PT. Barata Indonesia (Persero) is a company engaged in fabrication and manufacturing in Gresik, East Java. These companies have the 4 (four) workshops or production division and a division of EPC which focus on activities that have different work. One of its divisions engaged in the production of steel casting. In the foundry division that located in workshop 1, there is shakes out activity. Vents on the unit can not minimize the dust that produced by the shake-out machines, so disrupt the workers. Based on the available exposure measurements made in the area shake out the dust is 14 mg/m\(^3\) based on SNI 19-0232-2005 which exceeds the allowable value, that is \(10 \text{ mg/m}^3\). To control the exposure of dust at shake out area, it is needed a control engineering that is design a dust collector wet scrubber type. In designing dust collector, needs to designed of dust duct, calculate the power blower, the dust reservoir, sprinkler as a means to spray water to keep dust settles, the water pipe to supply the sprinkler, the calculation of power water pumps, water tanks and determination of the mask if the dust can't be controlled. From the results obtained design and calculation of \(0.5 \text{ m} \times 0.5 \text{ m} \) diameter duct with a power blower \(4.9165 \text{ Kwatt}\). The dimensions of the reservoir dust \(p = 3 \text{ m}, l = 3 \text{ m} \) and \(t = 5 \text{ m}\). Sprinklers for fire hazard with a mild discharge \(225 \text{ l/min}\) and a pressure of \(2.2 \text{ kg/cm}^2\). Diameter of 1.5 inch water pipe. With the power of water pump \(375.3052 \text{ Kwatt}\). PPE to be used is the mask.