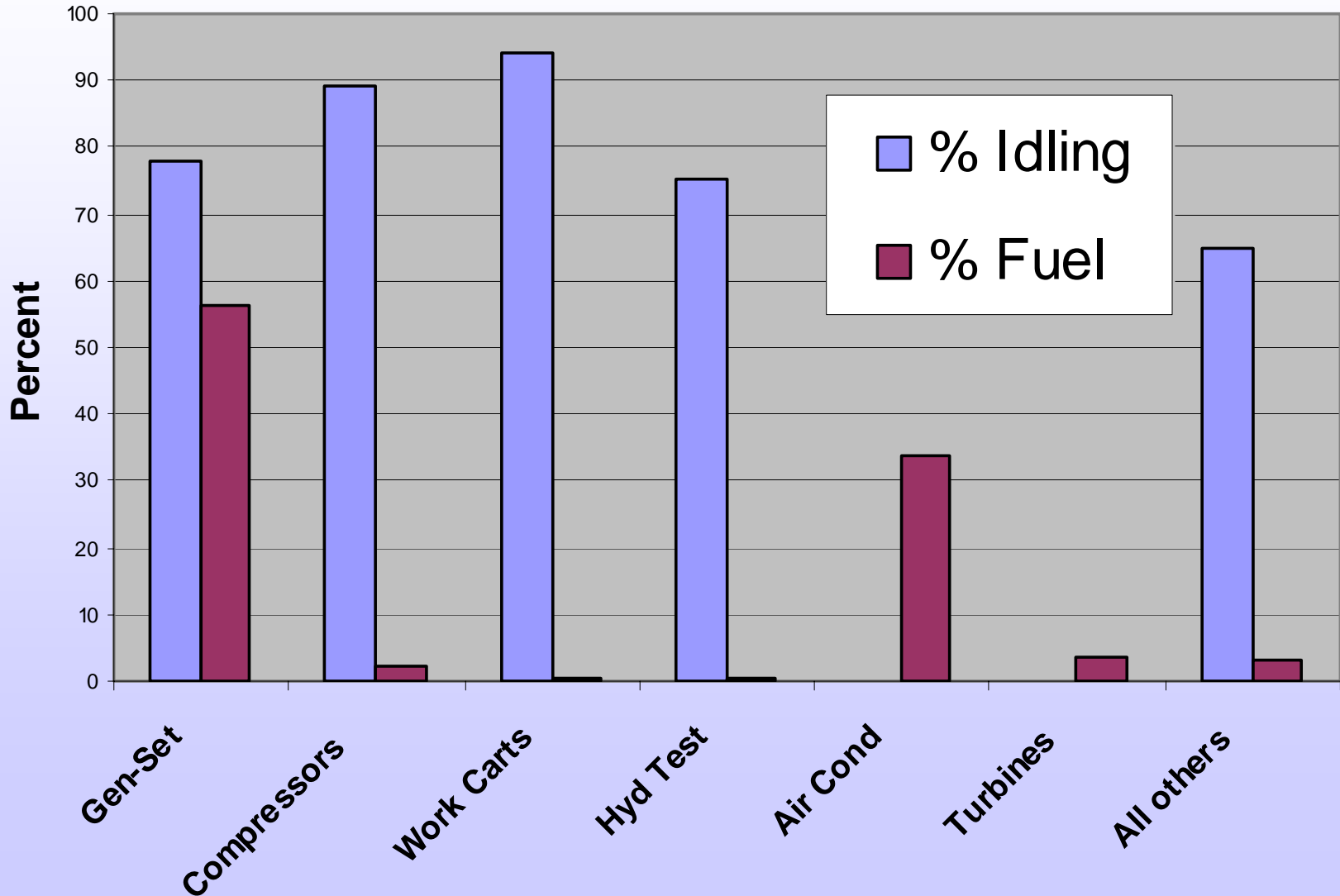
AGE Tailpipe Emissions Study at Robins Air Force Base (Final Report, Sept. 2003, Contract F09603-02-M-1960)

