


- Project Title: **Design and Implementation of MFL Intelligent PIG for Oil and Gas Pipeline Inspection**
- Executive Organizations: University of Tehran (College of Engineering), Segal Pardazesh Engineering Company (SegalTech)
- Executives: Dr. M. Kamarei, Dr. M. Mansub Bassiri
- Collaborator Organizations: National Iranian Gas Company (NIGC) as main Financial Sponsor and Supplier -Middle East Petrogas Company (MPG)

Abstract:

MFL intelligent PIG is a smart tool that travels inside the oil and gas pipeline in association with the fluid stream and inspects the pipe wall carefully and extracts all anomalies, corrosions and defects of the pipeline. This method is one of the best and most common methods in oil pipeline inspection in the world. Intelligent PIG passes through the pipeline using the pressure of fluid while it magnetizes the pipe wall intensively. In this circumstance, when an anomaly or corrosion exists in the pipeline, the magnetic flux leakage occurs near the defect. The pattern and intensity of the flux leakage are measured by the different sensors mounted on all around the MFL PIG. The acquired data are stored in special solid-state memories and logged into the powerful workstation after the completion of pipeline inspection. Obtained signals are processed and recognized using advanced pattern recognition algorithms and the features of pipeline defects are extracted. These features are length, width, depth, shape, kind and exact location of all defects. Since the pressure of the fluid is very high in the pipeline (about 100 bar), the design and implementation of electronic and mechanic parts of the MFL tool is hard and challenging work. This project was accomplished in 3 years with collaboration of large number of expert people in the industry and universities.