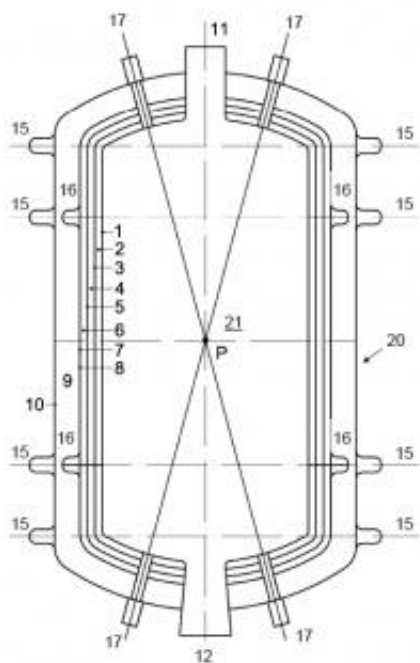


A new clean nuclear fusion reactor has been designed

January 14 2013



Schematic section of the vessel and the containment wall of the fusion reactor that show the essential components.

A researcher at the Universidad politécnica de Madrid (UPM, Spain) has patented a nuclear fusion reactor by inertial confinement that, apart from be used to generate electric power in plants, can be applied to propel ships.

This invention is the result of a work carried out by the Professor José

Luis González Díez from the Higher Technical School of Naval Engineering of the UPM, who has contributed to solve the problem of contamination risk associated with the generation of nuclear fission power. It is a design of a fusion [nuclear reactor](#) by laser ignition of 1000 MWe that uses as fuel [hydrogen isotopes](#) that can be extracted from water allowing us a significant saving in fuel.

The nuclear fission is generally considered as a dangerous energy due to its contaminant risks of radioactive waste resulting from the electricity generation process. The past events occurred in Japan after the tsunami of 2011 increased the [risk perception](#) of this type of energy generation what has provoked that research on alternative ways to obtain energy have gained more importance than ever.

For years, nuclear fusion was studied as an alternative to [nuclear fission](#) because of its remarkable advantages for security and financial issues. However, today, there is not working any fusion reactor to produce continuous electrical energy of high voltage.

As a result of the Project "[Fusion Power](#)", the Professor González Díez designed a prototype of fusion reactor by inertial confinement, of total conversion of material into energy, whose fusion chamber can adapt to the type of fuel that wishes to be used, specially deuterium-tritium, deuterium- deuterium or hydrogen-hydrogen. Therefore, according to the fuel, the size of the chamber can be adapted as well as its shape, the outer and inner equipment, coolants, moderators, shields and equipment of ignition.

This project has also led a design of a modular structure to realize coupling of various fusion reactors, what would allow us to maximize the power production solving the problem of the high current energy demand. Besides, this invention can determinate the features of a [fusion reactor](#) for its application in nuclear powered ships.

Provided by Universidad Politécnica de Madrid

Citation: A new clean nuclear fusion reactor has been designed (2013, January 14) retrieved 9 April 2024 from <https://phys.org/news/2013-01-nuclear-fusion-reactor.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.