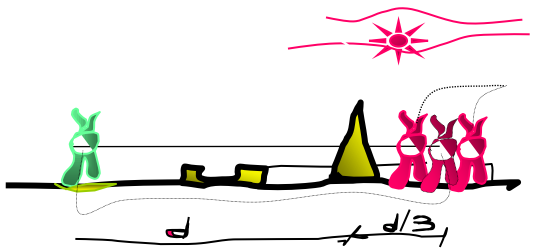
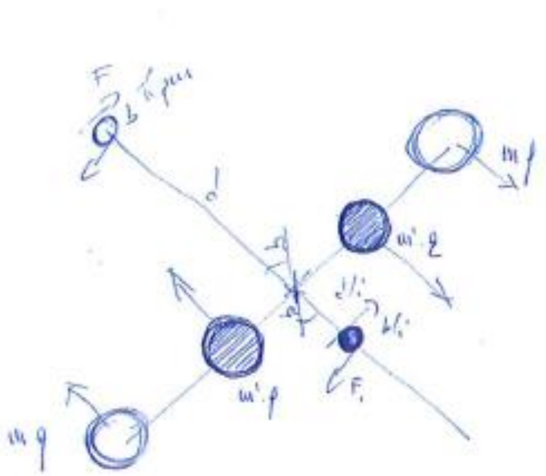


Bonate Sotto, 4 giugno 2014/2015

# TECHNICAL NOTE n.1

## Equivalence between "angular" mechanical energy and "angular" kinetic energy



Taking the patented report formula considering the angular mechanicalenergy, shown below, and the angular kinetic energy developed by the opposed masses, one has to obtain a correct formula, regarding the units of measurements. Here are some considerations

Patented formula of the "angular" mechanical energy equivalence:

$$Fxbx\frac{Rad}{s}xDx\Omega = F'xb'x\frac{Rad'}{s}x\frac{D}{i}x\Omega$$

From which the "angular" mechanical energy = $Fxbx\frac{Rad}{s}xDx\Omega$

Which becomes : $E_m = PxDx\Omega$ units of measurements are $Kgx\frac{m}{s^2}x\frac{m}{s}xmx\Omega = kg\frac{m^3}{s^3}\Omega$

Considering a thrust engine and placing 2 opposed masses that simulate the mechanical couple on the shaft on the same wheel, the "angular" kinetic energy of these 2 masses M is estimated, considering their kinetic energy and the angular effect and assuming the units of measurement have to be equal to the "angular" mechanical energy.

Formula of the "angular" kinetic energy:

$$E_c = \frac{1}{2} M x V^2 x D x \frac{\Omega}{s} + \frac{1}{2} M x V^2 x D x \frac{\Omega}{s} = M x V^2 x D x \frac{\Omega}{s}$$

Units of measurement are $Kg x \frac{m^2}{s^2} x m x \frac{\Omega}{s} = kg \frac{m^3}{s^3} \Omega$

Now we can obtain the equivalence between "angular" mechanical Energy and "angular" kinetic energy:

$$E_m = E_c \quad => \quad P x D x \Omega = M x V^2 x D x \frac{\Omega}{s}$$

Starting from the mechanical thrust power of the engine/engines, with this formula, we can calculate the mass M and so the mechanical couple on the shaft and so the mechanical power on the shaft-turbine when the alternator or alternators are fixed.

Different than what said during the Open Day, we have to reconsider the judgement of convenience between the distribution with a fixed alternator or a rotating alternator; the equivalences are:

"Angular" mechanical energy equivalence:

$$E_m = F x b x \frac{Rad}{s} x D x \Omega = F' x b' x \frac{Rad'}{s} x \frac{D}{i} x \Omega \; => \; F x 2 V D x \Omega = F' 2 \frac{V}{i} x \frac{D}{i} x \Omega$$

"Angular" kinetic energy equivalence:

$$E_c = M x V^2 x D x \frac{\Omega}{s} = M' x \frac{V^2}{i^2} x \frac{D}{i} x \frac{\Omega}{s}$$

Being $E_m = E_c$

$$F x 2 V D x \Omega = F' 2 \frac{V}{i} x \frac{D}{i} x \Omega = M x V^2 x D x \frac{\Omega}{s} = M' x \frac{V^2}{i^2} x \frac{D}{i} x \frac{\Omega}{s}$$

The 2 opposed masses, each mass M if the alternator is fixed, become a couple on the shaft and its force on the shaft is Mxg and the mechanical power on the shaft is P =2 M x g x V, so the judgement of convenience is the ratio between the mechanical power expressed by the dragged masses and the engine power applied on the power wheel:

