Hot Air-assisted Continuous Infrared Dryer for Fish and Fishery Products

Salient features	➢ A hot air-assisted continuous infrared radiation based drying system (80 kg/day) was developed for drying of fish and fishery products ➢ The developed continuous hot air-assisted infrared dryer was found to be the most suitable dryer for all fish drying in combined IR-HA mode of operation than HA and IR drying. ➢ The drying operations were carried out at infrared intensity of 3000 W/m^2 and 60°C hot air inlet temperature in the pilot scale infrared dryer.
Advantages	✓ IR heating allows more uniform heating resulting in better quality characteristics of dried products than other drying methods. ✓ The drying time of 2.5 h was observed for shrimp, 3 h for anchovy and squid rings and 4.5 h for clam. ✓ The drying of fish in IR-HA drying is quicker and superior quality product in terms of physical, sensory characteristics and proximate composition.
Specifications	Specifications such as Output capacity: Dried fish production is 20 kg/day (25%) Weight: 250 kg Manpower requirement: 1 No. Shelling efficiency: N/A Others (as per the equipments/project) a) Saving of water, labor, time and energy - Saves the time by reducing the drying time (50%) than existing dryers b) Capacity - 80 kg/day c) Efficiency - 18 – 20% d) Cost effectiveness including B:C ratio - B-C ratio - 3.50; Pay-back period – 0.52 year

Hot air-assisted Continuous Infrared Dryer

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More information	**Status of commercialization / Patent / Publication** **Design registration:** Certificate of registration of design has been received with design no. 341136-001 dated 20.03.2021 in class 15-05 in respect of "Hot Air Assisted Continuous Infrared Dryer" **Publications** 1. Delfiya, D. S. A., Prashob, K., Murali, S., Alfiya, P. V., Samuel, M. P., & Pandiselvam, R. (2021). Drying kinetics of food materials in infrared radiation drying: A review. Journal of Food Process Engineering. 45(6): e13810.

https://doi.org/10.1111/jfpe.13810

2. Aniesrani Delfiya, D. S., Sneha, R., Prashob, K., Murali, S., Alfiya, P. V., & Samuel, M. P. (2021). Hot air-assisted continuous infrared dryer for anchovy fish drying. Journal of Food Process Engineering. 45(6): e13824. https://doi.org/10.1111/jfpe.13824

3. Prashob, K., Aniesrani Delfiya D. S., Murali, S., Alfiya, P. V. & Samuel M. P. (2022). Drying of shrimp using hot air assisted continuous infrared drying system. Journal of Food Processing and Preservation. 46(9): e16364. https://doi.org/10.1111/jfpp.16364

4. Aniesrani Delfiya, D. S., K. Prashob, S. Murali, P. V. Alfiya, Lekshmi R. G. Kumar & Manoj P. Samuel (2022) Design and Development of Hot Air-assisted Continuous Infrared Drying System for Shrimps, Journal of Aquatic Food Product Technology, 31:4, 361-373, DOI: 10.1080/10498850.2022.2048158