



Adisseo's plant in Commentry, the birthplace of methionine production.

Adisseo: An 80-year-old dedication

From its days as AEC in the synthetic era of the 1940s, Adisseo has kept its competitive edge that has since extended to the Far East

By NGAI MENG CHAN

The development of methionine, like those of many other industry chemicals, was accelerated by the necessities created by World War II.

French feed additive company AEC, which was later to become Adisseo, wanted better feed for livestock to provide people better food. In 1945, it became the first company to successfully synthesise DL-methionine.

Nearby in war-ravaged Germany, large-scale synthesis of DL-methionine was taking place for another noble purpose – to treat nutritional edema (from chronic protein insufficiency) in soldiers returning home from the war.

The first technically feasible synthesis of DL-methionine at Degussa was achieved by Werner Schwarze,

Hans Wagner and Hermann Schulz around 1946 to 1947.

Today, the powder-form DL-methionine and the liquid-form hydroxy-analogue methionine are produced by many leading American, Japanese and Korean companies, including Novus, Sumitomo Chemical and CJ.

Sixty years on, and going strong

The second largest producer of feed-use methionine in the world, Adisseo has been producing its DL-methionine product Rhodimet® NP99 for over 60 years from two plants in France – at Roches-Roussillon and Commentry. Adisseo and its predecessor AEC have had a long history of methionine production in Commentry,

About methionine

- L-methionine is the biologically active form of methionine found naturally in crop or animal-based feeds
- DL-methionine is synthetic and contains equal numbers of D-methionine and L-methionine molecules. D-methionine can be converted to L-methionine by enzymes in livestock.



AEC's birthplace.

Adisseo has also been producing DL-hydroxy methionine product, Rhodimet® AT88 for nearly 25 years. >>

Rhodimet® AT88 is produced in the company's Burgos, Spain, and Nanjing, China, plants.

The Nanjing plant was inaugurated towards the end of 2013, with production increasing progressively in 2014. It got FA-MI-QS certification last December. FAMI-QS is the internationally recognised quality and safety reference system, and certification system for specialty feed ingredients.

Two market segments

Powder DL-methionine is the common choice among pre-mixers and small feed millers. Integrators and large feed millers, however, find the liquid form, DL-HMTBA, more economical.

DL-HMTBA has a lower market share, estimated at only 40% at the moment. But industry leaders see the trend shifting towards it globally, although the US seems ahead in embracing DL-HMTBA.

According to an eFeedLink survey, over 70% of methionine production capacity in the US is DL-HMTBA.

Adisseo serves both segments of the market. In markets with big feed millers and integrators, DL-HMTBA has a market penetration rate of more than 60% in countries that include the US, Brazil, Thailand, Malaysia, France and Spain.

In markets dominated by small and medium-sized feed mills, such as Russia, India, China, and the Philippines, its penetration rate varies considerably due to equipment costs. However, with the increasing availability of simple and affordable application systems, many smaller feed mills are choosing DL-HMTBA.

The powder form Rhodimet® NP99, which contains 99% DL-methionine (hence, a bio-efficacy of 99%) is either added directly to a mixer via a micro-dosing system or through a premix.

The liquid form Rhodimet® AT88, which contains 88% DL-HMTBA (hence, a bio-efficacy of 88%) and 12% water, is sprayed directly into

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the mixer. The spraying equipment is connected to dosing equipment, such as a flowmeter or weigher.

According to Adisseo, the initial design and installation of the equipment as well as their maintenance will guarantee over time excellent homogeneity of the product in a feeder.

Recovery and mixability data collected over the past decade from Adisseo's customers using Rhodimet® AT88 confirmed that spraying systems installed and maintained by the company work excellently.

On top of turnkey solutions, the company offers customers Rhodimet® DIMension, a comprehensive service and product support programme.

Data from eight feed mills comparing the use of Rhodimet® NP99 and AT88 in the same feeds show that mixing performance of both forms of methionine is strictly similar and influenced largely by the performance of the mixer.

Apart from their nutritive functions, amino acid products improve poultry health as well.

Certain forms of amino acids, according to an animal nutrition expert at Tyson Foods, "reduce the crude protein content in the gut, thereby reducing the risk of mycotoxin contamination." They also knock back bad bacteria and improve digestibility, he adds.

Having a pKa value close to formic acid, DL-HMTBA acts like an organic acid that controls gut micro-flora and inhibits fungi.

Research has shown that DL-HMTBA can metabolise into cysteine and taurine, which could help in certain circumstances such as inflammation or oxidative stress consecutive to heat stress.

Building supply chain resilience

In business, consistency is every-

thing. So while they continue to depend on commodity chemicals for their production, methionine companies go beyond the supply chain for elemental sulphur and hydrocarbons to ensure steady supply of raw materials and intermediates.

Similar motivation led Adisseo to acquire the Sulphur and Regeneration Products unit of the chemical conglomerate Rhodia in 2007. The company wanted to be fully integrated in methionine production.

Feed technology leads the way

Increasingly, methionine companies are finding their niche in offering customised, bundled services and products to their customers.

Precise Nutrition Evaluation (PNE), Adisseo's NIR (near-infrared) service, continues to gain new users.

At the same time, existing users increasingly scan more samples each month. Integrators and feed millers using the NIR service have complimented Adisseo for the speed with which answers are provided.

They say they get their results in real time for up to 55 parameters and 28 raw materials, adding that savings from the reduced need to perform wet chemistry analysis have been substantial.

With PNE, nutritionists appreciate the fact that for calibrations of digestible amino acids, equations are derived from in vivo measurements, as opposed to being calculated by applying a standard coefficient on a total amino acids measurement.

Purchasers find PNE helpful as it enables them to have a deeper knowledge of soybean meals' nutritional (digestible amino acids and metabolisable energy) and commercial values.

In November last year, Adisseo expanded its PNE service by engaging in a strategic partnership with Adifo in the development of MyPNE, a data management centre and extension of the PNE platform. 🌱

