

PRESENTING THE UNITS FROM FLUIDAS



HYDRAULICS AND PNEUMATICS RESEARCH INSTITUTE

HYDRAULICS & PNEUMATICS RESEARCH INSTITUTE (IHP) in Bucharest - ROMANIA is a research, design and production unit in the field of hydraulics and pneumatics, is a subsidiary of the National Institute of Research & Development for Optoelectronics - INOE 2000, concerned with the hydraulics and pneumatics fields, which has integrated current trends of applied research such as: environmental protection, ecological agriculture and water reserves, industrial mechatronics and health.

The institute, holding over 55 years of experience in its activity field, is structured on 3 research and development divisions : Division of basic hydraulics, Division of servo techniques, electronics and mechatronics, Division of special equipment. IHP personnel are highly qualified manpower, while its divisions hold an adequate endowment consisting of cutting-edge devices, electronic equipment and automatic adjustment and control systems and 10 laboratories of experimental research.



Team of researchers is composed of 2 SR I, 2SR II, 14SR III, 5SR, 2 TDE II, 4 TDE III, 9 ASR si 2 TDE, of which a total of 14 specialists are doctors engineers.

Basic research directions are:

1. **HYDROTRONICS, MECHATRONICS AND TRIBOLOGY**

The activities developed in this direction aim to improve performances and lifetime of complex automation systems based on hydraulic, mechanical and pneumatic equipment, combined with electronic and informatic central or local systems, including the development of components and systems with local intelligence.

Activities in this direction regard:

- Optimization of energy consumption by using digital hydraulics, which reduces energy consumption by superior adapting to the immediate requirements of hydraulic systems, even without circuits for recovery, conversion and energy storage
- Tribology of mobile seals in the mechanical systems, in order to reduce energy consumption and component wear
- Tribology of mechanical couplings in hydrostatic equipment
- Improved dynamic and tribological performances of hidraulic-mechanical systems using servo equipment
- The introduction, implementation and development of modern concepts of hydrotronics, mecatronics and pneutronics as a base for the modernization of hydraulic and pneumatic drive systems
- Research on optimizing mobile equipment operation using mechatronics based on informatics, sensor science and electronics specific for hydraulic drives
- Increased working pressure in hydraulic systems by using new materials in the construction of hydraulic and pneumatic equipment
- Development of equipment and systems equipped with electrohydraulic central and local intelligence for learning repetitive movements or performed in some default parameters.





2. GREEN ENERGIES

Green energy is a priority research area and an opportunity to work for our institute, aimed at developing technologies and equipment with mechanical, hydraulic, pneumatic or electric drive to capture, produce and use of renewable energy.



Increasing importance of this area in general activity of the institute was made possible taking into account the possibilities of reducing energetic costs from various branches of activity, where the hydraulic or pneumatic drives are present.

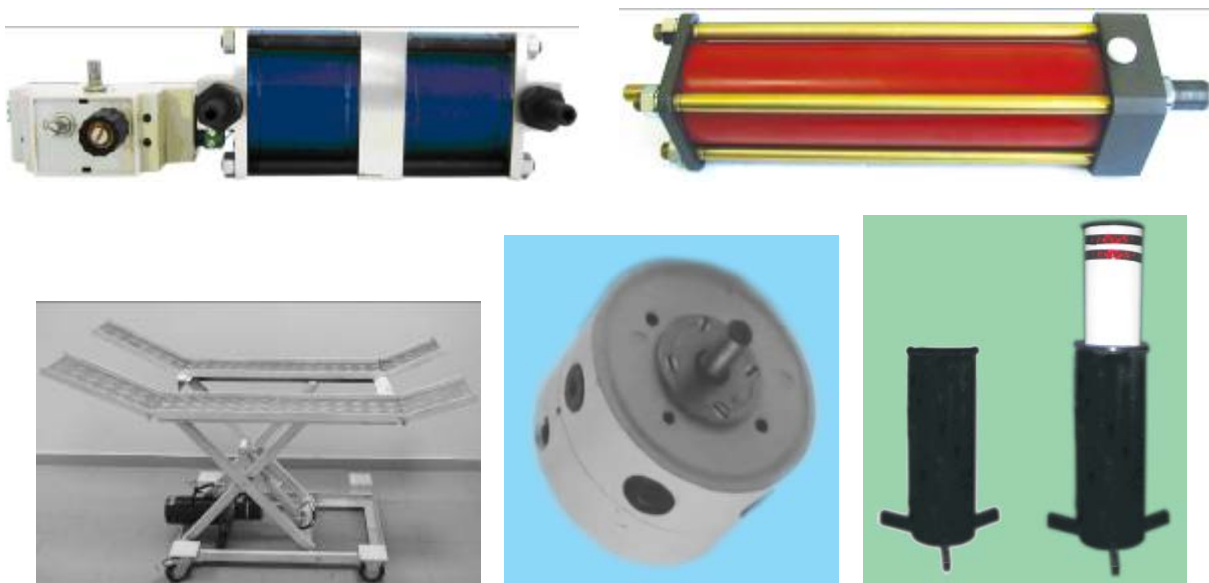


The activities of perspective appertaining to this trend, for the following years, are focused to achieve the following:

