



UIP2000hdT – 2000 Watts Powerful Industrial Ultrasonicator for Full Process Control

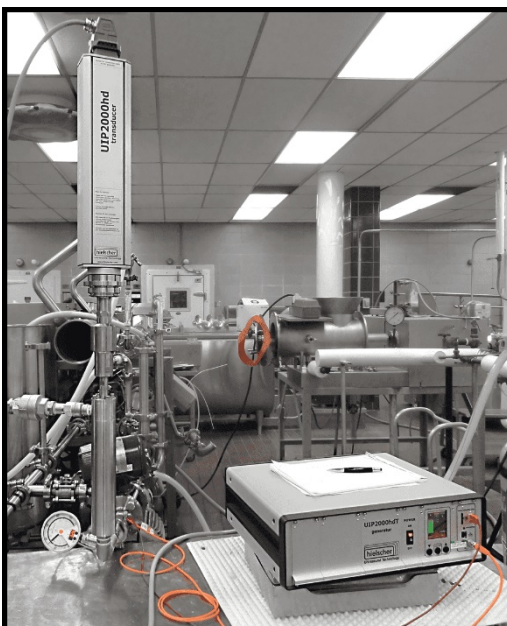
The new digital ultrasonicator UIP2000hdT (20kHz, 2000W) is a powerful ultrasound processor for liquid treatments on bench-top and industrial scale. Common applications include [homogenization](#), [emulsification](#), [dispersing & particle fine milling](#), [lysis & extraction](#), [dissolving or sonochemical reactions such as sonosynthesis and sono-catalysis](#). Color touch display, browser remote control, automatic data recording, integrated SD/USB ComboCard and pluggable temperature and pressure sensors allow for precise process control and operation comfort.

High Power and Full Process Control

Powerful sonication is the process solution for manifold liquid processing applications, such as [emulsifying](#), [dispersing](#), [milling or dissolving](#). The UIP2000hdT provides intense ultrasound waves to fulfill demanding tasks without problems. To ensure a consistent process quality, not only the power delivered is essential, the control and monitoring of all important process parameters is key. The new generation of hdT ultrasonicators enables the operator to pilot the ultrasonic device via touch display or browser remote control. All relevant process parameters – such as amplitude, sonication time, temperature and pressure – are automatically recorded and saved as CSV file on the integrated SD/USB ComboCard.

Thereby, the new UIP2000hdT provides the same ultrasound power as the predecessor UIP2000hd, but excels with a broad range of additional features, which makes the ultrasound process much more user-friendly. From the operational view, the precise control of all ultrasonic process parameters are absolute key functions.

The UIP2000hdT at a glance



- 2000 watts powerful ultrasonicator
- reliable for heavy duty sonication processes
- 24/7 operation
- industrial grade
- colored touch display
- browse remote control
- automatic data recording of power, amplitude, sonication time, temperature, pressure
- integrated SD/USB ComboCard
- pluggable temperature sensor
- pluggable pressure sensor (optional available)
- LAN connection
- Ethernet connection
- no software installation
- automatic frequency tuning

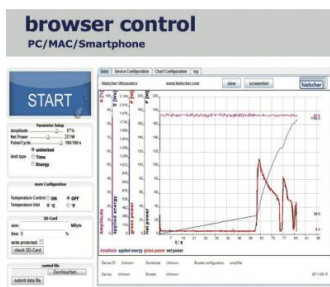
UIP2000hdT – the new digital 2kW industrial ultrasonicator for precise process control from HIELSCHER

Full Color Touch-Screen



A great enhancement from the operational view is the colored touch-screen. This touch- and stylus-sensitive screen allows for easy handling, whilst the accurate setting of operating parameters and the display of the ultrasound power setting are guaranteed and combined with highest comfort for the operator. The digital control menu is intuitive to use as reduced to the main settings. The amplitude/ power setting and the pulse mode can be adjusted by a colored touch-slider (with 1%, 5% or 10% snap). The user decides, if he prefers the display of amplitude and power as colored bar graphs or numerical representation. The display can be changed from regular view mode to BIG NUMBER display mode, characterized by heavy contrast and big font- size for improved visibility.

