Laboratory Dispersing Unit DL 05

device for manufacturing of nanoscale Zero-Valent Iron (nZVI) slurry

Laboratory dispersion unit LD 05 is designed for direct manufacturing of nZVI slurry from the dry powder (NANOFER 25P).

The equipment provides manufacturing capacity of 500 grams of slurry in 20 minutes, thus it fits to the research laboratories working with zero-valent iron nanoparticles. Besides nZVI it is also possible to disperse other nano-powder materials in almost any liquid. Laboratory dispersing unit LD 05 is equipped with vacuum pump and inert gas inlet with automatic regulation enabling to process metal nano-powders and slurries under protective atmosphere. Protective inert atmosphere prevent product degradation by air oxygen.

**LD 05 components:**

1. LD 05 body, made from stainless steel,
2. automatic control unit regulating dispersing speed and securing protective atmosphere,
3. batching plant for transfusion of nano-material from a transportation keg (A) into the reservoir (4),
4. reservoir made from stainless steel of inner volume of 0,2l dedicated for dry nano-powder application into the reaction vessel,
5. reactor vessel made from borosilicate glass with jacket for temperature control of the process (heating/cooling); the unit for temperature control is not included,
6. vacuum pump connected to the control unit.

*Notice: transportation keg (A) is not included.*

**Examples of the use of laboratory dispersing unit LD 05:**

I. Dispersing of nano powder into a liquid (water, liquid polymer, mineral oil, etc.):

- manufacturing of standard nZVI dispersion (water + dry nZVI powder NANOFER 25P),
- development of a new products by dispersing of NANOFER 25P (eventually another nano-material) into a user defined liquid (water with additives, surfactants, etc.),
- production of EZVI (emulsified zero-valent iron) by dispersing of NANOFER 25P into a liquid (water+mineral oil), NASA license required.

II. A system for running reactions:

- by application of dry nZVI powder (NANOFER 25P) directly into a concentrated wastewater. By this approach, the highest efficiency of Nanofer product (no degradation of Nanofer), the decontamination ratio and speed is reached.