

## Disposition of algorithm for conductivity data assessment – A/S S.A. Christensen & Co.

### Company description:

S.A. Christensen is a family owned company, which was founded in Kolding all the way back in 1938. Through the years the company has evolved into an internationally oriented production and trading company, which exports milking equipment and milking parlours etc. to more than 65 countries all over the world. Thus today SAC is one of the largest specialized manufacturers of milking equipment in Europe, and today the export makes up 60% of the total turnover.

SAC constantly performs intensive development and research both internally in the organisation and in cooperation with Danish as well as foreign research centres, farmers, consultants and veterinarians. This is done to ensure products of the best quality possible and in order to live up to the vision of: "If there is anything we can do for the good of the cow, the milk or the operator, we will do it", it is due to this that this project has arisen.

### Project description:

In traditional milking a cow is pre-milked into a control cup, which allows the milker to control whether the milk has normal appearance or is lumpy, which is the case if a cow has mastitis, thus the milk cannot be delivered for consumption. However, with the increasing automation and use of milking robots that takes place today, it is so that the milker has no opportunity of checking the milk through a pre-milking. Thus conductivity measurements through sensors are used on each of the 4 milking glands, which are to determine whether the milk contains lumps. Unfortunately it is so that this method of conductivity measurement only finds 40-50% of the cows that have mastitis, and at the same time up to 10% of the good milk is discarded.

Thus SAC's problem is that authorities demand that 70% of milk containing lumps is discarded, while farmers of course do not want any of the good milk to be discarded. A way of solving this problem is through a more precise method of milk separation. *Thus, we wish to get access to people, who through mathematical models and filters are able to produce algorithms, which are capable of assessing conductivity data from every gland in preparation for discarding lumpy milk. In order to discard in a more fool proof manner it is possible to supplement conductivity data with additional information such as age of the cow, mastitis history etc.*

As an aid for solving this problem SAC has collected conductivity data while registering lumps in the milk and making several other different tests. Furthermore, the company has collected miscellaneous scientific articles on the subject and will also provide the student(s) with access to existing algorithms.

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