Stage II. *Drawing up execution documentation for functional model and specialized software*

Within this stage, ICMET Craiova achieved the execution documentation for experimental model of "*Equipment for stress relieving by mechanical controlled vibrations with a.c. motor, flexible shaft and microprocessor".* It consists in replacing the d.c. motor directly coupled to the vibrator by an a.c. motor coupled to the vibrator by means of a flexible shaft.

The proposed solution offers many advantages; among them the following should be mentioned:

- flexible shaft allows locating more easily the vibrator on the part, and at very long distances from the central unit;
- a.c. motor is reliable and has a low maintenance as compared to d.c. motor

The software was achieved by VIG – SRL and has the following facilities:

- Controls the speed of a motor endowed with eccentric;
- Reads the speed, current absorbed by the motor and amplitude of the vibrations from the acceleration transducer placed on the part to be treated;
- Determines automatically the amplitude peaks from the acceleration transducer;
- Stores the current and speed levels, also the control value for motor speed, either by the confirmation of the operator (in manual operation duty) or by detection of the acceleration peaks (automatic operation duty);
- Allows printing a test report and diagrams of current evolution during the treatment of the selected peaks;
- Allows calibrating the speed input and the current input.

Physical used resources:

- LCD 2x20 characters;
- 3 analogue inputs (current, value corresponding to the number of revolutions per minute, vibration amplitude);
- Voltage output (ports CMD_DATAL, CMD_STROBE) with a value adjusted to 12 bits (0-4096 characters);
- Output for activation/de-activating an inverter;

- Keyboard 4x4 keys (in port P4);
- Real time clock (offers the tact for measuring the part treating time);
- timeKeeper (for completing the time related information from the test report of the part).

In Annex 2, the overall assembly of the functional model is presented.