APPLICATION OF THE SAGEAYCOS PROJECT IN THE AERONAUTICAL, AUTOMOTIVE AND NAVAL INDUSTRIES.

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Introduction:

The SAGEAYCOS mechanism is the Alternative System of Electrical Generation by Self-Induction and Simultaneous Cogeneration.

The work is undertaken to design a basic system for application to the aeronautical, automotive, and naval industries with the goal that each country can apply it to any means of transport it desires, thus facilitating the life and development of our people, as well as preventing further deterioration of our ecosystems, maintaining a circular economy with sustainability capabilities.

We will begin our description with data taken from AI information regarding calculations for the respective capabilities of each vehicle and the availability to apply them to each means of transport, whatever its function.

In the first case, we will take as a pattern a freight or passenger transport train and the steps that will have to be taken to apply this mechanism (Sageaycos) to this modality.

A modern freight train requires a power of 3000 to 6000 horsepower (HP), and in this case our objective is to apply the Sageaycos system as a fully self-sufficient operating mechanism independent of any other.

Main engine:

An electric motor drives a high-power electric generator, which in turn drives a high-power motor—in this case, a 3000-horsepower (HP) industrial motor. This requires a high-power industrial motor with a minimum capacity of 2500 kW to 3000 kW, or 3100 kW to 3750 kW, to account for starting current peaks.

Calculation and key factors:

A power conversion of 3000 HP is approximately equivalent to 2,238 KW of pure mechanical power at the motor shaft.

Engine efficiency:

No motor converts electricity into motion with 100% efficiency. Considering the standard efficiency of 93-95%, the actual demand exceeds 2,350 kW to 2,400 kW continuously.

Starting current:

If the engine starts directly, the demand can increase to 3 to 6 times the nominal power, requiring a generator with a much larger reserve or a soft start system (variing frequency) to mitigate the impact.

Generator type:

A low-speed generator is required: 1500 revolutions per minute (rpm) of 50 Hz or one of 1800 revolutions per minute of 60 Hz , it is clarified that the calculation is for a 3000 horsepower (HP) train.

To power a 6000 horsepower (HP) generator, that is, to power 6000 horsepower (HP) electric motors, a large-scale industrial generator is required, specifically a medium-voltage generator of at least 5000KW to 6000KW, equivalent to between 6,250 KVA and 7500 KVA.

Key sizing factors:

A base power rating of 6000 horsepower (HP) is approximately equivalent to 4,476 kW of pure mechanical power. Considering the typical efficiency of a large industrial engine (90% to 945%), the continuous power demand is above 4,700 kW.

Starting current:

Depending on the motor starting method (direct start, star-delta or soft frequency inverter), the initial current peak may require a much higher capacity in kilowatts (KVA) to avoid a critical voltage drop.

System type:

At this power level, the equipment must operate at medium voltage (for example: 4.16 KW; 13.8KW) and requires industrial generators.

The trains will have an electric traction motor for each axle that moves the pair of wheels on its axle.

Sageaycos devices to start any type of vehicle.

A 24-volt direct current battery, of any type: dry, electrolytic, gel, etc.

A pure sine wave power inverter, depending on the frequency used in each country, will operate at 50 Hz or 60 Hz, with a 24-volt DC input and a 220-volt AC output. This power inverter can have a capacity between 10,000 and 15,000 Watts.

A 1 or 2 horsepower (HP) electric motor with 1500 or 1600 rpm, depending on the type of alternator we are going to use, which must be within that number of revolutions per minute, will be coupled within the system, since this motor will be the one that will give the necessary revolutions to feed the alternator whose function will keep the 24 volt direct current (DC) battery charged, said battery will be fed back by this system which connects directly to the 10-15 KW 220 volt alternating current (AC) power inverter, the 1 or 2 horsepower motor is connected to the inverter. Here we calculate the difference in motor consumption, which will be between 750 and 1500 Watts. Taking into account the startup peaks (approximately 20%), we will have values giving it an advantage between 900 and 1800 W. This leaves us with a consumption difference of approximately 9000 W for the 10000 W inverter and 13200 W for the 15000 W inverter. This is to calculate the consumption of the motor that we will also connect to one of the inverter's outputs. If it is a 5 horsepower (HP) motor, it will give us a consumption of 3750 Watts. Adding the 20% startup peak, we will have a consumption there of 4500 Watts, sufficient capacity for the chosen inverter. This 4,500-watt load, which includes peak loads, is added to the load of the 1 or 2 horsepower

motor that drives the alternator to charge the battery. Recall that we assigned a nominal value of between 700 and 1,500 watts for a peak load delegated to the approximately 6,000-watt inverter, leaving a margin for any additional devices. However, we still need to connect the 5-horsepower motor to the industrial generator to power the 3,000 or 6,000-horsepower electric motor that will drive each axle of the freight or passenger train, or alternatively, the propeller of a river, sea, or submarine vessel. This can also be applied to electric vehicles of all kinds.

