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|----------------------|--|
| Measurement Category | Chemical Stability   |
| Measurement Target   | Investigation of long-term stability of oilfield chemicals<br>by simultaneous measurement of viscosity change and<br>filter blocking under pressure and temperature  |
| Sample Materials     | Petroleum field chemicals  |
| Pressure Range       | Up to 550 bar  |
| Temperature Range    | -20 to 200 °C<br>other ranges on request   |
| Sample Quantity      | Approx. 80 to 250 ml   |
| Repeatability        | Depending test   |
| Dimensions           | 170 x 75 x 120 cm  |
| Weight               | approx. 160 kg (with 4 loops)  |
| Supply               | Compressed air   |
| Price Range          |  |
| Special Features     | <ul> <li>Very strict conditions in the laboratory<br/>(continuous pressure and temperature changes)</li> <li>Heating and cooling bath circulation</li> <li>Easy handling through PC control and automatic<br/>data recording.</li> </ul> |



#### **Stability**

### Basic requirements Situation (s)

- Oilfield chemicals are sold without long-term stability proof (especially for deep-water applications).
- Existing measuring methods are too simplified or insufficient (pressure, temperature, shear rate, filter blocking, ...).

#### Requirement criteria

- How important is it to measure the long-term stability of your chemicals?
   (good: important | bad: unimportant --> Why?)
- How do you currently measure them?
   (good: not at all | worse: self-made, viscometer, roller oven)
- In which area do you measure? (pressure, temperature, flow rate, shear rates [1/s], ...)
- What experience have you gained in this field? (good: complains | bad: satisfied)



Stability

| Optional add-on products (Up-selling) |           |  |
|---------------------------------------|-----------|--|
| Extended physics. Properties          | р         |  |
| Software                              | included  |  |
| More measuring stations               | 2-6 Loops |  |
| Maintenance                           | <b>/</b>  |  |
| Additional Features                   |           |  |
| Spare parts (if required)             | <b>/</b>  |  |
| Documents for customs                 | <b>/</b>  |  |
| Customizing                           | <b>/</b>  |  |
| Service                               | <b>/</b>  |  |
| Training                              | <b>/</b>  |  |
| Optional by-products (cross-selling)  |           |  |
| Calibration Set                       |           |  |
| Test measurement                      |           |  |
| Chiller                               | included  |  |
| Gas-Booster                           |           |  |
| PC                                    | included  |  |
| Other                                 |           |  |



#### Stability

| Reason for purchase 1 | Safety: You ensure the long-term effectiveness of your chemicals by testing the measurement accuracy through more demanding long-term tests with strong pressure and temperature changes.       |
|-----------------------|---|
| Reason for purchase 2 | Safety: You protect your field and production facilities from failure and damage due to failure of the injection chemical by ensuring the stability of your chemicals under various conditions. |
| Reason for purchase 3 | Time: Save project time by increasing test capacity through parallel testing.   |
| Reason for purchase 4 | Money: You can prove the stability of your chemicals and convince new customers.  |
| Reason for purchase 5 | Convenience: You can flexibly expand the measuring capacity at a later date without requiring additional space for your laboratory instrument.  |
| Reason for purchase 6 | Image: You differentiate yourself from your competitors because you provide your customers with a measurable and resilient proof of stability.  |



#### For all devices

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|--|---|
| Step 1   | Step 2  |
| In the first step after our discussion, you will receive a quotation for the system with various variants and options. On this basis, you can initiate an internal budget discussion and use secure arguments.                 | In the second step, you discuss the requirements and the available budget internally with your colleagues. We support you with our advice and helpful documents.  |
| Step 3   | Step 4  |
| In the third step we evaluate the quotation with you - based on your internal requirements - and compile the variants and variables as you need them for your application. On this basis you can make a well-founded decision. | If we are perceived as your best alternative, we would be pleased to receive your order. Afterwards we will deal with the details of production, delivery and commissioning. Also, we will send you the order confirmation with the 1st invoice (70 % advance payment) and set an expected delivery date. |
| Step 5   | Step 6  |
| 1 month before delivery you will receive the 2nd invoice (30 %). After receipt of payment we will send the system to you.  | In the sixth step, we accompany the commissioning and train your staff. Four weeks after commissioning, we arrange a telephone feedback discussion with you and clarify questions and previous experience.  |

