Hönnun X - Rintintin

Electrical Group
Thoughts on gear ratio

3. febrúar 2011

Motor:
120W
24V
2750rpm

To get some numbers we'll take an educated guess that under normal circumstances the motors will run on 50% load so the power requierd by one motor will be 60W, that will reduce the number of rpm from 2750→2062rpm (decrease by 25% (educated guess)).
the bycicle tires that we have at the moment have a diameter of 0,3m so the circumference is 0,94m ≈ 1m

So if we convert 2062rpm to revolutions per seccond we get

$$\frac{2062}{60} = 34Hz$$

Converted to the speed of the vehicle it becomes:

$$33\frac{m}{s} \rightarrow 120\frac{km}{hour}$$

The top speed in the cellar where the robot is going to be is **10 kilometers per hour** so we might prefer a gear ratio of 10:1 (ten revolutions from the motor = one revolution to the tire) but at top speed with that gear ratio the speedlimit could still be broken... but this is just an estimation.