This paper presents a proposed IT-Tools concept for modeling, simulation, analysis and design of water hydraulic actuators for motion control of machines, lifts, cranes and robots. The designed test rigs have tap water hydraulic components of the Danfoss Nessie® product family and equipped with a measurement and data acquisition system. Results of the mathematical modeling, simulation and design of the motion control test rigs are presented. Furthermore, the paper presents selected experimental and identifying test results for the water hydraulic test rigs.