Team 22 - SmartOil

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While there has been a surge in development for smart meters that monitor electric energy consumption in residential applications, the movement has not yet begun to address needs for customers who heat with fuel oil. Their systems are often older and difficult to keep tabs on; oil consumption, an important parameter, is either tracked using sight-based mechanical gauges on oil tanks or estimated with private algorithms that fuel companies use to schedule deliveries. There are some automated tank gauges on the market that allow users to see their current fuel usage rates and levels on their smartphone, but such devices ignore the rest of the system beyond the oil tank. Our project aims to develop a full-home smart system that can offer users the information needed to monitor the performance of their heating equipment without complicated installation. It will encompass a temperature sensor network throughout the home, an oil level sensor on the fuel tank, and a central hub that receives and uploads all recorded data to one location. Customers will be able to interact with the many devices and to learn about their system – in terms of remaining fuel, home efficiencies, costs, and more – on readable graphs shown in our mobile application. The interface will report the results obtained from our developed software, taking the raw sensor measurements and converting them to meaningful metrics relevant to oil heating. Our solution will do more than just provide a history for their system; a specialized machine learning program will analyze the data in real time to alert users to future fuel costs as well as to changes that could reduce such costs if made in their home.