

INTISARI

Telah dilakukan penelitian pengkajian model prediksi pola dan distribusi sebaran NO₂ menggunakan model-K dengan metode beda hingga. Upaya pemantauan kualitas udara yang sering dilakukan dengan metode pengukuran langsung, diperlukan lebih banyak biaya dan waktu. Sehingga dipergunakan model prediksi untuk mengetahui pola dan distribusi sebaran pencemaran. Model-K berbasis pada persamaan difusi dan aliran gas, metode penyelesaian model secara numerik dengan beda hingga.

Sumber pencemaran NO₂ berasal dari cerobong asap PT. Fumira Semarang. Hasil perhitungan numerik dan peta Isokonsentrasi hasil prediksi dikerjakan dengan pemrograman MATLAB versi 6.1. Nilai konvergensi numerik yang dipergunakan $dx=dy=20$ m dan $dt=0,5$ detik, dengan waktu simulasi 3600 detik dan luas daerah simulasi 1000 m x 1000 m.

Pola dan distribusi sebaran yang dihasilkan dipengaruhi kondisi stabilitas udara daerah penelitian, yang berpengaruh pada luas sebaran NO₂ di atmosfer. Kecepatan angin berpengaruh pada arah dan luas sebaran NO₂ serta nilai konsentrasi NO₂ di titik pantau. Hasil prediksi konsentrasi NO₂ di titik pantau I adalah 19,82 $\mu\text{gr}/\text{m}^3$ ketika angin bertiup dari Timur Laut dengan kecepatan dominan 3 m/dt, 67,49 $\mu\text{gr}/\text{m}^3$ di titik pantau II ketika angin bertiup dari Utara-Timur Laut dengan kecepatan dominan 1,5 m/dt dan 12,16 $\mu\text{gr}/\text{m}^3$ di titik pantau III ketika angin bertiup dari Utara-Barat Laut dengan kecepatan dominan 2 m/dt.



ABSTRACT

Study on "The Modelling for predicting distribution of NO₂ dispersion system use K-Model with a finite difference methods" has been conducted. Usually, Air pollutant monitoring have been done by measuring the air pollutant concentration at each point, this method needed a lot of time, staff and cost. So, the predicting model used to know distribution of the dispersion air pollutant system. K-Model based on diffusion and flow gas equation, and also used numeric methods with finite difference methods for making solution of the model equation.

Air pollutant (NO₂) which come from plume of PT. Fumira Semarang. Numeric computing and mapping of predicting isoconcentration done with MATLAB version 6.1 program. Value of numeric convergent are $dx=dy=20\text{ m}$ and $dt=0.5\text{ second}$, the simulation time is 3600 second and the width of simulation zone is 1000 m x 1000 m.

The dispersion system from the research, influenced by atmosphere stability and velocity of wind. The atmosphere stability influence on wide of dispersion NO₂ at the atmosphere. The direction and velocity of wind influence on direction and width of dispersion NO₂ and also concentration value of NO₂ at a monitoring place. The result of this research are : at the place of monitoring I are $19,82\text{ }\mu\text{gr/ m}^3$, when direction of wind come from North East with the dominant velocity are 3 m/s, and at the place of monitoring II are $67,49\text{ }\mu\text{gr/ m}^3$, when direction of wind come from North-North East with the dominant velocity are 1.5 m/s, and also at the place of monitoring III are $12,16\text{ }\mu\text{gr/ m}^3$, when direction of wind come from North-North West with the dominant velocity are 2.0 m/s.