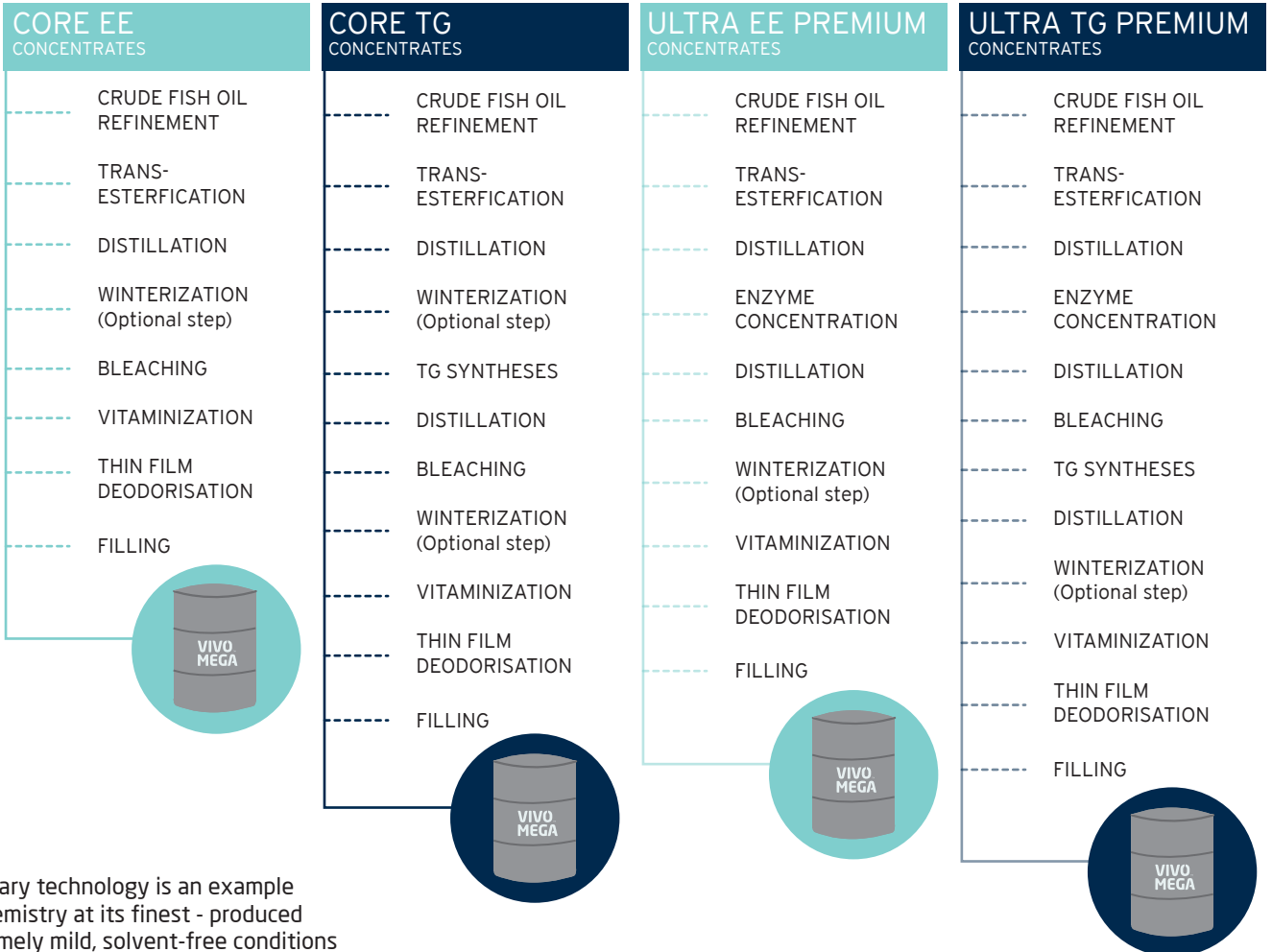


VIVO MEGATM

PROPRIETARY
TECHNOLOGY
PRODUCING
SUPERIOR
OMEGA-3
CONCENTRATES

CORE & ULTRA



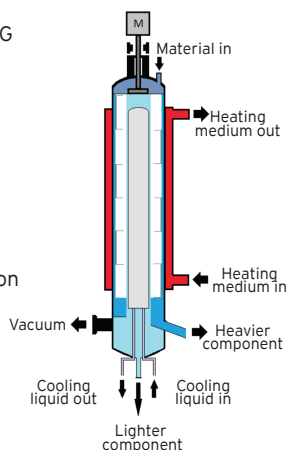
- Our proprietary technology is an example of green chemistry at its finest - produced under extremely mild, solvent-free conditions
- Product quality is assured as we use state-of-the-art advanced thin-film deodorisation and advanced technologies at our brand new production facility
- Largest tank farm for human consumption in Europe
- Largest rTG capacity globally
- Zero CO² footprint
- State-of-the-art distillation

