

Under the Hood, September 2020

The little Falcon that could(n't). In 1971 gas prices were continuing to increase, and the US national average was about \$.36/gallon. A group of Australian engineers were convinced there had to be a better system than the internal combustion engine. They developed a modern steam engine and installed it in a 1963 Falcon 4 door sedan. I assume they had sporting inclinations as the Falcon was white with green stripes along the sides and the more normal green racing stripe on the hood, top and trunk. A steam engine basically starts with a furnace to heat water. Many of you have home furnaces that are rated as 90% or even 95% efficient. The Falcon furnace was built to run on just about anything liquid that would burn; diesel, stove oil, vegetable oil, or kerosene, without having to make any adjustments to the furnace. Gasoline internal combustion engines are about 25-30% efficient; only 30% of the gasoline energy actually goes to rotate the wheels, the rest is lost to heat etc. Diesels are much better at about 40%. The engineers calculated that their steam engine was in excess of 45% efficient. Your home furnace is only heating air. The steam engine furnace first heats water to steam, and then the steam is routed to a steam turbine, then a condenser, and then back to the furnace to start the process over. The extra steps are reducing the effective efficiency. Regardless, their steam powered Falcon was considered to be 50% more efficient than the equivalent gasoline powered Falcon. After extensive testing in Australia, in Nov, '72, the team loaded the Falcon on a Qantas jet and flew to Los Angeles. Over the next 3 months, all the major car companies inspected the steam car but no serious discussions developed. Then in the Sept, '73 the first gas crisis hit and gas prices increased more than 50%, with limited availability. Again, none of the US manufacturers were on the phone to Australia. By late '74 we had regained some sense of normalcy, and it seems most of the public was just happy that gas was feely available at whatever cost. The Australian engineers held on to their dream until 1981, when they finally abandoned the Falcon steamer. In an interview some years later, they claimed that the reduction in gas prices in 1974 was the final straw. However, I did some checking on that claim and couldn't find any significant long term reduction; rather gas prices continued to increase until the next gas crisis. I suspect the real reason for their failure is the natural reluctance of the consumer to buy a vehicle that takes extensive warm up time. We are just too accustomed to turning the ignition key and going, and we are willing to pay the cost of lower efficiency for the convenience.

In the 1950's and 60's GM dominated the domestic car industry. Of course, during those years, there was relatively minimal import competition. GM provided buyers with the epitome of the aspirational ladder of vehicles. GM management was in constant fear that the Justice Department would move in to break up the corporation. In subsequent years, GM closed the Oldsmobile Division and then the bankruptcy sealed Pontiac's fate. Domestically, Buick is a shadow of its former self, and Buick survives because the brand is cherished in China. The June/July "Fortune" magazine has a listing of the largest publicly traded corporations. All of the data is for the 2019 year. Ford has moved ahead of GM with 2019 revenues of \$156 billion vs. \$137 billion. Ford revenues were down 2.8% from 2018, but GM was even worse with revenues declining 6.7%. However, Ford's 2019 profits declined almost 99% from 2018 and reported profits were only \$46 million, vs. GM's profit of \$6.7 billion. I have often written about Tesla, and the same article reports that Tesla's revenue for 2019 was about \$25 billion, with a reported loss of \$862 million. I will leave you to make your conclusions.

I suspect many of you recognize the names Ron Fellows, Oliver Gavin & Jan Magnussen. All are recent Corvette drivers that helped Chevrolet's success in racing. Although the drivers get most of the credit, we should never forget that behind the scenes there are many people contributing to that success.

Chevrolet re-entered racing in a serious way with the C5R effort. Soon after the beginning of that era, Dan Binks joined Corvette racing as crew chief. Dan already had enjoyed years of racing success, but now he devoted his efforts to Corvettes. Dan was a primary contributor to the C5R, C6R & C7R endeavor that resulted in 13 season championships over 20 years. Dan has announced that he is leaving the Corvette team, and we should all be grateful for his efforts over the past years in making our favorite marque a leader in sports car racing. If you like books about racing, Dan co-authored a book "Making it Faster" with the sub-title "Tales from the Endless Search for Speed". Check it out. Probably the most famous crew chief of all time was Smokey Yunick. In the early 50's he prepared a Hudson Hornet that went on to win its first race. Smokey was probably best known for creative ways of getting around the rules, (call it what you will). NASCAR has always measured fuel capacity as there is an obvious advantage in reducing fuel stops for the long-distance races. In one instance, Smokey installed an 11-foot coil of 2 inch diameter tubing in the fuel system to add about 5 gallons of extra fuel. In another classic example he installed a basketball in the fuel tank, with a hidden way to inflate. During fuel capacity testing by officials the basketball would be inflated. Then on race day, the deflated ball would allow extra fuel capacity. I also remember reading that he had used some of the tubes in the roll cage as fuel storage, although that is a scary story by itself. Smokey was also involved with Indy car racing. In 1962 he installed a wing on Jim Rathmann's Watson Special to build downforce for the corners. USAC (Indy governing group) immediately banned wings. Wings soon appeared in Can-Am racing and other series, and of course Indy car racing now uses multiple sources of aerodynamic aids. As a young man, I can remember reading Smokey's guest columns in "Popular Mechanics". He wasn't just a great wrench. Yunick held 9 patents, including being a leader in track safety with a 1966 safety barrier design. We need to remember that behind every winning driver is a great crew chief.