

EXPERIMENTAL RESEARCH CONCERNING THE EFFICIENCY OF THE MICROWAVE INSTALLATION

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Microwaves are electromagnetic waves with frequencies of $300 \text{ MHz} \div 300 \text{ GHz}$. In order to avoid interferences between different microwave applications, the microwave bandwidth has been divided into ranges. The 2450 MHz frequency has been allocated for industrial, scientific and medical applications (ISM). The diagram of a complete microwave installation is shown in fig.1.

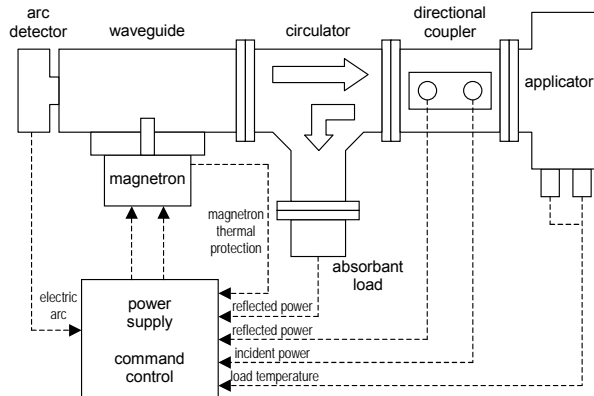


Fig.1. Complete system for microwave generation, transmission and use.

Of all the possibilities for the adjustment of the emitted power, the division of emission has been proven to be the most efficient. It provides a good linearity for the emitted power and for the efficiency of the installation. According to the chosen application, it is necessary to adequately choose the clocking frequency. For common applications, such as simple heating of materials, lower frequencies may be chosen, in order to optimize efficiency. However, knowing that the installation emits maximum power when enabled, we should use higher clock frequencies in the case of particular applications, such as medical diathermy or decontamination of fruit and seeds. At higher clock frequencies, the installation delivers smaller quantities of energy to the load, but more frequently, thus providing a more uniform heating of the load to be treated.

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