The use of cfd to improve the performance of refrigerated cabinets for food products preservation

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Maintaining food temperatures below critical values is the key to maximizing the high quality warranty life of refrigerated food products. The paper presents a comprehensive CFD (Computational fluid dynamic) method which can be used to optimize and redesign the performance of refrigerated display case. CFD modelling has the advantage of virtually testing of temperature distribution into interior space of refrigerated display case before introducing the real food products for being kept into. CFD method is important because could show simultaneously the temperature in two or three dimensions on different regions from the display case, which is practically impossible to do by classical methods (temperature measuring with temperature transducers). The CFD simulations applied for a refrigerated cabinets with four shelves were initial calibrated with experimental dates, while later the dates obtained by simulation were compared with the experiment in other measure points from refrigerated cabinet inside. In this kind was realized an error level testing of CFD simulation. The obtained results were of ± 5% error, which is an accepted level in the field of heat transfer and fluid flow.