PROPRIETARY TECHNOLOGY PRODUCING SUPERIOR OMEGA-3 CONCENTRATES

State-of-the-Art Distillation

- GC RIEBER USE SPD (SHORT PATH DISTILLATION ALONG WITH FURTHER PROPRIETARY MODIFIED DISTILLATION TECHNOLOGIES)
- HIGH SEPARATION OF OMEGA-3 FATTY ACIDS BY DIFFERENCES IN BOILING POINT (VAPOR PRESSURE)
- NO HARSH CHEMICALS USED
- LOW RESIDENCE TIME - MINIMIZES THERMAL STRESS OF THE OIL

The heart of the processing is done in the distillation plant. GC Rieber is using a two-stage thin film, short path distillation equipment, especially suitable for temperature sensitive products. The process is fast - contact time less than one minute per stage - and temperature stress on the products is kept to a minimum. The main purpose of the process is to separate the high boiling EPA, DPA and DHA fats from the rest of the oil. But carefully run, it also enables further separation of environmental pollutants and unsaponifiables.



TG Synthesis

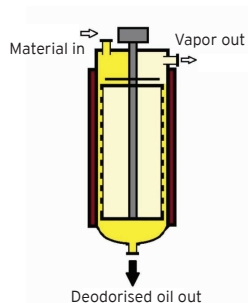
- OIL IS CONVERTED BACK TO ITS NATURAL TG FORM USING AN ENZYMATIC PROCESS
- THIS GENTLE PROCESSING STEP DOES NOT USE NOR REQUIRE ANY TOXIC CHEMICALS OR SOLVENTS
- THE ENZYMATIC PREPARATION OF TRIGLYCERIDES IS HIGHLY EFFECTIVE, RESULTING IN A PLEASANT TASTING TRIGLYCERIDE OIL

After a final fatty acid profile has been made with its characteristic EPA and DHA contents, the ethyl ester oil is converted back to the triglyceride form via trans-esterification. This is the opposite reaction to ethylation and means substituting the ethanol in the fats with the glycerol bridge we removed in the early process step. The process is run in a specially designed process reactor at about 70 deg C where water and glycerol are added at a carefully controlled rate. Excessive ethanol from the ethyl ester product is continuously removed in a controlled vacuum. Unlike chemical trans-esterification, the process is very gentle to the highly reactive omega-3 components and gives a pleasantly tasting triglyceride oil.

Thin Film Deodorisation

- REMOVAL OF VOLATILE COMPONENTS BY GENTLE PROCESSING
- SHORT RESIDENCE TIME - MINIMIZED THERMAL STRESS OF THE OIL CONCENTRATE
- PROVIDING PRODUCTS WITH SUPERIOR TASTE AND SMELL

The final stage in processing of all our high-quality triglycerides is the deodorisation process. Our deodorisation process is designed to remove volatile and semi-volatile taste and smell components which are normal components of all omega-3 oils. In GC Rieber deodorisation unit, the oil for processing is spread out in a very thin film while hot steam is passed over it in gas form. The contact time and exposure to high temperatures is very short, this dramatically reduces the temperature stress of the oil compared to traditional deodorisation. GC Rieber thin film deodorisation process is a state-of-the-art, continuous process unit.



Document produced: 6 May 2020



Energy Management - Zero CO2 Footprint

GC Rieber Oils' state-of-the-art production facilities continually monitors and maintains a Zero CO2 Footprint for all of its manufacturing operations. CO2 emissions are measured as CO2 content per kg or kWh according to emission standard from Greenhouse Gas Protocol. GC Rieber Oils has installed energy reclaiming systems on its biggest consumption unit. The Norwegian State has supported GC Rieber Oils in establishing a system where surplus energy from the main manufacturing plant is used in heating fish oil storage tanks.

GC Rieber Oils' Energy Management System is running according to ISO 50001:2011. The company's Energy Conservation Team headed by the CEO is meeting regularly to follow up and make improvements. GC Rieber Oils also operates according to a zero waste manufacturing philosophy for all production side streams being re-purposed to minimize waste from the processing of fish oil crude into Omega-3 concentrates.

Largest rTG Fish Oil Production Capacity throughout Europe and Globally

GC Rieber Oils over recent years has continually invested in our state of the art fish oil production facilities located in Kristiansund, Norway. Improvements to GC Rieber's proprietary technologies and capabilities have along the way increased GC Rieber capacity, ensuring we can continually meet the growing global demand for marine derived Omega-3 fish oil concentrates.

GC Rieber's Omega-3 rTG fish oil production capacity, based on GOED published industry production data is considered to be the largest rTG production capacity globally. Couple this capacity with GC Rieber's largest newly refurbished tank farm for human grade fish oil in Europe gives GC Rieber a unique competitive advantage to ensure continual uninterrupted supply to our global customer base.

VIVOMEGA™

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