Reliability" is one of engineering indicators for describing theperformance of an item or system by probability functions. Reliability is defined asthe probability that an item or system is capable of performing, its intendedfunction in a specified time under given working conditions. Modern industry haveproperty of contrast and fastness of products development, so that the high coststhat occur because of failure machines due to failure, Therefore analysis reliabilityis an important factor from point of view of the factory managers and the costumer.This research focuses on studying and evaluating the reliability of one ofproduction system factory as a basis to study the reliability of systems and theways of calculate it, which consist of:A) Failure Data collection .B) Failure representation, simulation and drawing graphically the histogram andprobability plot in order to calculate Time To Repair TTR and TimeBetween Failure TBF.C) Calculate the β-value of weibull distribution for the plant.D) Analyzing the charts to determine the age stage from parts and to calculatethe optimistic prediction maintenance time.E) Analyzing the effect of failure mode in order to calculate the Risk no.estimation.Data analysis has been done with support a computer aided program. Itsclear from the analysis of the data of the plant for Kiln and some components ofdepartment, are in the third (last stage) of their cycle life, which is the wear-outand aging stage . This is due to the β-value of weibull distribution. Which was β=3.87 so that we focus more on the analysis's of their data as a case-study for thefactory.