Restated Project Scope & Plan
EML 4551C – Senior Design – Spring 2012 Deliverable

Team # 19
Jordan Berke
Dustin McRae
Khristofer Thomas
Luis Bonilla
Trevor Hubbard
Department of Mechanical Engineering, Florida State University, Tallahassee, FL

Google Mobile App for Compressor Performance (GE)
Department of Mechanical Engineering, Florida State University, Tallahassee, FL

Project Sponsor
General Electric

Project Advisors:

Todd Hopwood
Industry Advisor, GE Oil & Gas
Dr. Sam Taira
Department of Mechanical Engineering
Dr. Linda DeBrunner
Department of Electrical and Computer Engineering
Dr. Michael Frank
Department of Electrical and Computer Engineering

Reviewed by Advisor(s):

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Project Scope

Introduction

The compressor industry has existed for over 100 years. Throughout this time, companies like General Electric (GE) have competed to make their product state of the art in respect to size, speed, and efficiency. Recently, there has been a desire to integrate newer technologies into GE's products to further distance themselves from the competition in terms of innovation. This desire has arisen from the need to analyze information more efficiently, and to utilize tools readily available to engineers around the globe. The purpose of our project is to create an inexpensive and efficient system for analyzing fluid flow by incorporating sensors into a platform compatible with a Google mobile device. This allows flexibility by the operator unlike anything else in the field, introducing the ability of flow analysis from across the globe. The majority of technical issues for a compressor are on flow, and a handy solution involving simple and common instruments will greatly improve GE's ability to fulfill contractual maintenance services.

Problem Statement

There is currently not a product available that is cheap to ship overseas, can be easily used and collects airflow data from a safe distance to be analyzed on a mobile phone. In order for this product to be considered easy to use, the product setup time should be relatively short and must not require modifications to the compressor itself.

Justification/Background

There are currently systems that analyze compressor performance that are very expensive to ship overseas. In one case, GE spent millions of dollars sending employees to Africa for months to fix a client's compressor to find that the client's measuring equipment was setup incorrectly. This was found after GE decided to ship their expensive flow analyzing equipment. If GE had the Google mobile app product, they could have saved a great deal of money since the product and equipment could have been sent out right away. A real world example such as this is a motivating factor for this project.

Objective

Create a product that measures airflow sends the data out and plots it on a mobile phone. Proper sensor placement needs to be determined and must not require modification to the compressor itself. The application must be easily used and should allow the operator to compare actual performance versus expected performance.

Project Plan: Gantt Chart

ID		Task Name	Duration	December 2011 / January 2012
1		Configure Linux OS on SBC	6 days	
2		Configure Electrical components for Signal Processing	14 days	
3		Verify Sending and Receiving Signal, Calibrate Accordingly	15 days	
4		Setup Android Database	7 days	
5		Simulate Receiving Data	7 days	
6		Configure conversion from velocity to PV	7 days	
7		Configure Graph for data we get	7 days	
8		Code Kernel Modules for Time Stamping	20 days	
9		Code User-Space program for Top-Level Functions	15 days	
10		Configure Wireless Access Point	7 days	
11		Test and Calibrate Entire System	30 days	
12		Construct Housing Solution For Electrical Components	30 days	

Figure 1 – Spring 2012 Plan