

Torque, Speed and Power

Sample document with complete example values. It shows the report the purchased export produces for YOUR input - it is not itself a report for any part.

Project: Sample project

Part/Position: no real part

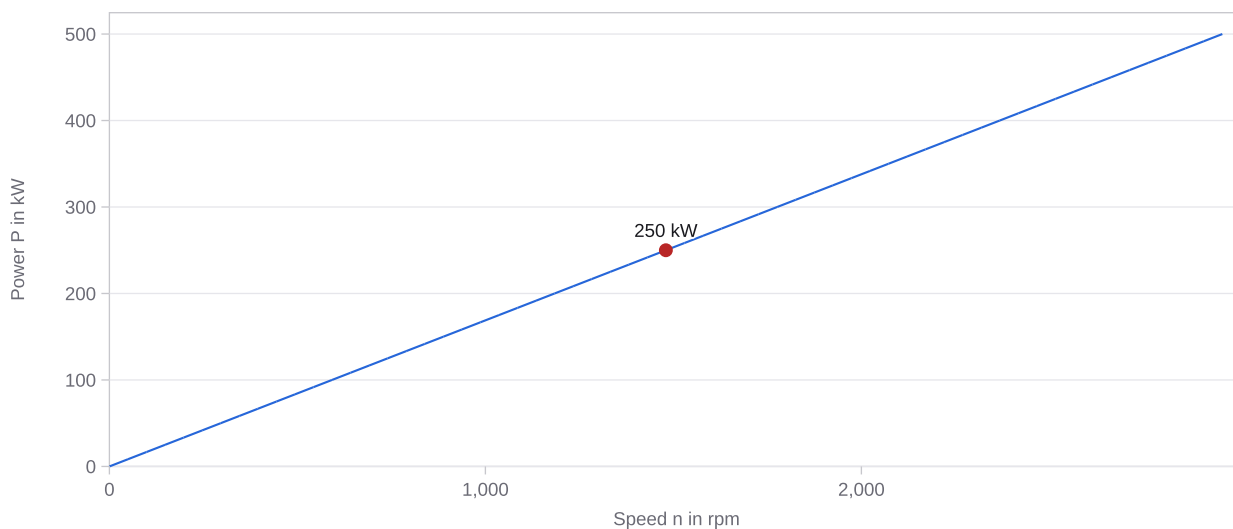
Prepared by: Sample, not released

Conversion via $P = M \cdot \omega$ with $\omega = 2\pi \cdot n / 60$. The quantity to determine was torque M. Result: $M = 1,613.06 \text{ Nm}$, $n = 1,480 \text{ rpm}$, $P = 250,000 \text{ W} = 250 \text{ kW}$, $\omega = 154.985 \text{ rad/s}$.

Results

Torque M	1,613.06 Nm
Speed n	1,480 rpm
Angular frequency ω	154.985 rad/s
Power P	250,000 W
Power P	250 kW
Approximation 9550 rule $M = 9550 P[\text{kW}]/n$	1,613.18 Nm

Power over speed at constant torque



Calculation basis

The speed n yields the angular frequency $\omega = 2 \pi n / 60$. The mechanical power of a rotary motion is $P = M \omega$. Any two of the three quantities $\{M, n, P\}$ determine the third uniquely. The 9550 rule $M = 9550 P[\text{kW}]/n$ is a rounded approximation of the same relation (9550 corresponds to $60000/(2 \pi)$) and deviates from the exact value by roughly one per mille.

About this sample

All values on these pages come from a freely chosen example calculation and belong to no real part. The purchased export contains the same sections with your input, your header data (project, part, prepared by) and as searchable text. Pricing and scope: maschinenbaurechner.de/en/pricing

Note: The results are design and orientation aids. They do not replace independent verification, calculation and approval by a qualified person. The terms of use at maschinenbaurechner.de apply.