

HYDROTRONICS, MECHATRONICS AND TRIBOLOGY

THEMATICS:

- 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 energy recovery, conversion and 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 hydraulic-mechanical systems using servo equipment
 - The introduction, implementation and development of modern concepts of hydrotronics, mechatronics and pneutronics as a base for the modernization of hydraulic and pneumatic drive systems
 - Research on optimizing mobile equipment operation by using mechatronics based on informatics, sensorics and electronics specific to hydraulic drives
 - Increased working pressure in drive systems by using new materials in the construction of hydraulic and pneumatic equipment
 - Development of equipment and systems equipped with central and local intelligence for learning repetitive movements or movements performed in some default parameters.

GREEN ENERGIES

THEMATICS:

- Producing biogas from sediments obtained as a result of treating wastewaters in specialized plants
 - Reducing volume and weight of wastes using solar energy and other kinds of green energies
 - 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)
 - 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 heat energy
 - Finding new possibilities of using two or more combined renewable energy sources for reducing the energy consumption from classic sources
 - Improving the performances of the installations for producing electric energy by using hydro resources (small hydropower plants)
 - Use of various vegetal waste in installations for producing heat energy by using the intermediary conversion into gasogen.

TECHNOLOGICAL TRANSFER

THEMATICS:

- Remote control for operation of hydraulic systems which were transferred to industry
- Management systems of maintenance for extending operation time, which reduces operation costs
- Methodologies for rapid technological transfer from research units to industrial units
- Training of research workers and manufacturers for reducing the time spent in technological transfer
- Promoting in manufacturing of products with higher efficiency, resulting from R&D within national programmes 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 between research units and various organizations in order to extend possibilities for technological transfer.
- Developing of projects (within national and international programmes) which have the objective to accelerate the introduction into production of research results, in hydraulics and pneumatics field
- Large scale dissemination of results of research and development from specialized units which can be introduced in production.