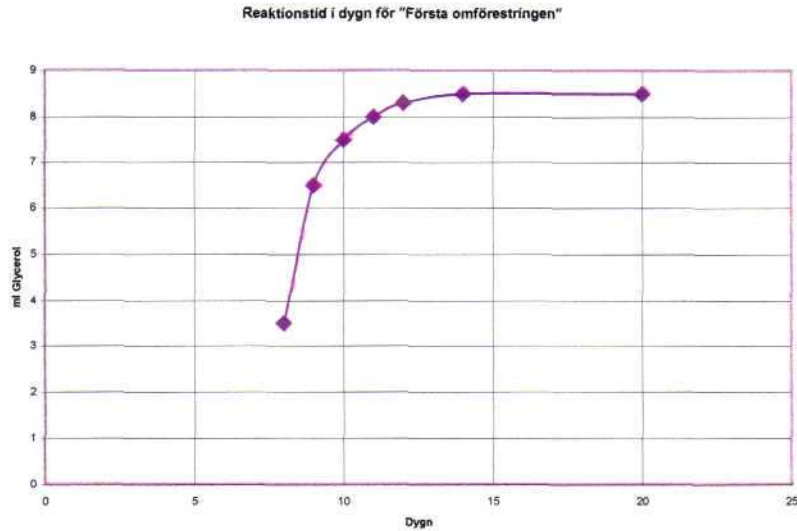


Report on Cold Process reactions.

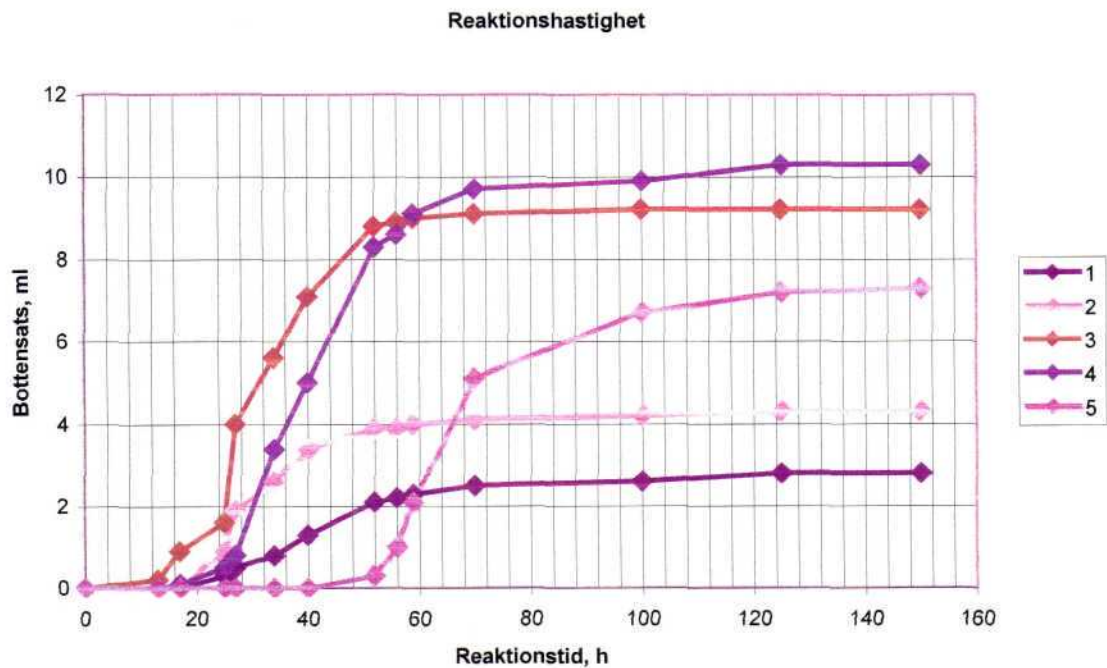
First successful laboratory experiment of transesterification, according to 1G, First generation as Cold Process, became a reality in 1984.

The graph illustrates how much glycerin formed during the reaction. The reaction time is estimated to be 14 days.



The Cold Process was refined in the following years and several analytical methods and technologies developed in parallel to the process.

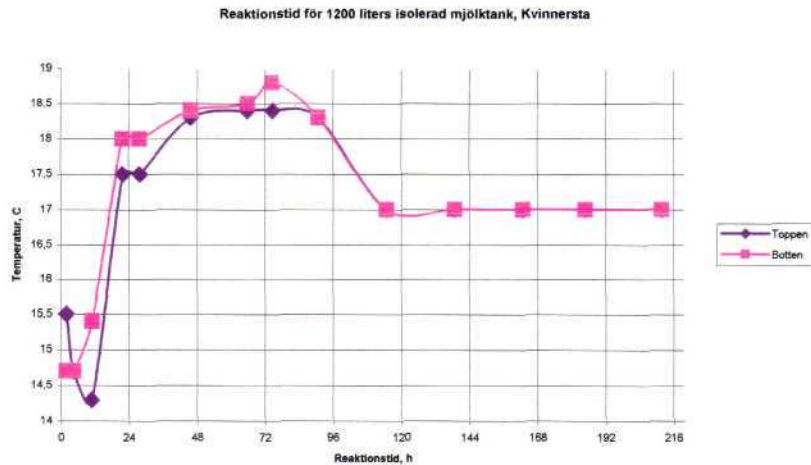
This graph illustrates also how the yield changes with different techniques. The reaction time is estimated to be 5 days or more.



1993 was the first major experiment at Kvinnersta Gymnasium to transesterificate Rapeseed oil in to RME, G2.

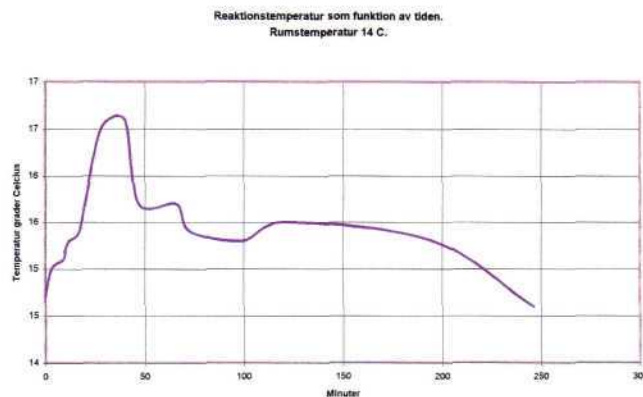
A well-insulated milk tank of 1200 liters was used, with the ability to read liquid bottom- and surface-temperature with an accuracy of ± 0.1 C. The reaction time is estimated to be 3,5 days. It should be noted that the room temperature has been deliberately put on an extreme low level (14 C).

Blue - Top
Red - Bottom



4G Fourth generation as Cold Process running as fast that it becomes impossible to measure glycerol outcome of the trial. In contrast, it is fine to measure the temperature rise that occurs in the transesterification. The mere mixing of the components in the trial, such as oil, methanol catalysts and other chemicals takes just over a minute to complete.

The reaction time is estimated to be 36 minuter and if you perform experiment at room temperature (21 C) transesterification occurs in 18 minutes. At Mediterranean climate (28 ° C), it takes 9 minutes and at the equator (35 ° C) for 4 minutes. The room temperature remains 14 C.



Today (2014) Cold Process has an extreme fast response time, less than 3 minutes at 14 ° C room temperature and when it comes to G5, we are talking about seconds.