

Multi-Variable Quality Control and Optimization for In-Line Blending - ANAMEL

Application: ANAMEL software is an on-line software dedicated to perform the multi-variable control and optimization of finished product quality.

Strategy: ANAMEL brings blends to target specifications based on feed back from on-line analyzers (ASTM ones or NIR spectrometer) while staying as close as possible to the initial optimal blend recipe. It also optimizes the blend by re-computing the optimum recipe given by the scheduling by minimizing or maximizing the usage of one to two blend components or constraining the recipe within limit values.

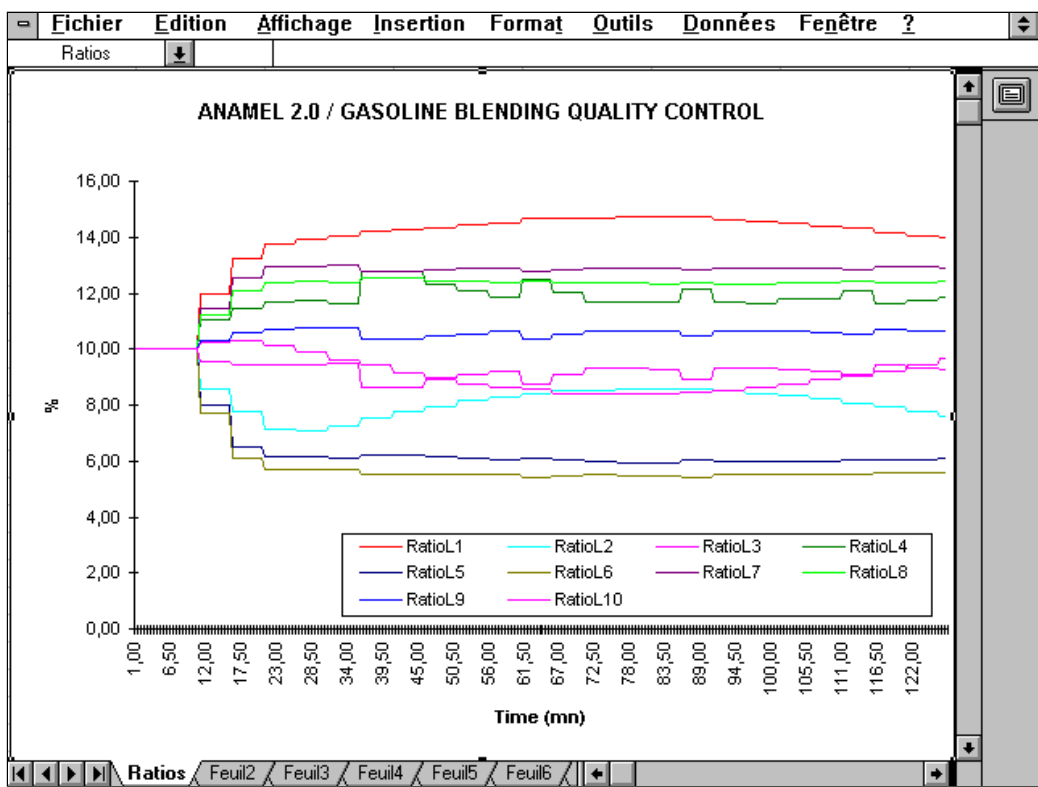
Main features: The main features of ANAMEL are:

- on-line modification of component flow ratios (given in the initial blend recipe) to cancel any deviation between the blend quality setpoint and the currently measured and cumulated value of blend qualities,
- on-line modification of the component flow ratios to reach optimization objectives such as maximization / minimization of one or two blend components or constraining the blend recipe within maximum/minimum limits,
- performance of blend quality multi-variable control while keeping unmodified the initial ratio of one of the blend components,
- monitoring of the blend qualities that cannot be controlled so that those qualities do not exceed pre-defined limits,
- real-time computation of blend component dead time,
- automatic stopping of the multi-variable control when hydraulic limits of equipment are reached
- control of additive injection for gas oil,
- identification and optimization of the action of non-controlled additives,
- real-time follow up of blending and blend logging.

Economics: ANAMEL has been successfully applied to the control and optimization of gasoline, middle distillates, and fuel oil. It can be easily interfaced on the top of third party ratio control software and also easily fed with inputs from third party scheduling / planning or optimization systems. Major tangible benefits consist in minimization of quality give away, lowest cost blends manufacturing, elimination of re-blending, reduced inventory requirements, improved information flow.

Commercial installations by TECHNIP: Recent ANAMEL installations are ADNOC TAKREER Umm Al Nar refinery (UAE) and ELF-MIDER LEUNA refinery (Germany). ANAMEL is successfully operated since several years, in the three ELF ANTAR FRANCE French refineries and in BP Lavéra (France).

An example of ANAMEL display for ratio control



An example of ANAMEL display for quality control

