

# Simulation of a Microwave Applicator for the Treatment of Petroleum Emulsions

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## Abstract

In Mexico there is a decline in the production of oil deposits due to the lack of effective treatment of oil emulsions, which generate a problem in the reinjection of emulsified water, transport of oil with high water content and corrosion in the oil refineries.

Through the simulation in COMSOL Multiphysics® software, specifically the modules of RF, Heat Transfer and the Materials library, it was possible to simulate a microwave applicator with different geometries to find the ideal geometry where there is a greater energy absorption leading to a better Heating oil and contribute to a better separation. As results obtained it was found that an applicator with cylindrical geometry has a better and uniform heating than with spherical and cubic geometries.

## Figures used in the abstract

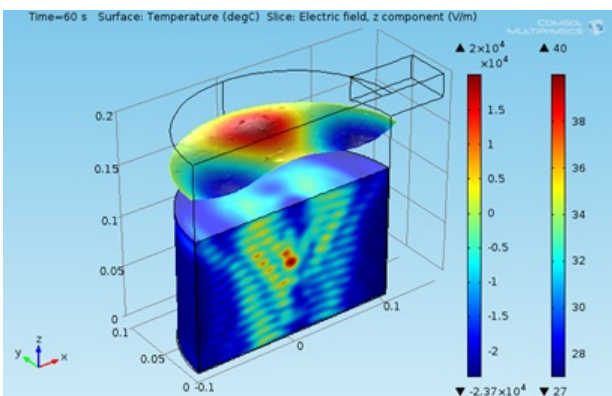


Figure 1: applicator with cylindrical geometry