Answer on Question #62110, Physics / Mechanics | Relativity

A pump ejects 12000 kg of water at speed of 4 m/s in 40 seconds. find the average rate at which the pump is working.

Solution:

$$F = \frac{mv}{t}$$

$$A = Fs$$

$$s = vt$$

$$A = \frac{mv}{t} \times vt = mv^2$$

rate of working

$$P = \frac{A}{t} = \frac{mv^2}{t}$$

$$P = \frac{12000\ kg \times (4\ m/s)^2}{40\ s} = 4800\ Watts = 4.8\ kW$$

average rate of working is 4.8 kW

Answer: 4.8 kW