

**OPEN CALL FOR  
SUPPLEMENTARY EXPERIMENTS WITH RYCKEBOSCH METHOD  
CEN/TC 454 'Algae and algae products'**

**Specific agreement:**

SA/CEN/2016-04/ENER/C2/498-2016/SI2.735225

**Background:**

The European Commission (EC) and CEN have signed a contract (SA/CEN/2016-04/ENER/C2/498-2016/SI2.735225) under the Framework Partnership Agreement 2014. The project is titled: "Algae or algae based products or intermediates" and is related to the Standardization Request M/547 as regards algae and algae-based products or intermediates.

The objective of the project is to develop standardization deliverables in the Technical Committee **CEN/TC 454 'Algae and algae products'**, which was established in the beginning of 2017. Within CEN/TC 454, working group 6 'Test methods' identified the need for supplementary experiments with the Ryckebosch, which will contribute to the development of the method as a European Standard.

**Objective:**

To perform supplementary experiments to make the Ryckebosch method into a European standard for total lipid determination of microalgae and seaweed.

**Tasks to be performed:**

**Tasks:**

1. Compare accuracy and reproducibility of 3 extraction methods on different scales:
  - a. standard 100 mg as described in the Ryckebosch et al. paper,
  - b. bigger scale extraction on 2.4 g biomass (KULeuven protocol),
  - c. bigger scale extraction on 10 g biomass (KULeuven protocol with same biomass / solvent ratio).

To be performed on:

- 3 seaweed species (brown, red and green) commonly used for industrial purposes and 3 micro algae species (different cell wall characteristics);
- To be performed 10 times per sample / method.

2. Investigate whether the water washing step incorporated in the method also removes some ore polar lipids. To do so, determine FAME content on water phase that is normally discarded. To be performed on same samples as in 1.
3. Investigate the necessity of 2 extractions with 2 phases each (as in the standard protocol). To do so, the standard protocol will be compared with a protocol with 2 extractions of one phase each and a protocol with 1 extraction of two phases. To be performed in triplicate on one seaweed and one microalgae species.

**Time schedule:**

The research needs to be done in a period of +/- 4- 6 months maximum (it is expected that the research could start in June 2018 (summer holiday period is taken into account)).

**Costs:**

A budget needs to be provided, containing a division in:

- Labour costs;
- Consumables;
- Buying and sending samples;
- Contribution to the costs of buying lab material;
- Other costs, if applicable, such as overhead costs (contribution to costs of university for electricity, housing, ...).

Note 1: These costs are added separately to every invoice;

Note 2: Prices excl. VAT.

The offer shall be specific on the costs of the project as described above, including the expected time. Consortium offers will also be considered. Offers can also be from a single person, which should however have a VAT number and a company registration.

**Selection procedure:**

The selection and appointment of the WG Convenors will be made by a selection panel, which is composed of:

- Mr. Indra te Ronde (NEN), Secretary of CEN/TC 454 'Algae and algae products';
- Mr. Bert van Asselt, Chair of CEN/TC 454 'Algae and algae products';
- Mrs. Catherine Vigneron (CCMC).

**Lab specifications:**

The to be selected lab should:

- Have extensive experience with lipid extraction from microalgae and / or seaweeds and the different factors possibly influencing the results;
- Have access to a GC-FID to determine FAME composition.

**Selection criteria for the tendering process:**

Selection of contractors will be based on the following criteria:

**1) Documented experience** (maximum 50 points):

- experience in running European or/and international test programs;
- extensive experience with lipid extraction from microalgae and / or seaweeds and the different factors possibly influencing the results.

**2) Organization;** demonstration of ability and understanding of the project (maximum 40 points):

- facilities used for the actual testing;
- organization for the reporting to NEN;
- established quality system;
- access to a GC-FID to determine FAME composition.

**3) Quotation price and detail** (maximum 10 points)

Additional points may be awarded if the tenderer can add additional value to the project.

Offers that pass the selection criteria of scoring minimum 35 points under 1) and 25 points under 2) will be pre-selected and invited for further evaluation in a Q&A meeting session.

NEN considers that proposals requesting a budget in the range of €15 000-25 000 (excl. VAT) would allow the study to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

On the effective contract the "General Terms and Conditions for the Provision of Technical Services to NEN" shall apply. A copy of those can be delivered on request. The Contractor should also agree to the fact that the obligation of NEN to pay is subject to the normal functioning of the financing mechanisms of the Commission of the European Union and of the EFTA, also applicable to specific agreement SA/CEN/2016-04/ENER/C2/498-2016/SI2.735225.

**Replies to tender:**

- Applications should be submitted using the attached [application form](#) by 26 May 2018). Applications received after the deadline will not be taken into consideration.
- Applications shall be sent by e-mail to [energy@nen.nl](mailto:energy@nen.nl).
- If necessary, additional information can be obtained via the CEN/TC 454 Secretary, Mr. Indra te Ronde (t: +31 15 2690 326, e: [indra.teronde@nen.nl](mailto:indra.teronde@nen.nl)).



**Form - Answer to a call for Tender in compliance with FPA 2014**

See attachment