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Corrections to existing calibrations - proposal

The subject of this document is calibration corrections of the **Foss Analytical A/S** instruments according to the reference methods.

This proposal is about situations, when Foss Analytical A/S or third party supplied calibration (prediction model) is usable for the product in question, but it needs to be ***bias*** or ***slope/intercept*** adjusted.

This document is ***not*** about new calibration (prediction model) development.

This document is ***not*** dealing with the ways of obtaining reference data and prices for them.

Case 1. - Simple correction.

You have some calibration which is partially OK or it seems to be OK after the ***slope/intercept*** adjustment. In this case you need to gather some data in simple table – instrument results versus reference data. By using this table EIRA Ltd. can do calculations and adjust your instrument afterwards.

Price proposal for 2010:

20 EUR + VAT per parameter (VAT = 0% for EU countries)

Price is not dependent from quantity of the data. More data – better for you.

Stated price also includes short results for calculated adjustment with main statistics.

Example. You have calibration with 4 parameters. You have decided to adjust moisture slightly and prepared 6 samples for this. Protein is more interesting to you, so you have prepared 11 samples for protein. You are most interested to measure fat and for this purpose you have 20 samples. Starch is not important to you, so you decided not to spend any effort to adjust it. According to our calculation it will cost you 20+20+20, in total 60EUR+VAT. (VAT = 0% for EU countries)

Case 2. – Combined or continuous correction.

In the past years we have seen very good stability of the NIR type instruments. Once adjusted instrument will show the same results one year or more later. Not-so-good results appear not because instrument has changed, but usually because properties of the analysed product are changed.

For example in previous year you had product with 6% average fat content. Now you have extended product range, which also includes the same product with 12% fat. In this case it is necessary to add some calibration data to ensure good precision around 12% fat too.

In order to make optimal corrections in such cases, it is necessary to use both – old and new data together. It is not correct to use only new data set. This way we might degrade instrument precision in the other part of its range. In the example above – if we are going to adjust instrument just using samples around 12% fat and forget about "low" end, we might get instrument, which is badly adjusted at 6% fat.

Therefore EIRA Ltd. offers to store all the calibration data of your instrument. Then we will be able to combine them with new data, when it is necessary. Storage itself will cost you nothing,

only **combined calibration** prices will differ slightly.

Price proposal for 2010:

30 EUR + VAT per parameter (VAT = 0% for EU countries)
Price is not dependent from quantity of the new data.
Price is not dependent from quantity of the previous data.
Stated price also includes short results for calculated adjustment with main statistics.

Case 3. – Search for optimal prediction model.

You have product, which possibly can be analysed by several ready-to-use calibrations. Before purchase you want to know which one is the best for your product.
At the first sight simple way to determine it is to analyse your samples by all calibrations available. But such testing can be very time consuming. Moreover to get right picture about every model's and every parameter's precision, you have to make calculations mentioned in Case 1.

EIRA Ltd. offers another route. You will need about 20 samples of your product (or 10 samples in simple cases) with known reference results. In case you do not have your own chemical laboratory, you can use EiraLab Ltd. services. In the second step we have to obtain spectrum data for your samples with your IR spectrum analyser. In the third step by means of the software we are going to model analyser behaviour with different ready-to-use models. Then we can do final evaluation and choose optimal calibration model.

Price proposal for 2010:

15 EUR + VAT per every parameter in each modelled case.
Price is not dependent from quantity of the data.
Stated price also includes short results for data analysis with main statistics.

Example. Your enterprise is going to produce flour with new recipe. In fact this is the rye and wheat flour mix, therefore nobody knows which ready-to-use calibration will give the best results. We have access to rye flour and wheat flour calibrations from Foss Analytical A/S and also rye flour and wheat flour calibrations from other company, so 4 calibrations in total. You are interested in 3 parameters – moisture, protein and ash. Then in total we have to evaluate 4x3=12 cases. In total it will cost you 12x15=180 EUR + VAT. (VAT = 0% for EU countries)

Usually **data exchange is electronic**. Reference results are sent to EIRA Ltd. by e-mail or fax, spectrum data are gathered by remote connection to the customer's instrument. Changes in the customer's instrument are also performed via remote connection. Therefore this document do not discuss any travel costs. If such necessity occurs, travel costs has to be agreed separately.

EIRA Ltd. is eligible to keep spectrum/reference data obtained in the calibration adjustment/evaluation process and use it in next developments. At the same time we guarantee confidentiality of the commercially sensitive data. Customer **may use obtained calibration only in his own enterprise.** Customer may not pass or sell obtained calibration to the third party without consent by EIRA Ltd.

Wishing the best,

EIRA Ltd. managing director
Māris Stegenburgs

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