Aeronautical industry:

One device must be installed per turbine. For aircraft with 2 MW (Megawatt) turbines, high-power electric generators, also rated at 2 MW, must be installed to operate these turbines. The generators will operate at either 50 or 60 Hz, depending on the country's requirements, between 1500 and 1800 rpm. These generators will be started by the same mechanism described previously. It is important to use a system with all the necessary devices for each electric turbine. This will provide 100% electrical autonomy to the aeronautical industry, and above all, flight autonomy, as stopovers will be unnecessary, allowing for long journeys or even days-long stays in the airspace of any location on the planet, enabling uninterrupted travel from one end of the world to the other.

One advantage is that the aeronautical industry is freed from the high cost of loading an aircraft with tons of fuel,

and these components, including two main and two emerging ones, most likely do not exceed 10 or 15 tons in weight, which suggests that aircraft will increase their payload capacity to improve market competitiveness and customer satisfaction.

References:

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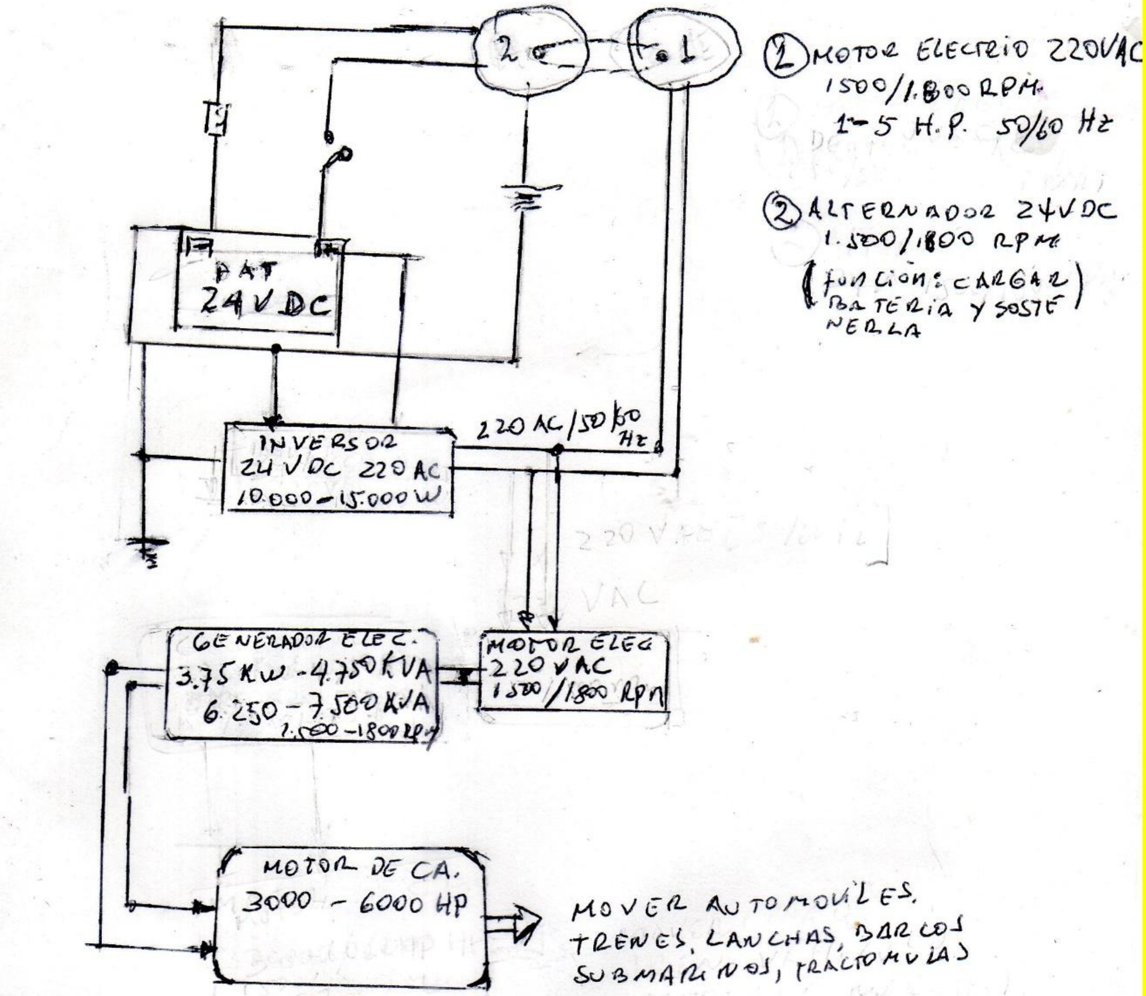

SISTEMA PARA LA INDUSTRIA AERONAÙTICA

APLICACION DEL PROYECTO SAGEAYCOS EN LAS INDUSTRIAS: AERONAUTICA, - AUTOMOTRIZ Y NAVAL

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