METALLOPLASTIKI AGRINIOU

ΜΕΤΑΛΛΟΠΛΑΣΤΙΚΗ ΑΓΡΙΝΙΟΥ Α.Β.Ε.Ε.
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TO: SENERQON GROUP **22/05/2025**
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Bergstr. 23, 65451 Kelsterbach, Germany
11 Portland Road, London, SE25 4UF, UK
Sofia 1408, "South Park" quarter No45, entrance A, floor 4, Bulgaria

ATTENTION: Dr. K. Satsios,

We would like to inform you of the success of the electrical energy saving and power quality optimization project, carried out by your company, SENERQON, at our factory in Agrinio.

For the implementation of the project, SENERQON's engineers initially collected a wide range of measurements. These measurements concerned electric motors, various power electronics such as VFDs, power transformers, and the subpanels supplying various machines installed in our factory. All major electrical loads and power transformers were measured. Specialized instruments were used, such as the A-Eberle Portable Power Quality Net-analyzer PQ-BOX 200 (expert), which is capable of measuring transient phenomena. The collected data included both fundamental electrical parameters and harmonic distortions in current and voltage up to the 35th order. Additionally, transient phenomena occurring in our installation due to large motor starts and effects from the external grid were recorded.

Next, your engineers used all the collected data to apply SENERQON's simulation models, based on Finite Element Methods and Artificial Intelligence algorithms. The measurements and simulations revealed specific issues within our electrical installation, such as high voltage harmonics, which led to reduced efficiency in motors and power transformers. Your company then designed and implemented customized solutions to resolve these issues, optimize power quality, improve the efficiency of motors and transformers, and ultimately achieve significant energy savings. It should also be emphasized that, in designing the interventions, SENERQON's engineers took into account all the unique characteristics of the Metalloplastiki Agriniou facility, such as temperature conditions and available space.

The project installation, carried out by SENERQON's highly professional technical team, was completed on 17/10/2024 and immediately put into operation. It is worth noting that during installation, there was no disruption to the operation of our electrical installation. Since then, the system has been operating reliably, contributing to the optimization of our electrical installation and **achieving significant energy savings, which were measured at 12.2% — significantly higher than the initially guaranteed savings of 9.6%.**

To calculate this result, the following steps were taken:

1. **Measurements of consumption** with and without the implemented energy-saving interventions across all electrical subpanels of our factory. The measurement intervals were kept short to avoid variations in motor load, ensuring maximum accuracy in the evaluation. T**he weighted average of all measured consumption reductions represents the total energy savings** across the electrical installation.
2. **Analysis of the energy savings results based on international literature and using artificial intelligence algorithms** to correlate energy consumption with influencing factors such

as production levels, raw materials, temperature, etc. These algorithms showed excellent accuracy for the pre-installation period, **with a deviation of just -0.35% between predicted and actual energy consumption values. Applying the same algorithms to the post-installation period yielded the energy savings outcome.**

Additionally, the optimization of the electrical installation led to several other important benefits, including:

- Significant reduction in voltage and current harmonics,
- Improved efficiency of motors, VFDs, and power transformers,
- Substantial increase (30%) in the electrical system's reserve capacity,
- Drastic reduction in undesirable motor shutdowns caused by external or internal voltage sags, effectively preventing interruptions in the production process.

Based on all the above results, both t**he significantly higher energy savings achieved compared to the guaranteed figure** and the **qualitative improvements derived from SENERQON's project**, we consider the project **an absolute success**.

For METALLOPLASTIKI AGRINIOU S.A.,

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