



Application of water jet cutting in processing of cod and salmon fillets

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Objectives

The focus of the study was to establish knowledge on water jet cutting of fish that could be utilized in the design of Flexicut. Flexicut is a water jet cutting technology developed for white fish with focus on cod. Is able to cut different shapes and curve cut. The relationship between water jet cutting conditions, fish species, physical properties and temperature of fish fillets was studied. Cod and salmon fillets were tested by applying different pre-cooling methods and the fillets cut either with or without skin. The main criteria for success in water jet cutting were the cutting efficiency and edge quality, including if the water beam was able to cut through muscle, connective tissue and skin.

Materials and methods

The experimental period was from March to November 2013, cod fillets were obtained from the fish processing company Eskja hf. and the salmon (farmed) from Kalmanstjörn in Reykjanes. The cod was in most cases caught by Norðfjörð or right east of Norðfjörð. The fish was in most cases about one day old when processed. The fish fillets were weighed before after the cut to see the weight loss. Each cut was evaluated to see if the water beam was getting through the fillet or not.

Results

The results showed that the transverse speed (cutting speed) was the most important factor when it comes to quality of cut since saw dust (saw mince) increased in fillets with increasing transverse rate. The connective tissue was the main problem in the tail portion of the fillet for cutting efficiency especially for cod fillets. Super-chilling prior to cutting resulted in better cutting and less saw dust. It was more important for salmon fillets compared to cod fillets regarding skin cutting quality and through the tail cut, if the fillets were superchilled.

