Michigan Tech EcoCAR GM Mentor Chris Twarog Helps Identify Major Vehicle Controls Device Error

Jamie Kleinendorst/MTU EcoCAR Outreach Coordinator

Christopher Twarog of General Motors has been an invaluable resource during the final push to the third year of competition. As the shipping date for the spring workshop approached, our engine controller continued to refuse to deliver fuel during unexpected engine start attempts. This challenge was holding us back from doing further trouble shooting with other aspects of the car. Having Chris come to MTU to help us address it the problem proved to be more efficient and effective than just utilizing our own efforts.

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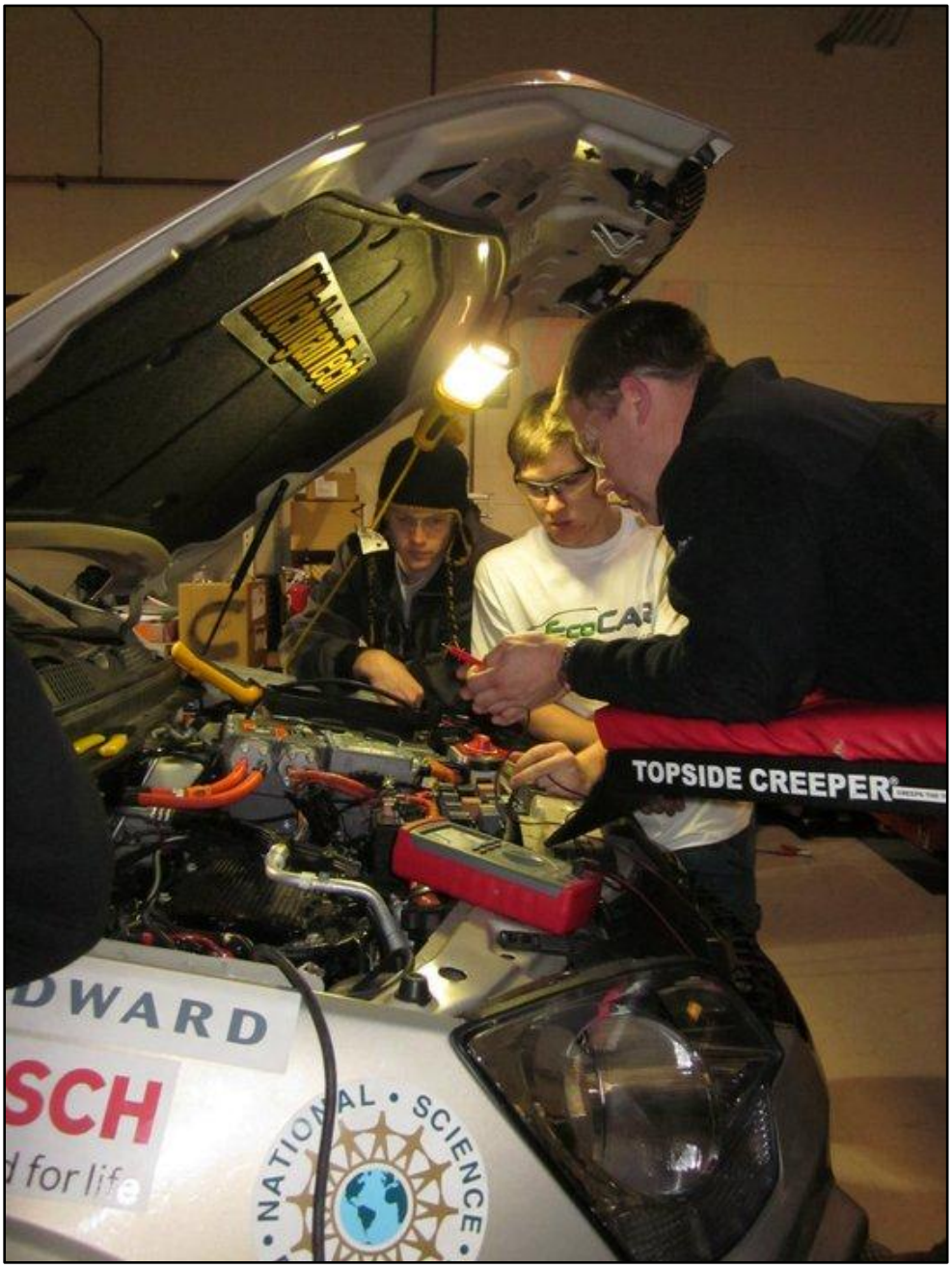
MTU EcoCAR GM mentor Chris Twarog (right) showing team leader Jason Socha (left) areas of concern while trouble shooting the ECM.

The collaborative approach to troubleshooting this challenge happened during our most recent visit from Chris. From 10:00 am to midnight we collected data, he made suggestions, and the team implemented the changes he recommended. Once the changes were executed we again took more data. This trial and error cycle continued into another day of testing with no breakthroughs. At the end

of a 14 hour day, the ten hour drive the day before and the marathon shop session had a cost a night's sleep for Chris and our team. After exhausting all the possibilities he could try in our shop, Chris suggested that our engine controller could be the root of our problem and needed to be completely swept clean and reset. Our team originally purchased this unit from a third party who had rewritten its code.



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MTU EcoCAR GM mentor Chris Twarog (right) showing team members James Parisot (middle) and James Doornbos (left) the areas he found to be a concern while troubleshooting the ECM

The following morning Chris returned back to GM with the 60 seconds of data from the end of the late night troubleshooting session. This data was all he had to finish diagnosing the problem. Three days later he requested we send him our engine control module (ECM). We sent the ECM out via overnight FedEx that afternoon. After examining our ECM Chris noted nothing was wrong with the ECM. In fact, it worked exactly as a stock ECM should. When this component is installed in a vehicle it can identify when it has been removed from its intended car. The ECM had correctly determined it was stolen and was refusing to fuel the engine. The third party we had purchased this ECM from to work with our new engine was not cleared of security codes as the seller has reassured us it was.

A new ECM arrived in the mail a few days after Chris identified it as the root of the problem. Chris had flashed the ECM to accept the vehicle code fed to it on its first key cycle. Our engine controller is now working properly and it no longer tells us we're trying to use a stolen engine. Without Chris' contributions, his diagnostic trouble code (DTC) decoding script and site visit we wouldn't have been able to identify this problem as quickly and efficiently if at all. Being a part of the EcoCAR Challenge has again proven to be an invaluable hands-on experience with industry. The MTU EcoCAR team is honored to get to be a part of such an innovative competition designed to prepare the team for what they will really experience in industry. Nothing ever seems to work like it does in a text book and this experience of trouble shooting our ECM with our GM mentor Chris Twarog was a valuable learning opportunity to the Michigan Tech EcoCAR team.

Though we are still troubleshooting our vehicle controls, we learned a very important lesson as a result of buying a used ECM from a questionable third party. The ECM is critical to the vehicle controls functioning, and the seller wrongly assured us the prior theft code had been removed. We may have saved money up front by purchasing from eBay, but the cost difference was not nearly enough to offset the headache generated in the end.