Judgement of convenience: $\frac{2 M x g x V}{2 F x V} = \frac{M x g}{F} = \frac{M x g}{m' x g} \; se \succ 1$ (m is the mass of the force F of the thrust engine couple) we now know that it's convenient keeping the alternator fixed instead than rotating if M>m……this happens if:

$$m g x 2 V D x \Omega = M x V^2 x D x \frac{\Omega}{s}$$

$$M = \frac{2mg}{\frac{V}{s}}$$ => M = m se V/s = 2g => M>m se V/s < 2g => M<m se V/s>2g

If the angular velocity of the thrust engine V/s < g (per V<19,6 m/s = 70,56 km/h), M will always be greater than m, so the more convenient turbine distribution is when the alternator is fixed.
In space, where g is very low, the distribution with the rotating alternator will be more convenient, whereas on earth, where g is high, a fixed alternator will be more convenient.

**Alessandro Leghi**

**March 8th 2015 – Bonate Sotto**

Now consider when the power is reduced on a smaller wheel and we haveto establish whether it's more convenient to keep the alternator in a fixed position or rototraslating:

Taking the previously

$$\frac{2M'xgxV/i}{Fx2V} se \succ 1$$

I replace M' = $Mxi^2$ and I obtain

$$\frac{2Mxi^2xgxV\ /\ i}{Fx2V} = \frac{Mxi\ \ xg}{F} = \frac{Mxi\ \ xg}{m\ xg}$$

If this fraction is > 1 the solution with the fixed alternatori s more convenient, if Mxi > m and so M > m/i

Let's take the following formula and if M > $m/i^2$ the solution with the fixed alternator is more convenient

$$mgx2VDx\Omega = MxV^2 xDx\frac{\Omega}{s}$$

$$M = \frac{2mg}{\frac{V}{s}} > m/i$$

$$M = \frac{2mi\ \ g}{\frac{V}{s}} > m$$

Conclusions:

Se 2gi = v/S => M = m the 2 solutions are equivalent
M > m/i se V/s < 2gi in this case the solution with the alternator in a fixed position is more convenient
M < m/i se V/s > 2gi in this case the solution with the rototraslating alternatori is more convenient

**Alessandro Leghi**

**9th/29th July 2015**

Between different layouts (seen above) it's convenient not to acknowledge frictions and load losses when the turbine is working and the engine angular velocity decreases, especially when it comes to the layout with a fixed alternator. Considering the layout with a fixed alternator, the mass that trails and converts in a couple could be a lot more inferior than the one calculated because the reduction by the load loss lessens by the squared velocity when the system is under stress and the alternator is supplying. For this reason experimental measures are needed in order to understand how much trailed mass actually converts in a couple on the alternator in a fixed position. Anyway the system should multiply the power by the same amount as the reduction of the power arm of the engine, as in the layout with a rototranslating alternator, so even with a fixed alternator the power on the alternator shouldn't be inferior to

=> P alternator = Power of the engine x i.

The energetic measures, with an alternator that supplies and with a working turbine, experimented as seen in FIGURE 12b in the patent report, confirm the principles of the power increase when entering the system:

MECHANICAL PRODUCTIVITY MEASURED => 200/250 %

**Alessandro Leghi**

**5 th September 2016 – Bonate Sotto**

I applied the torsimeter to the prototype to measure the editing mechanical power; to those who believe it, these are the results:

- The mass dragged in kinetic Energy doesn't change in couple on the shaft when the alternator is in a fixed position; the two situations, fixed or rototraslating alternator, are equivalent (certain situation with rototraslating alternator, situation with a fixed alternator to be experimented); It's the mass of the force of the engine torque that changes into couple on the shaft.
- The power multiplied by distance is calculated by the nett of the friction and not engine power times distance minus friction (in the layout with the alternator directly on the shaft).
- The measures of the torsiometer prototype aren't determinant as the results can be interpreted in two different ways because the power obtained is too small to give wanted results if you remove the ongoing inertia and the power used to move the machine
- As the analysis of the experimental attempts show the layout with the alternator directly on the central shaft doesn't achieve the hoped results because the resistance power directly restricts the engines. So the only certain and efficient layout is the one with the power lever and the rototraslating alternator (certain situation) that has been used for thousands of years (for example by Egyptians).
- To those who think that the distance doesn't come into play, I remind you that the transmission of the engine power occurs between the barycenter of the engine shaft and the barycenter of the turbine shaft; the arrangement with out-of-phase adaptors is yet to be tested, especially the one with a slowed-down alternator.

**Alessandro Leghi**