PT. YTL East Java is a part of Steam-powered Power Station (PLTU). In the process to produce electricity, PLTU Paiton uses coal. Coal before comes unto Bunker enters Tripper Floor. At Tripper Floor a lot of coal dust that can labor activity and environmentally. Based on SNI 19-0232-2005 and based on American Conference of Government for Industrial Hygiene (ACGIH), the coal dust at Tripper Floor exceeded from the Particulate Permissible Exposure Limit (PEL). Therefore the controlling of coal dust is needed. The controlling effort can be done by engineering control. Identification result by use of Fault Tree Analysis (FTA). Planning engineering control coal dust that can be done is (design of coolant system on The Dusting Filter with cooling water). From the calculation, it can be found that was gotten to energy water (Pw) 88,05 is hp, axis energy (P) is 125,79 hp, actuating nominal energy beginning (P_m) is 158,89 hp, so energy specification pumps electric which is chosen 225 Hp, energy specification diesel pumps is 225 Hp. Piping system is designed by using suction pipe, discharge pipe, branch pipe with total head of 122,26 m. Water volume that can stream through pump is 3299,92 liter/minute. For temperature decrease, every digit of time in design of coolant system with water debit 0,055 m^3/s it known by its temperature decrease is 0,70 C/s.