

Wattless Flux

By Carl Heering

10/21

The acceptance of the conception of what might be called wattless flux will clarify the true meaning of that admittedly ambiguous term self-inductance, about as the conception of the wattless current clarified the distinction between a true resistance, a reactance & an impedance. The basic distinction in both is real vs. apparent energy.

Flux is ^{considered} wattless, however, for a different reason than in the case of current. It must be considered as wattless, ^{whenever} ~~when~~ its stored energy has already been included or accounted for in a resultant of all the flux energies. When ^{in any} ~~to~~ system of forces the total energy is deduced from the resultant of all the forces, it is evidently wrong to then deduce that for each of the components also and add them to it to get the total; that is adding again what had already been added before, & of course makes the total too large, even infinity (by integration) in some cases. Yet this has been done, & we have deceived ourselves, just as we did before the difference between a true resistance and a reactance was ^{generally} recognized, ~~the result~~ resulting in the wattless ampere.

The components in the above case which had been included ~~ded~~ in the resultant, must then be considered as wattless, but merely when computing the total energy from the resultant, as each component, when acting by itself, could generate true energy. The writer will discuss this more in detail & show how it affects self-inductance in a forthcoming paper on a broader subject.

The e.m.f. induced by cutting or ~~linking~~ ^{being} them, ~~is~~ independent of the energy in them, is not affected by this wattless feature.

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The acceptance of the conception of what might be called wattless flux will clarify the true meaning of that admittedly ambiguous term self-inductance, about as the conception of the wattless current clarified the distinction between a true resistance, a reactance and an impedance. The basic distinction in both is real *vs.* apparent energy.

Flux is considered wattless, however, for a different reason than in the case of current. It must be considered as wattless whenever its stored energy has already been included or accounted for in a resultant of all the flux energy. When in any system of forces the *total* energy is deduced from the *resultant* of all the forces, it is evidently wrong to then deduce that for each of the components also and add them to it to get the total; that is adding again what had already been added before, and of course makes the total too large, even infinity (by integration) in some cases. Yet this has been done, and we have deceived ourselves, just as we did before the difference between a true resistance and a reactance was generally recognized, resulting in the wattless ampere.

The components in the above case which had been included in the resultant, must then be considered as wattless, but merely when computing the *total* energy from the resultant, as each component, when acting by itself, could generate true energy. The e. m. f. induced by cutting or linking them, being independent of the energy in them, is not affected by this wattless feature. The writer will discuss this more in detail and show how it effects self-inductance in a forthcoming paper on a broader subject.