



Progress Report for

J2VK Valvetronic Exhaust Control System

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Date Issued:

March 28, 2016



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1 Introduction

J2VK's Valvetronic Exhaust Control System is an aftermarket exhaust system that allows drivers to control different sound levels coming out from their vehicles. The exhaust system is not only able to be controlled manually, to perform different sound levels, but also able to automatically monitor the throttle input from the driver. From the throttle input, a metal flap in the exhaust system will be automatically adjusted to allow for more or less sound to escape from the car. This document will outline the development progress of our project and the tasks we will be completing before the demonstration of the final project. Given the significant progress made in the past months, with only a small number of obstacles, J2VK is confident we can deliver a functional prototype by April 21st, 2016.

2 Schedule

Our original schedule is shown in the table below:

Timeframe	Description	Weeks
January 5 - January 19	Research costs, components and design.	2
January 20 - February 3	Order parts, delivery, design prototype.	2
February 4 - February 18	Welding, testing of individual components.	2
February 19 - March 13	Software implementation and assembly.	3
March 14 - March 28	Installation onto car, performance testing.	2
March 29 - April 10	Calibration	1.5
Total		12.5

Table 1: Original Planning Schedule. Green = completed, yellow = in progress, orange = incomplete.

As seen by the colours in the table above, we have finished our first 3 tasks on time. We are currently working on the software implementation and assembly as shown in yellow, which is behind our schedule. We are projecting to finish them by the end of March and move on to the next step. Since our demo date is scheduled to be on April 20th, we will have enough time to finish installation, performance testing, as well as calibration on time.

3 Financials

Table 2 shows our expenditures to date and funding from the ESSEF.



Items	Quantity	Cost
Used Car	1	\$500
Arduino UNO R3	1	\$36.96
USB Cable	1	\$2.24
Wired Jumper 40 PIN F/M 210M	1	\$6.16
Push Button DPDT 100MA PS-90	2	\$2.24
2-Relay Digital Module 5V	1	\$13.44
Diode 1N4001 Rectifier 100V 1A	4	\$0.67
Diode 1N4001 Rectifier 100V 3A	2	\$1.01
Aluminum Pipe	2	\$100
Aluminum Sheet	1	\$20
Control Valve	2	\$80
Pedal with potentiometer	1	\$50
12V 5A Battery	1	\$33.41
Total		\$846.13
Funding		\$415
Expense Deficit		-\$431.13

Table 2: Expenditures to date.

As shown in table 2, we received \$415 funding from the ESSEF but have spent \$846.13 up until now. The most outstanding expenditure is the \$500 used car. We decided to buy the used car because we wanted to test our product in an actual vehicle, so that we may have a better idea whether or not our product is actually workable or not in reality. Other than the used car, our expenditures for our project is \$346.13, which is within budget.

4 Progress

4.1 Planning

For the past three months, weekly meetings have been held by the team at J2VK in order to ensure the project's consistency and timeliness. Important meetings involving all members of the group are planned beforehand so that individual attendance is assured. Although individual meetings between smaller groups within the four-person team are also conducted, all team related communication is conducted in a chat group so that every member is aware.

4.2 Research

The majority of the research involved for this project was conducted in January during the initial planning phase. There has occurred an instance where further research was needed in order to implement a wireless transmitter-receiver device into the project. The additional research and implementation has so far made an indistinguishable impact on our project schedule.

4.3 Design



The design for J2VK's Valvetronic Exhaust Control System has gone through a few iterations. Most notably the addition of a wireless transmitter-receiver has been appended to the final design in order for easier operation and installation.

4.4 Parts & Materials Acquisition

For the most part, all of the necessary parts and materials for the project were purchased back in January and February. However, a recent design change has resulted in a necessary purchase of a wireless transmitter-receiver. Finally, possible future purchases may include a box/enclosure for the components of the system and any accidentally damaged parts requiring replacement.

4.5 Tests

While building the control system, individual components have been tested for functionality. Each time a new component is added the entire system is again tested for functionality. The code for controlling the system is also tested regularly and in units to insure compatibility and reusability.

4.6 Fabrication

As of now, fabrication is not needed or planned for J2VK's Valvetronic Exhaust Control System. For the final commercial product though, fabrication may be considered.

4.7 Documentation

For all the documents up till now, J2VK has completed them thoroughly and on time. The remaining documents needed to be hand in are being worked on.

5 Conclusion

J2VK's Valvetronic Exhaust Control System is nearing completion after months of work, and the first prototype will be ready for demonstration on April 21st. The prototype is expected to be completed by April 7th 2016, two weeks before demo day, so that fault and consistency testing can be conducted on the days leading up to the demo. J2VK's exhaust system will be a bridge of compromise between enthusiastic drivers and unhappy citizens. J2VK is confident in its product and team's ability to deliver on time.