

## LOW COST SOLUTIONS FOR MODERNIZATION OF YOUR EXCITATION SYSTEMS

SEPAC is a world-class provider of integrated solutions for the electrical industry. Since 1984, SEPAC has modernized and rehabilitated dozens of excitation systems for electric generators with capacities from 1 to 350 MW.

Excitation Systems manufactured by SEPAC meet or exceed the standards of the IEEE - 421 standards for Excitation Systems.

Our Excitation Systems are custom designed to meet the particular requirements of each plant.

SEPAC's clients include TACOMA Electric USA, CFE México, PEMEX México, EPM Colombia, INDE Guatemala, ICE Costa Rica, JASSEC Costa Rica, DUKE ENERGY El Salvador, ENEE Honduras, EEB Colombia, EMGESA Colombia, CHEC Colombia, EGEHIDRO República Dominicana, SIEMENS Germany, ISOLUX Spain, and many more.



SEPAC's experience includes the integration of mechanical and electrical equipment of the turbo-generator, including Speed Regulation Systems, Automation, SCADA Systems, Excitation Systems, Measurement Systems, Protection Systems with Multifunctional Relays,

See our website: [www.sepaccorp.com](http://www.sepaccorp.com)

SEPAC's design philosophy is to use, as much as possible, standard components that are commercially available on the open market to provide the user with the flexibility to expand and to optimize the purchase of spare parts immediately and economically.

SEPAC equipment is manufactured under a strictly controlled management system approved by ISO-9001: 2008. The SEPAC manufacturing plant, certified by the AMERICAN TRUST REGISTER company, offers complete control of the design, manufacture and quality of the Systems offered.

The Electronic heads, model RAV-CE of the SEPAC brand, mounted on the PAC SYSTEM Programmable Logic Controllers from GE INTELLIGENT PLATFORMS, or SIMATIC from SIEMENS, based on high-speed microprocessors, perform their regulation functions via Integral and Derivative Proportional control (PID).





## NEW POWER HEAD RAV-CE

SEPAC has successfully verified the use of industrial PLCs, from various brands, in dozens of power plants. Contrary to proprietary platforms, these commercially available PLCs maximize the flexibility of expansion, facilitate the purchase of spare parts, and free the user from the technological dependence of the manufacturer. Among its most relevant characteristics the following can be listed:

- They comply with the norms for excitation systems according to IEEE-421 standards
- They use standard industrial components available on the market
- They have high reliability and high performance by using high speed CPU
- They have extensive self-diagnosis facilities
- Offer a modular design for easy maintenance and service
- Offer extremely fast dynamic response
- They meet the response criteria of the IEEE-421 standard

RAV-CE power heads can be configured with a single Excitation Control Unit (UCE) or with two UCE's and two pulse generators / amplifiers, offering full redundancy features for the control of rectifier bridges.

A powerful set of limiters allows the machine to be kept strictly within its capacity curve, with optimized dynamic regime, and to maximize the unit's capacity characteristics by taking advantage of the thermal inertias of both the rotor and the stator of the machine. Unit.

Operation, diagnostic and self-diagnosis (IHM) tools are deployed using a 15-inch touch-screen operation console, which exchanges information via a high-speed Ethernet network.

Communication facilities, with MODBUS or PROFIBUS protocols allow linking the rehabilitated Excitation System with any unit control system or any SCADA of a higher hierarchical order.

To complete this list of indisputable advantages, a total decoupling between the preserved power sections and the regulation electronics is carried out using fiber optic links, both for trigger pulses, and for all analog or digital signals between the two parts. :

***THE NEW RAV - CE ELECTRONIC HEADS WITH CUTTING EDGE TECHNOLOGY HAVE ALREADY BEEN INSTALLED BY SERPRO / SEPAC SINCE YEARS AGO IN SEVERAL ELECTRIC POWER PLANTS. COMPANIES SIMILAR TO CFE ACKNOWLEDGE THE SUPERIORITY OF THE NEW REGULATION ELECTRONICS WITH RESPECT TO THE TECHNOLOGY OF THE YEAR 2000.***

***MANY COMPANIES, IN AN INCREASINGLY FOCUSED ON INVESTMENT PROFITABILITY, HAVE CHECKED THE GOODNESSES OF REPLACING ONLY CERTAIN KEY STRATEGIC PARTS INSTEAD OF THE ENTIRE EXCITATION SYSTEM. IN A CHANGING WORLD THAT STILL IS NOT AWAKENING FROM THE SHAKE CAUSED BY THE ENERGY REFORM IN MEXICO, THE SUCCESSFUL ENGINEERING SOLUTIONS, AND THE SKILLS OF SPECIALISTS WILL BE TESTED AGAINST THE ESCAPE OF ECONOMIC RESOURCES.***

***SERPRO / SEPAC CAN HELP YOU WITH YOUR 30 YEARS OF EXPERIENCE IN THE MATTER.***

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