HNP Mikrosysteme

The tailor-made pump system for continuous production processes in fine chemistry
Modular Dosing System – MoDoS®

- **Ready-to-use unit**
  fully equipped and assembled system in a rigid framework
- **Modular system of components**
  individually equipped with micro annular gear pump, filters, sensors (e.g. flow, pressure, temperature) valves, fluid connections
- **Chemical resistant materials**
  material combinations from stainless steel / hard metal to alloy C22 / ceramics, optional titanium
- **High process stability**
  mass or volume flow controlled micro annular gear pumps
- **Local controller**
  integrated controller allows stand-alone mode as well as integration into external process control systems
- **Open design**
  easy access and exchange of all components

The **Mo**dular **Do**sing **S**ystem (MoDoS®) from HNP Mikrosysteme is a tailor-made pump system for continuous delivery in fine chemical and pharmaceutical production. MoDoS® is synonym for a design concept and a modular component system, forming the base for the concept development of a customized pump module. The manufacturer-independent selection of the sensors for flow, pressure, temperature, among others is based on the given process parameters. MoDoS® expands the system boundary from pump towards pumping system. Actuators are supplemented by measurement and control technology, and offered as a complete solution for process-reliable pumping in the low flow range.

Applications

- Micro process technology
- Fine chemistry
- Pharmaceutical industry
- Mini plant technology

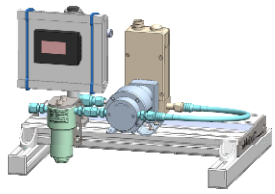
Components

Pumps	micro annular gear pumps of hermetic inert and high performance series for volume flows from 0.003 to 1152 ml/min at differential pressures up to 80 bar *
Filters	filters in stainless steel, alloy C22, PTFE or glass *
Mass flow controllers	measurement principal Coriolis, thermic, ultra sonic *
Fluid connections	1/4"–28 UNF, 1/8" NPT, 3/8" NPT *
Liquid temperature range	-20 … +150 °C *
Viscosity range	0.3 … 1000 mPas *
Wetted parts	material combinations: stainless steel / hard metal, alloy C22 / ceramics, optional titanium *
Power supply	24 V DC, 240 V AC, 400 V AC *
Display	mass flow *
Controller and interfaces	mass flow control with precision potentiometer, 0–10 V, 0(4)-20 mA, RS-232, CAN-Bus *

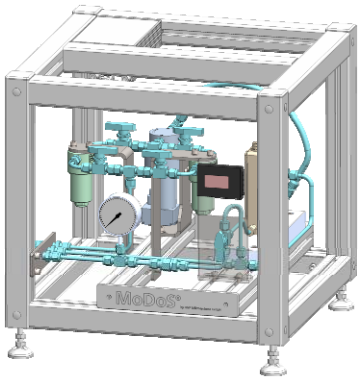
* depending on the components selected

Contact
HNP Mikrosysteme GmbH
Bleicherufer 25 · D-19053 Schwerin
phone +49 385 52190-301
fax +49 385 52190-333
e-mail info@hnp-mikrosysteme.de
http://www.hnp-mikrosysteme.de

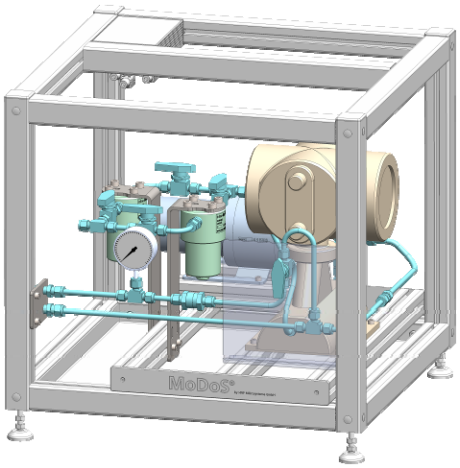
Customized MoDoS® versions and sample pump modules



Closed loop controlled volume flow



Redundant filter system



Pump system modular dimension 570x570

The current development of Flow Chemistry, from lab research passing through pilot plants, up to production scale, opens new possibilities for fine chemical production. Small structures allow carrying out reactions in previously inaccessible process windows. Temperature, pressure and mixing ratios, which were not possible in classical batch procedure, can now be successfully implemented. In contrast to previous times, lower flow rates of higher concentrated chemicals are used for the purposes of resource conservation. The change from batch to continuous handling in Fine Chemistry represents new challenges for plant engineering.

Not only at the process level but also at the level of unit operations has the complexity degree increased through the use of technologically innovative components. This requires an intensive analysis of the new type of process management. Optimally controlled material flows and an expanded power management are the foundations of a successful production in Flow Chemistry. The adjustment of the stoichiometric ratios, different than in a batch process, results from the sensoric control of as uniform as possible flow volumes in the correct ratio to each other. This results in the need for pumping systems that provide precise, low-pulsating

handling of aggressive liquids with low flow rates for the plant engineering in the fine chemistry industry. Holistic turnkey pump system solutions facilitate the integration into the system and give the planner the opportunity to deal more intensively with the actual process. The special value for the customers of the modular solutions of HNP Mikrosysteme is set in particular, in the integration of carefully selected and proven fluid power system components. The therefore necessary know-how is the basis for a stable and process-reliable operation of the overall system.

08/16