Browser Remote Control



The UIP2000hdT can be controlled using any common browser, such as Internet Explorer, Safari, Firefox, Mozilla, mobile IE/Safari using the new LAN web interface. The LAN connection is a very simple plug-n-play setup and requires no software installation. The ultrasonic device acts as DHCP server/client and requests or assigns an IP automatically. The device can be operated directly from the PC/MAC or using a switch or router. Using an optional pre-configured wireless router, the device can be controlled from most smartphones or tablet computers, e.g. the Apple iPad. Using the port-forwarding of a connected router, you could control your UIP2000hdT via internet from any place in the world – your smart-phone or tablet being the remote control.

Built-In Network

Another smart feature of the UIP2000hdT is the operation and control via LAN (local area network, see right box) which facilitates the operation and allows for high processing flexibility. All information of the sonication process is recorded on SD/USB data card, automatically. A pluggable sensor measures the temperature permanently whereas an optionally available pressure sensor can be additionally plugged.

Automatic Frequency Tuning

Like all Hielscher ultrasonic devices, the UIP2000hdT comes with an intelligent automatic frequency tuning. When the device is switched on, the generator will sense the optimal operational frequency. It will then drive the device at this frequency. That improves the overall energy efficiency and reliability of our ultrasonic devices. All you need to do, is to switch the system on. The generator will perform the frequency tuning automatically in a fraction of a second.

A Robust Work Unit for Manifold Applications

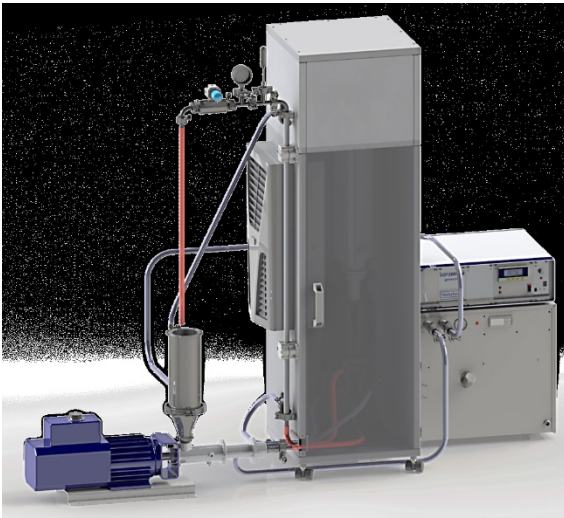


The UIP2000hdT is a robust and reliable system for all kind of ultrasonic liquid processes. Important applications for the ultrasonic processor UIP2000hdT are [the breakage \(particle size reduction\)](#), [deagglomeration & dispersion of nano materials](#), [the functionalization of nano particles](#), [emulsification](#), [the production of biofuels \(e.g. biodiesel, bioethanol\)](#), [the formulation of paint & coatings](#), and [various sono-chemical applications \(e.g. sono-catalysis, phase transfer catalysis, precipitation, sol- gel routes\)](#).

With 2000W ultrasonic power, UIP2000hdT handles easily applications in pilot and large scale. Corresponding sonotrodes e.g. the [cascatrode™](#) provide the required intensity of ultrasonic treatment of the liquid. Corresponding flow cells are offered for continuous operation. Sound protection casings complete the ultrasonic system based on UIP2000hdT. The picture above, shows a disintegration system of 24xUIP2000 . The combined power of 48kW is used for the processing of approx. 6m³/hr.

The digital industrial ultrasonicators feature a smart browser control for optimized operation and processing.