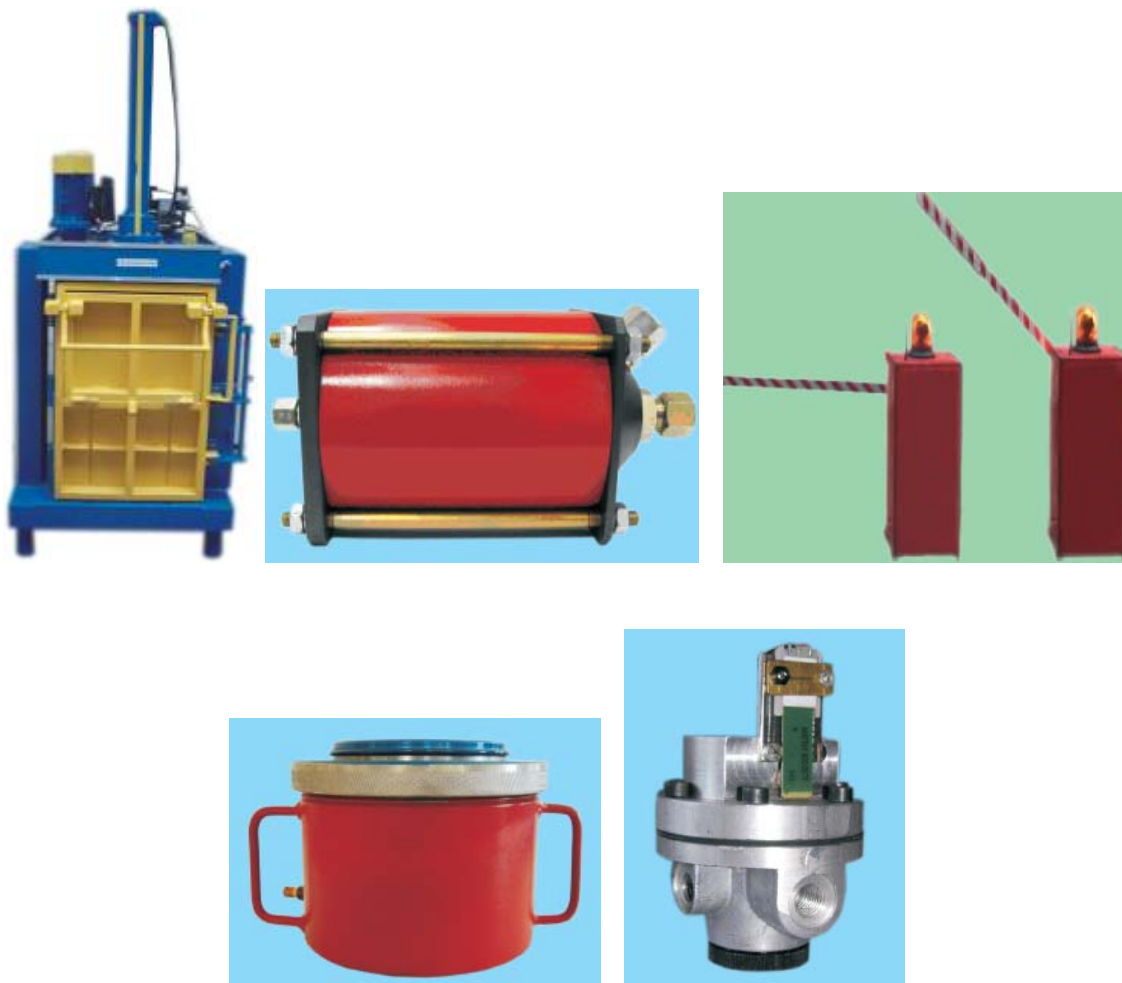
- Studies and research for producing biogas from sediments obtained as a result of treating wastewaters in specialized plants
- Studies for reducing volume and weight of wastes using solar energy and other kinds of green energies
- Studies regarding the use of the wave energy in static applications (installations of conversion into mechanical, hydraulic or electric energy) or in mobile applications (for propulsion or other secondary functions of the naval ships)
- Studies for optimizing kinematic networks from the structure of the eolian turbines by using hydraulic drives
- New methods for the conversion and use of the vegetal waste (from forestry, agriculture), as a raw material for obtaining thermal energy
- Studies regarding the possibilities of using combined two or more renewable energy sources for reducing the energetic consumption from classic sources
- Studies regarding the improvement of the performances of the installations for producing electric energy using hydro resources (small hydropower plants)
- Studies regarding the use of various vegetal waste in installations for producing thermal energy using the intermediary conversion into gasogen

3. **TECHNOLOGICAL TRANSFER**

The technological transfer has as strategically objective the exploitation of the potential represented by research and development activities results by implementing it in production at industrial units.



