

**MODEL MATEMATIKA PERUBAHAN SUHU DAN KADAR AIR IKAN
LEA (*Ilishamegaloptera*) SELAMA PENGERINGAN MENGGUNAKAN
PENGERING HIBRID TIPE RAK BERBAHAN BAKAR BIOMASSA**

INTISARI

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Penelitian ini dilakukan untuk mengevaluasi proses pengeringan ikan asin Lea (*Ilisha megaloptera*) menggunakan pengering hibrid dan penjemuran langsung. Evaluasi proses yang dilakukan meliputi perubahan suhu dan kadar air, penentuan koefisien perpindahan panas ikan asin, penentuan konstanta laju pengeringan, dan kualitas ikan asin (uji *Total Plate Count (TPC)*, kadar garam, uji warna, dan kadar abu tidak larut asam) dalam dua variasi kecepatan udara. Perlakuan dua variasi kecepatan udara 0,33 m/s dan 0,14 m/s menghasilkan debit aliran udara *blower* sebesar masing-masing 0,0008 m³/s dan 0,0003 m³/s. Proses pengeringan hibrid dilakukan selama 10 jam dengan kapasitas bahan 18 kg berbahan bakar biomassa, sedangkan penjemuran langsung dilakukan selama 3 - 4 hari dengan kapasitas bahan 2 kg.

Dari analisis data, diketahui bahwa kisaran suhu ruang pengering sebesar 30,3°C – 43,1°C dan suhu bahan sebesar 30°C – 66,8°C. Nilai koefisien perpindahan panas konveksi pengering hibrid pada variasi 1 sebesar 2298,36 W/m²°C dan variasi 2 sebesar 1849,90 W/m²°C. Proses pengeringan hibrid dapat mengeringkan ikan asin dari kadar air 71,06% (*wb*) menjadi 1,33% (*wb*), sedangkan pada penjemuran langsung dari kadar air 65% (*wb*) menjadi 15% (*wb*). Nilai konstanta laju konstan dan menurun pengering hibrid variasi 1 sebesar 0,0086%/menit dan 0,0083%/menit, sedangkan variasi 2 sebesar 0,0063%/menit dan 0,0062%/menit, lebih tinggi dibandingkan penjemuran langsung pada kisaran 0,0026%/menit – 0,0029%/menit dan 0,0023%/menit – 0,0027%/menit. Hasil uji analisis kualitas ikan asin lea menunjukkan bahwa tidak ada perbedaan kualitas yang signifikan antara pengering hibrid dengan penjemuran langsung.

Kata kunci : pengering hibrid, penjemuran langsung, ikan asin, ikan lea, kadar air, debit aliran udara, laju pengeringan, kualitas ikan asin

**MATH MODEL OF TEMPERATURE AND MOISTURE CHANGES OF
LEA FISH (*Ilisha megaloptera*) DURING DRYING USING
BIOMASS FUELED RACK HYBRID DRYER**

ABSTRACT

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This study was conducted to evaluate lea salted fish (*Ilisha megaloptera*) drying process using hybrid dryer compare to conventional direct sun drying. The evaluation was measured on temperature, moisture content, salted fish heat transfer coefficient, constant drying rate, and its quality (*Total Plate Count (TPC)* test, salinity, color test, and acid insoluble ash content) in two variation of air velocity 0,33 m/s and 0,14 m/s which generated air flow blower of 0,0008 m³/s and 0,0003 m³/s. Biomass fueled hybrid drying was conducted for 10 hours at 18 kg capacity, while direct sun-drying need 3 - 4 days at 2 kg capacity.

The results of data analysis showed that the range of room temperature was 30,3°C – 43,1°C, while the range of material temperature was 30°C – 66,8°C. Convection heat transfer coefficient of hybrid dryer of variation 1 and 2 were 2298,36 W/m²°C and 1849,90 W/m²°C, respectively. Drying process using hybrid dryer was able to dry salted fish from moisture content of 71,06% (wb) to 1,33% (wb), whereas direct sun-drying did from 65% (wb) to 15% (wb). Constant and declining drying rate of hybrid dryer in variation 1 was 0,0086%/minute and 0,0083%/minute and variation 2 at 0,0063%/minute and 0,0062%/minute, significantly higher than direct sun-drying of 0,0026%/minute – 0,0029%/minute and 0,0023%/minute – 0,0027%/minute. Salted lea fish quality analysis showed no significant difference of salted lea fish quality dried using hybrid dryer and direct sun-drying.

Keywords: hybrid dryer, directly drying, salted fish, lea fish, moisture content, air flow rate, drying rate, the quality of salted fish