

Senior Design Project Description

Company Name	KEYper Systems	Date Submitted	11/6/2017
Project Title	Asset Storage Solution (Bin and Lockers) (KEYPER_LOC)	Planned Starting Semester	January 2018

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person.

Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

Discipline	Number	Discipline	Number
Mechanical	4	Electrical	1
Computer	1	Systems	
Other ()			

Project Overview:

KEYper® Systems, based in Harrisburg, NC is a global company committed to providing the best solutions in key storage and key management systems, padlock management for “lock out / tag out” procedures, and asset control of equipment. KEYper devices are used in a variety of industries, but a well-known application is in the automotive field. Car dealerships have millions of dollars of mobile assets that are constantly being moved around the site and off site. It is imperative to asset control to know who has checked out the cars and when they were returned. KEYper systems provide that functionality. KEYper offers multiple products that utilize various forms of key boxes to manage and control keys and take the worry of who has the keys! Key control is a number one security issue for any industry, KEYper Systems key boxes and key management systems give the key control industries need.



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Over time, KEYper has developed increasingly complex systems that have moved far beyond mechanical systems to electromechanical with computer screen interfaces.

For this project, Keyper would like to extend their current technology to develop a different mechanical implementation for larger items beyond keys. Larger compartments like storage lockers and bins that would secure various size assets (from cell phones all the way up to laptops). The new system would operate similar to our existing machines to provide accountability and reporting of the transactions. The new machine would grant access to individual lockers and doors.

Project Requirements:

KEYper currently has firmware/hardware interface for tracking keys in a cabinet and would like to utilize the existing system to release/open, take pictures, and track transactions in and out of each bin.

This project would be to investigate different forms of credential presentation (bio metric, Pin, proximity card, etc.) and have the team develop mechanical prototypes designs for larger compartment access of various size assets. These mechanical prototypes would be integrated with the existing Keyper software/hardware user interface. Software development is not required, but programming of the existing software to operate the mechanical prototype is required as well as firmware additions to operate the prototype.

Keyper will provide sample hardware/software for the integration as well as more technical interface data.

Expected Deliverables/Results:

Documentation - Including schematics, mechanical layout, bill of material, firmware/code listing



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- Full description of concept and solution to the problem
- A small working prototype with 2-3 small lockers that will open via our software

Disposition of Deliverables at the End of the Project:

Deliver to Keyper after the conclusion of the Expo.

List here any specific skills, requirements, knowledge needed or suggested (If none please state none):

- Mechanical (cabinet layout), Electromechanical (latch devices), Electrical (circuit design), computer engineering (firmware)
- Orientation meetings will be required at KEYper's Concord NC site and design reviews will be held there as well.