

WORK-ENERGY-POWER

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Porsche Panamera Now Has Looks to Match Its Speed and Luxury:2017



INTRODUCTION: The purpose of this application is to find efficiency X of this gasoline turbocharged Porsche Panamera 2017.

Output Power $P_{\text{OUTPUT}} = X P_{\text{INPUT}} = W_{\text{OUT}}/t =$

$$[1/2 m V^2]/t = X P_{\text{INPUT}} \quad \text{eq. 1}$$

Output work(actual energy passed on to wheels) goes to cars kinetic energy $\frac{1}{2} m v^2$.

HINTS: 60 mph = 88 ft./s. , 550 ft. lb./s. = 1 HP, Weight = (mass) g , $g = 32 \text{ ft./s.}^2$

QUESTIONS: (a) Find mass in slugs of this Porsche Panamera 2017 if weight listed at Porsche site is 4500 lb. ? (b) Convert 550 HP (P_{INPUT}) to ft. lb./s. ? (c) Using equation 1 (above) find this cars efficiency X ?

The second-generation [Porsche Panamera](#) had been in my possession for less than 24 hours when I noticed a trend. When enthusiasts locked eyes onto the car, they made a beeline to the back. Each said the same thing: "It looks so much better!" In my week with this [Porsche](#) I witnessed this unfold a dozen times Until the E-Hybrid comes online, there are two engine choices — a 440-horsepower V6 and the one I exercised, the **(((Twin Turbo model's 4-liter V8 with 550 horses)))** and 567 pound-feet of torque. All Panameras, even the E-Hybrid, are twin-turbocharged. A new crisp 8-speed dual-clutch transmission snicks through cog changes like finger snaps. The new Turbo with all-wheel drive is now sinfully quicker. **(((Porsche claims the 0-60 m.p.h. sprint is a blistering 3.4 seconds)))** on its way to a top speed of 190 m.p.h. It's very easy to drive very fast ... uh, so I hear.

Although the car is dressed in luxury livery, even inexperienced drivers will sense the sports car in its bones. On Germany's famed Nürburgring, Frank Wiesmann of Porsche Cars North America says, Panamera Turbo's lap time of 7:38 squeaks out a victory over the very capable Cayman GT4. Frugal mates will put the kibosh on those plans. A base Panamera with rear-wheel drive begins at \$86,050. The **tested Turbo model starts at about \$148,000 before winding up at \$181,000.**

ANSWERS: (a) 140.625 slugs , (b) 302,500 ft. lb./s. (c) ~ 53.54 %

COMMENT: At fuelconomy.gov it is said....." Turbochargers increase fuel efficiency by ~ 8 %" This being a twin-turbo the high efficiency is possible. Hybrids use stop-start regenerative braking to fuel Batteries to reduce fuel use, especially in stop-and-go driving.