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### Structural and heat transfer modelling of lighter expanded polystyrene boxes

Discussion about the environmental impact of single use plastic packaging has increased during recent years. Due to its high insulation value and strength to weight ratio, expanded polystyrene (EPS) boxes are the industry standard for packing fresh fish and the recommended choice worldwide, especially in case of poor temperature control during distribution. EPS boxes are available in different size ranges but the most common ones are designed for 3 to 25 kg of fish. For packing fresh, whole salmon, typically 20-22 kg of fish is packed with 4-5 kg of ice or ice packs on top in an EPS box with volume capacity of around 40 L and weight of around 650-900 g. The aim of the project Lighter salmon box is to integrate the methods of computational heat transfer modelling, structural analysis and laboratory experiments and in the real supply chain in order to improve the design of expanded polystyrene boxes used for export of fresh, farmed fish. The effects of decreased EPS density on strength and insulation are also studied. The cooperative

partners are University of Iceland, the largest fresh fish box manufacturer in Iceland, Tempra Ltd., and the largest farmed fish exporter in Iceland, Arnarlax Ltd. The higher order objective is to decrease the environmental impact of fresh fish packaging.



### Biography

Bjorn Margeirsson is a mechanical engineer holding an MSc degree from Chalmers University of Technology in Gothenburg, Sweden and a PhD from University of Iceland since 2012. He serves as Assistant Professor at the University of Iceland since 2016 and Research Manager at the plastic manufacturers RPC-Saeplast and RPC-Tempra in Iceland since 2013. He has been involved in research, development and teaching within the field of heat transfer modelling, fresh fish processing, packaging and transport for 10 years.

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