## ABSTRACT

**SIMULATION OF GASEOUS POLLUTANTS AND PARTICULATES MOLECULES DISPERSION MODELING IN CEMENT FACTORY USING SOFTWARE MATLAB 7.12**

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It has been designed the computer application for visualization of the gas pollutants pattern and particulate molecules pattern from fume stacks of cement industry. The location chosen to implement this pollutant dispersion modeling is Steam Power Plant of Tarahan, South of Lampung with environmental data (ambient temperature, wind direction and wind speed) were directly obtained from field measurements. This application is available in the form of simulations with a wide range of input data parameters namely wind speed, atmospheric stability, emission rate-point source, stack exit temperature, ambient temperature, height and diameter of fumes stack and the simulation results are presented in the form of figures, graphs of two-dimensional and three-dimensional and the choice of the form of graphs. The mathematical model is used to model the spread of pollutants is a Gaussian-type dispersion model assuming a point source pollutant dispersion coming from fumes stack, the dispersion takes place in steady-state conditions and no chemical reactions that occur in the air. From the simulation results show that the smaller the value of the temperature change ( $\Delta T$ ) between the temperature in the chimney with air temperature around the chimney, the diameter of the center of the length distribution pattern and plume rise is getting smaller. Then the greater the wind speed, the more narrow dispersion pattern of pollutants and pollutant concentration value at distribution centers is increasing.



**Keyword.** *Simulation, air-polution dispersion, Gaussian Plume Model, matlab*