**Introduction**

Process identification is an important stage in modern model-based controller installations. Several techniques exist for this identification, and the problem is that the procedure for introducing disturbances into the system to allow for identification is very time consuming, requiring both engineering time and time on the plant. The objective of this project is to develop a stepper which can keep a plant within control limits while stepping automatically. This research is limited to identification of linear processes with white noise, the existence of non-linearity do not affect the outcome of this research project.

The need for process identification may rise from a “black box” problem where the concerned process is poorly understood or too complex.

Several algorithms or methods exist for identifying processes and some have advantages and disadvantages. Identification is classified into two categories; the off-line and the online identification, an off-line identification involves the collection of the sampled processes information such as the process input signal and the process variable, the subsequent step being the mathematical manipulation of data in order to come up with adequate parameter estimates of the process, the off-line technique is sometimes referred to as the classical technique. In contrast to off-line identification, online identification involves the collection of the most recent process data in order to update the estimated process parameters, the online procedure is recursive and is often referred to as the recursive identification. However, not all identification algorithms will converge to true values under certain conditions.