

To: SENERQON GROUP

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Attention: Dr. K. Satsios, CEO of SENERQON GROUP

AKOVA ARGOS 21200 ARGOLIDA, 22/07/2024

Dear Dr. K. Satsios,

Following your company's request, we are pleased to inform you about the successful results of your scientific project on electrical energy saving and power quality optimization, which was carried out based on yours know how at our factory in Akova Argos in Argolida.

Within the framework of the above project, the scientific and technical team of SENERQON conducted numerous measurements on all major electrical loads as well as on the power transformers of the factory. The measurements were carried out with special measuring devices such as the A-Eberle Portable Power Quality Net-analyzer PQ-BOX 200. These measuring devices allow the collection of detailed data concerning not only the basic electrical quantities but also the current-voltage harmonics up to the 35th order and have the capability to record transient phenomena (e.g., voltage dips). Based on the above measurements and other electrical installation data collected, SENERQON engineers and technicians performed a full scientific study using your expertise, simulated, designed, constructed, and successfully installed a series of custom-made interventions. These are adapted to the specific technical and environmental conditions prevailing at our factory. The custom-made equipment includes state-of-the-art materials from top manufacturers of industrial equipment worldwide (ABB, RITTAL, SIEMENS, EPCOS).

During the installation of the project interventions, the supervising engineers and technicians of SENERQON demonstrated exceptional behavior, precision, and professionalism. Your project's installation was completed at the end of October 2023, and all equipment was put into operation at the beginning of November 2023. Over all these months, it has been confirmed that the energy-saving interventions operate smoothly and continuously without problems. As for the significant qualitative benefits we have observed for our factory, these are as follows:

- The significant reduction of harmonics and reactive currents within the electrical installation has greatly reduced thermal losses in cables, power panels, and electrical equipment.
- Problems related to interactions between electrical loads and Power Transformers, such as harmonic resonances and harmful voltage drops, have been resolved.
- Improved voltage levels close to nominal values and the elimination of harmonics have significantly improved the efficiency of both motors and power transformers in our electrical installation.
- Additionally, we have observed a significant increase in the reserve capacity of the electrical installation by 25%. This improvement allows us to install new electrical loads of corresponding apparent power in the existing low voltage fields without the need for new power transformers, main low voltage panels, and cables in the future.
- Finally, there has been a significant reduction in maintenance costs (over 60%) for all electrical equipment in the installation, while unwanted stops of electrical loads due to external and internal voltage dips have been drastically reduced, leading to increased productivity.

The assessment of the energy-saving result was carried out with detailed electrical measurements. The measurements were taken instantly (to avoid the possibility of motor load changes) in each low voltage field and for various operating scenarios without and with the corresponding energy-saving intervention in operation. These concerned the values of active current consumption (integrating these values over time can accurately determine total energy consumption). The final energy-saving result achieved by the SENERQON project was **13.2%** greater than the guaranteed result of **9.7%** based on the project contract.

In closing this letter, and based on all the above positive results, we consider the SENERQON project to be absolutely successful. This is because the project not only exceeded the initial energy-saving target, but also led to additional qualitative improvements such as the significant increase in the reserve capacity of our factory's electrical installation, the substantial reduction in maintenance costs, and the improvement of the productivity of our installations.

For TSABASSIS,

Vasilios Koutoumpinos



Group COO