Technology Offer

Device for generating ultrasound field in liquids situated in vessels with narrow apertures

Summary

A research team from Romania developed a device for generating an ultrasound field in the liquids situated in vessels with narrow apertures, designated to the chemistry domain, aimed for intensifying and accelerating the chemical reactions in solutions.The targeted partners are universities, research institutes or SMEs from the same activity field in order to cooperate in further development within a technical cooperation agreement.

Creation Date	09 June 2015
Last Update	07 September 2015
Expiration Date	06 September 2016
Reference	TORO20150609001

Details

Description

A team of researchers from Romania has developed a device for generating an ultrasound field in the liquids situated in vessels with narrow apertures.
This device is designated to the chemistry domain, in order to intensify and accelerate chemical reactions in solutions increasing nucleation, disintegration and homogenization of solid particles in liquids, thus improving the distribution of crystalline powders that result from various processes.
The problem solved by the patented device is represented by the production and amplification of ultrasonic high frequency field (45 kHz) carried out by the emitter piezoceramic transducer (TPU) with high working frequency and high electroacustic efficiency, in liquids inside containers with narrow apertures, used especially in the chemistry laboratories.
According to the invention, the device is supplied from a 220 V network by means of a stabilized voltage rectifier (RED) furnishing a supply voltage (U2) to some integrated circuits (CI1 and CI2) and a voltage (U1) to a voltage step up transformer (TR1), the first integrated circuit (CI1) playing the role of an adjustable frequency pulse oscillator and furnishing at the output a signal which is applied to the second integrated circuit (CI2) which achieves a duty factor of 1:2, the signal furnished at the output being applied to a pre-amplifier which is carried out with a transistor (T1), then the signal is applied to a power amplifier which is carried out with another transistor (T2), in whose collector there is mounted the voltage step up transformer (TR1) in whose secondary there are produced the high voltage oscillations which supply an emitting piezoceramic transducer (TPU) which carries out the conversion of the electrical energy into mechanical energy as mechanical vibrations.
The partners the Romanian researchers are looking for are universities, research institutes or SMEs from the same activity field in order to cooperate in further development within a technical cooperation agreement.

Advantages and Innovations

The conversion of the electrical energy into mechanical energy as mechanical vibrations is carried out by a piezoceramic transducer transmitter (TPU), whose advantages, as compared with the electroacoustic transducers having magnetostrictive elements are related to the piezoceramic elements that:
- ensure an overall small gauge
- have low weight
- confer high ultrasonic power and electroacustic efficiency.

Stage of Development

Available for demonstration

IPR Status

Patents granted,Copyright

Comment Regarding IPR status

Patent applied for at the State Office for Inventions and Trademarks. IP rights on national level - Romania

Keywords

Technology

03004004	Electrical Engineering/ Electrical Equipment
03007	Sound Engineering/Technology
05003001	Vibration and Acoustic engineering

Market

08003006	Power transmission equipment (including generators & motors)
08003007	Other industrial equipment and machinery

NACE

M.72.1.9	Other research and experimental development on natural sciences and engineering

Network Contact

Issuing Partner

NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT FOR OPTOELECTRONICS

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Open for EOI : Yes

Dissemination

Send to Sector Group

Nano- and Microtechnologies

Client

Type and Size of Organisation Behind the Profile

R&D Institution

Year Established

0

Already Engaged in Trans-National Cooperation

No.

Languages Spoken

English

Client Country

Romania

Partner Sought

Type and Role of Partner Sought

The targeted partners are universities, research institutes or SMEs from the same activity field in order to cooperate in further development within a technical cooperation agreement.

Type and Size of Partner Sought

SME 11-50,University,R&D Institution

Type of Partnership Considered

Technical cooperation agreement