Adaptable System

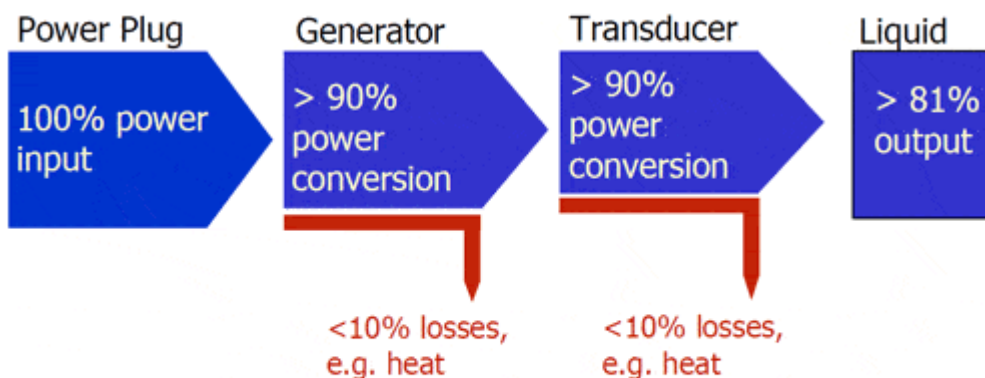


An extensive list of manifold [accessories](#), such as sonotrodes, boosters and flow cells is available for the UIP2000hdT. In combination with a sonotrode and the stand, you can sonicate samples in a batch to test or develop various liquid formulations for their response to sonication. For the processing of batches larger than 5 liters, we generally recommend to sonicate using a flow cell reactor (flow mode) in order to obtain a better processing quality. When used with a flow cell you can run larger samples in [recirculation](#) to establish the correlation between parameters, such as amplitude, pressure and liquid composition, and the process results and efficiency. When used for the sonication of liquids in flow mode, the UIP2000hdT can typically process between 1.0 and 8.0L/min (The actual rate will depend on your process). As the UIP2000hdT is full industrial grade, it can be operated 24 hours per day (24h/7d). A UIP2000hdT can typically process

approx. 2 to 10m³ per day. For higher production throughput, we recommend using either multiple units or one the larger ultrasonic devices:

- UIP4000 (4000W, 20kHz)
- UIP10000 (10000W, 20kHz)
- UIP16000 (16000W, 18kHz)

Industrial Grade and Outstanding Efficiency



The UIP2000hdT is designed and built for commercial production. This ultrasonic processor requires little maintenance, is easy to setup and simple to clean and to sanitize. Despite the enormous power of the ultrasonic processor UIP2000hdT (2000 watts, 20kHz), this ultrasonic device does not need any additional cooling by water or compressed air.

Overall Efficiency approx. 80 - 90%

The device can be operated continuously in air, too. The robust design of the transducer, made of stainless steel and titanium, enables use under extreme conditions of dust, dirt, higher temperatures and humidity.

As all our industrial ultrasonic processors, the UIP2000hdT has a [very high efficiency](#) in the conversion of electrical energy into mechanical oscillations of the sonotrode. This means, that more energy is transmitted into the liquid, resulting in a better sonication. The overall energy efficiency of the UIP2000hdT is approx. 80-90% from the power plug into the liquid

Full Amplitude Control and High Performance

The amplitude of the UIP2000hdT is electronically controlled, so that the magnitude of the mechanical ultrasonic vibrations at the sonotrode is constant under all load conditions. You can change the amplitude from 20 to 100% at the generator and additional ranges by using various booster horns. The chosen amplitude is being held constant, while sonicating any material at any pressure. This feature gives you full control over the most important sonication parameter: Amplitude.

Testing and Evaluation on Good Terms

If you would like to evaluate the UIP2000hdT for your purposes, [you can rent all standard items](#) at good conditions. Alternatively, you can conduct process [trials in our process laboratory](#). A list of standard accessories can be found below. All items are typically carried in stock, so delivery time is really short. Please use the form below, to ask for a proposal for a UIP2000hdT with suitable accessories.

We make customized accessories, too. This includes special sonotrodes or flow cells.

Feel free to describe your particular requirements and mail it to

- info@imlab.be for Belgium and Netherland
- info@imlab.fr for France and other