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Importance of Automation in the UK Dairy Industry

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Margins are very slim in the Dairy Industry, and companies in the United Kingdom have been competing to reduce overhead costs and improve yield. Therefore, the demand for automation in the dairy industry is increasing. This article offers a brief comparison between a fully automated modern dairy, and a manually operated dairy in the UK. At primary production, the effect of automated milking parlours on the quality and yield of raw milk are examined. Automation has also assisted the implementation of rigid traceability systems in the dairy industry, through MIS and SCADA systems. As the industry moves towards an integrated supply chain, the benefits of automation on the traceability of the product from source to consumer are discussed.

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Role of artificial intelligence techniques for modelling a new generation of highly efficient and intelligent district heating systems

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The innovations and emergence of new technology impose energy systems to face a challenge in adapting to customers' more flexible and individual solutions. Consequently, one needs to know more about what drives customers' requirements, choices and priorities. The next generation district heating system promotes the idea of Total Thermal Comfort. In this case, the customer facility is equipped with cutting-edge technology (installation, operation and service) by the energy suppliers and puts the customer in a position to take full responsibility on heating adjustments and optimization with the help of visually simple and inspiring user interface in the form of apps to smart phones, tablets and PCs. In line with these objectives, in our research we motivate the use of optimal control of energy distribution in a district heating system as a mean to increased energy efficiency. We postulate that with a well-learned optimal control of some parameters, higher energy efficiency will be achieved in the district energy network. Motivated by the fact that for developing a new generation of highly efficient and intelligent district heating systems, the customer behavior is very critical, this talk will cover our framework, which is related to the application of artificial intelligence techniques, such as supervised machine learning algorithms for predicting the heat load on the consumer side. In order to obtain an accurate prediction of the heat load, there is a need for computational models that can be incrementally updated to capture changes in the heat load over time and hence can adapt to the predicted heat load changes. Lastly, we will also be discussing on the possible related parameters, which influence the operation of district heating systems and for the impact of intelligent smart wireless networks and innovative interfaces in promoting energy efficiency through changing and strengthening of supplier-customer relationship in the district heating sector.

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