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Air Force Research Laboratory

Air Force Remote-controlled Cargo Transporter

The Air Force Research Lab, or AFRL, is a military research laboratory in charge of weapons and equipment development, including aerospace defense and cyberspace defense. This year they challenged universities to create a small, lightweight cargo transporter to use in enemy airfield seizures. When seizing enemy airfields, Special Forces clear the base of enemies and debris and ready the air strip for US Air Force use. They often are carrying up to 100 lbs of gear per airman, and need to transport equipment from one end of the airstrip to the other. Wounded airmen currently are transported via a litter by 4 airmen, taking men from their assigned mission tasks.



The vehicle at Arnold Air Force Base during the 2017 AFRL University Design Challenge

Team VAHANA created a remote-controlled gas powered vehicle, using the heavy-duty agricultural transporter Kipor KGFC500 as a base that has been modified. This design features simple, one-handed controls, solenoid and actuator controlled steering, a flat bed for securing cargo, an alternator for charging devices, and an extendable shelf that can accommodate a litter with a wounded airman. This vehicle can carry up to 865 lbs, is remote-controllable up to 700 feet, and weighs only 440 lbs. With this design, airmen can safely and efficiently deliver supplies, produce power, and provide emergency transportation during standard Air Force Special Forces missions.

Throughout the design process, actual airmen were involved and gave feedback as to the desirability of this design. All major features came as a direct result of their comments. In the future, this vehicle could also be used for munitions loading, civil engineering projects, IED removal, or other cargo carrying missions. This vehicle was presented at Arnold Air Force Base at the 2017 AFRL University Design Challenge with 13 other universities' designs. The AFRL is in possession of the vehicle, and will conduct all further development.

YEAR

2016-2017

TEAM

01: VAHANA

COACH

Jeffrey Niven

STUDENTS

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Andy Monk and Justin Halversen lift the vehicle while loaded with a payload attached



Team VAHANA meets with two airmen from Hill Air Force Base for feedback on the design