- **Fuel Consumption Data for Individual GSE is available at bases**

Mission AGE Idling and Fuel Consumption

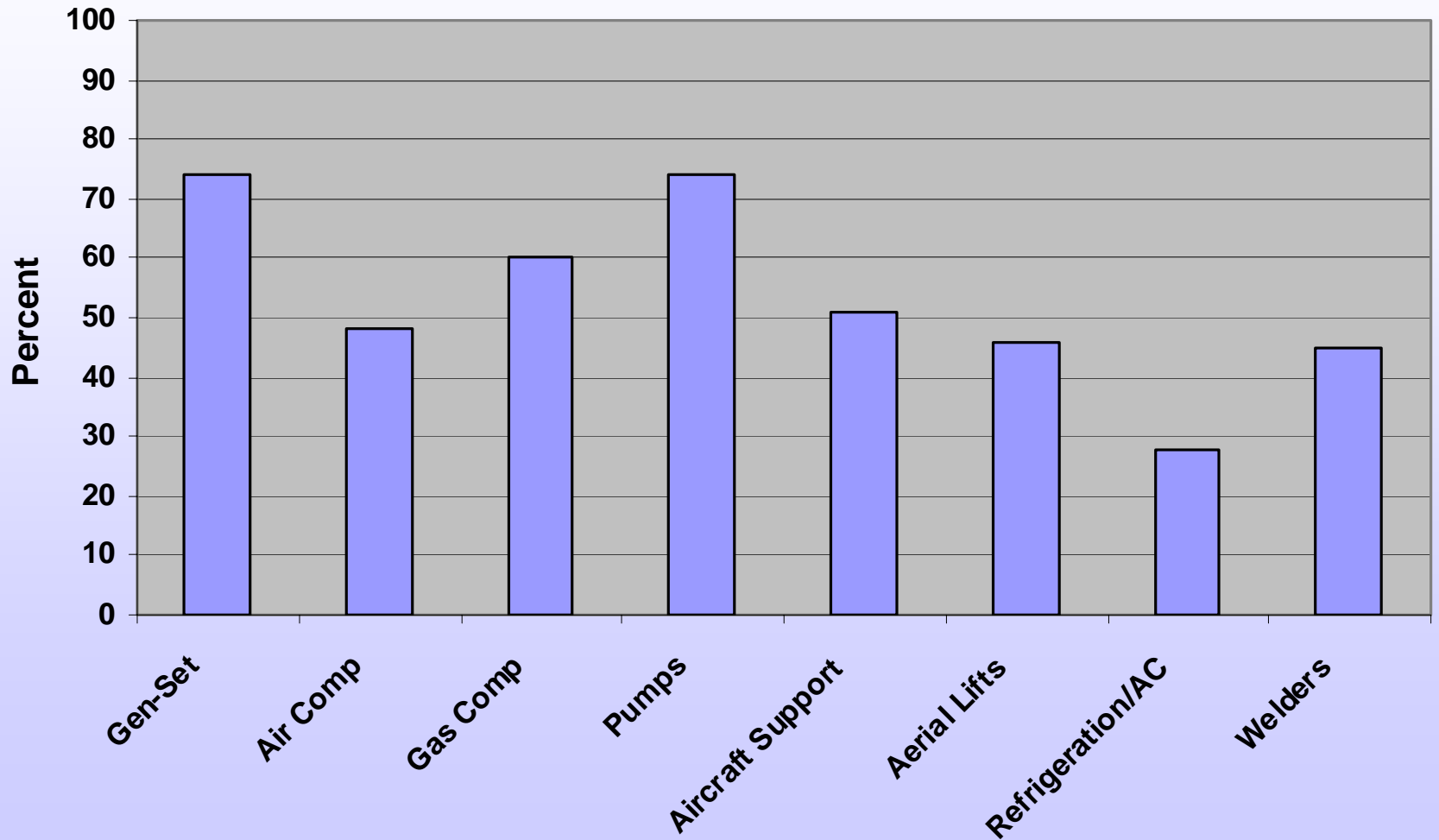
Idling Observed Over 8 Hour Period

2 Month Fuel Usage Observations



AFIERA Load Factors

Percent of max hp





New Expanded Study



- **USAF Flight line AGE/GSE Operations Air Pollution Emissions Inventory Enhancement**

ROVER, Real Time 5 gas emissions, fuel consumption, and engine loading data for five major use AGE categories, depot and mission service events initially at Robins with potential for expansion to other bases





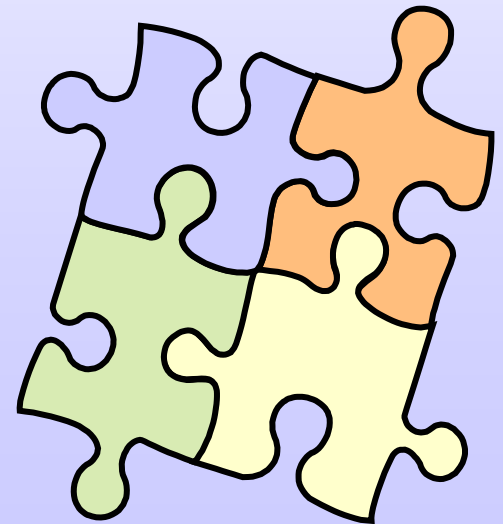
Summary



- **Preliminary study indicates the load factors now used for emissions surveys are overstating the fuel usage**
- **Lack of idle time/fuel consumption data is being addressed, primarily motivated by the need for conducting better emissions inventories**
- **AF APTO is actively pursuing advanced technologies which address both fuel efficiency and emissions over the entire operating range**



WHAT CAN WE DO TO HELP YOU



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Welcome to
Robins Air Force Base

Team Robins Plus

U.S. AIR FORCE