Technology transfer is seen as the main way of raising the industrial activity, both considering the existence of many high-level scientific results which are not used, as well as low level of activity based on results of scientific research, in general.



The research and development results which can be transferred are both products and technologies obtained in R&D activities.

The activities envisaged in this direction for the next years aim to realize:

- Remote control for operation of hydraulic systems which were transferred in industry
- Management systems of maintenance for extending operation time, which reduces operation costs
- Methodologies for rapid technological transfer from research units to industrial units
- Education of research workers and producers for reducing the time spend in technological transfer
- Promotion in manufacturing of products with higher efficiency, resulting from R&D on national programs and projects
- Development of mixed research partnerships between the institute and enterprises, as the basis of an effective and appropriate technological transfer
- Development of partnerships with institutions of research units and divers organizations in order to advance and support technological transfer possibilities.
- Developing of projects (in national and international programs) which have the objective to accelerate the introduction into production of research results, in hydraulic and pneumatic field
- Large scale dissemination of results of research and development from specialized units which can be introduced in production

As you can see the institute has a wide range of areas in which can enter with original and innovative ideas, which are supported by the patents obtained and applications submitted to the accredited body.

As a interest field of national and international is desired:

- Increased visibility
- Stabilization within the institute personnel and attracting young students in research activities the approach of researches with ending in the technology transfer

GUIDING PRINCIPLES:

- Scientific performance
- Providing knowledge and results to beneficiaries
- Compatibility of the own infrastructure with those of high technical and technological level existent at European level
- Adaptability and flexibility
- Global and unitary vision
- Non discrimination

PRIORITIES:

- The expanding of the capacity of approachment of the complex multidisciplinary research
- The increased acknowledgement of the institute at national and international level by its technical and scientific results and the participation at international projects which to make possible its integration in the European research networks
- The stabilization of its staff and the employment of young researchers
- The development of the research and innovation activities in the regional area
- The creation of an efficient system of evaluation at the level of a coherent unity in the field of the research programmes
- The development of the infrastructure and the connecting to European centers of excellence
- The integration in the European research environment taking into account the thematics of the technological platforms
- The approach of research with finality in the field of technological transfer

Also, the institute hold a micro manufacturing base gathers a team of mechanical workers and one of locksmith and repairing workers. The mechanical workers' group have a large range of equipments (lathes, drills, grinding machines and so on) with which can be worked out and fixed various hydraulic systems such as hydraulic cylinders, pumps, rotary engines, battery directional control valves.

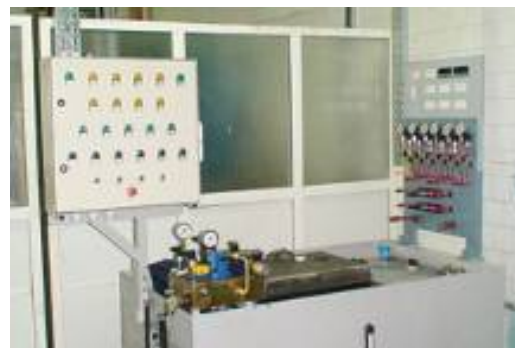


All these are tried and tested in the three accredited laboratories:

- Testing laboratory for high pressure equipment;



-Testing laboratory for hydraulic equipment of medium and high pressure



- Testing laboratory for lubrication equipment and systems



HYDRAULICS & PNEUMATICS RESEARCH INSTITUTE also holds a library comprising over 1000 technical books, collections of journals from the field of hydraulics and pneumatics, electronics and mechatronics, as well as a large number of company catalogues and leaflets.



The results of the research developed within the institute were concretized in a number of 44 patents of invention and 20 applications submitted to OSIM, over 650 technical and scientific articles published in specialized national and international magazines and proceedings

HYDRAULICS & PNEUMATICS RESEARCH INSTITUTE is able to offer a wide range of services:

- Modernization of hydraulically/pneumatically actuated complex devices
- Reconditioning of hydraulic components (pumps, directional control valves, valves, et cetera) as well as complete hydraulic/pneumatic/oil lubrication installations
- Reconditioning of hydraulic/pneumatic installations by replacing the original worn out devices with the equivalent ones
- Reconditioning and adjustment of hydraulic/pneumatic equipment for automation such as servo valves and proportional devices
- Elaboration of technical, technical-economical, marketing studies or marketing research and feasibility studies in the field of fluid and pneumatic power systems

- Technical consulting services in the field of hydraulic and pneumatic drives, centralized oil lubrication, sealing, gauging the water or heat consumption
- Technical survey in the same fields
- Elaboration of operation and maintenance tutorials for driving and automating complex hydro and pneumatic machineries
- Implementing the Quality Management System specific to hydraulic and pneumatic equipment manufacture
- Elaboration and implementation of special computer programs for various activities in the field of hydraulics and pneumatics
- Tutoring rules and schooling on operation and maintenance works in the same field.

You will find usefull information at: **www.ihp.ro**