Propellors unloading in the air

Intuitively we think that when a motor is turning a propellor static on the ground it uses more power than when it is flying. In fact some parts of the prop will be stalled and turbulent. The reduction in power needed when flying we normally call 'unloading'. However I have seen no data about it. When I started using the FrSky Neuron I was able to make the comparison.

The first test I did was to run at full throttle on the ground and in the air. I put EscA and EscA+ on the transmitter screen. This allowed me to read the actual current EscA on the ground at full throttle and maximum current EscA+ in the air. In the same way I measured RPM using EscR and EscR+. In the air this would obviously be at full throttle. For the current EscA+ I reset the telemetry before take-off. These were the results:

Full throttle

	Static	In the air
EscA and +	55 A	48 A
EscR and +	9320	9974

Thus you see that in the air the power load the propellor is placing on the motor is about 87% of the value on the ground and rpm in the air was 7% higher .

Other data

Taxiing	12 - 20 A
Cruising at half throttle	20 - 30 A