



# TR

## Turbulence Rheometer

DRA



Measurement Category	Drag Reducing Agents DRA
Measurement Target	Investigation of flow behaviour in pipelines (development and optimization of DRA)
Sample Materials	(Petroleum) oil or water with/without DRA
Pressure Range	Up to 35 bar
Temperature Range	-10 to + 80 °C
Sample Quantity	From 0.5 to 3 L
Repeatability	Depends on the attempt
Dimensions	190 x 85 x 183 cm
Weight	Approx. 510 kg
Supply	Three-phase connection (400 V) / Compressed air
Price Range	
Special Features	<ul style="list-style-type: none"><li>▪ Fully automatic laboratory system</li><li>▪ Only in one experiment the whole range of Reynolds numbers can be measured</li><li>▪ Reduced sample quantity</li><li>▪ Compact design</li><li>▪ Easy handling, monitoring and evaluation through integrated PC with user software</li></ul>



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Basic requirements  
Situation (s)

- No possibility for DRA tests available
- Available instrument can only be operated with high sample quantity (loop)
- Available device only adjustable for one Reynolds number.

### Requirement criteria

- What oilfield chemicals do you sell? (good: DRA (Drag Reducing Agents))
- How do you currently measure the effectiveness (% improvement in flow velocity) of DRAs? (good: in large loops [high space requirement, large sample volume, very complex], not at all [no information], other | bad: we do not need)
- To what extent is it important to your customer that you prove the efficacy of the chemicals? (good: very important | bad: not at all)
- What types of samples do you measure? (good: oil, aqueous solutions)
- Which temperature ranges are of interest to you? (good: between -10 and +80 °C | worse: outside)
- How large is the sample quantity required so far? (good: >> 3l | bad: < 3l)



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### Optional add-on products (Up-selling)

Extended physics. Properties	p
Software	included
More measuring stations	1 or 2 lines
Maintenance	✓
Additional Features	Drill core holder, further pressure sensors
Spare parts (if required)	✓
Documents for customs	✓
Customizing	✓
Service	✓
Training	✓

### Optional by-products (cross-selling)

Calibration Set	
Test measurement	✓
Chiller	mandatory
Gas-Booster	
PC	included
Other	



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Reason for purchase 1	Comfort: You can test the complete range of possible Reynolds numbers with a small sample volume of 3 litres.
Reason for purchase 2	Comfort: You can test in a wide temperature range.
Reason for purchase 3	Money: You save time in the project because the sample throughput (measurements/time) increases significantly (from 1 test in one week to 1 test in 2 hours).
Reason for purchase 4	Safety: Adjustable flow conditions allow you to simulate realistic conditions.
Reason for purchase 5	Comfort: You save space in the laboratory thanks to the compact design of the 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 effectiveness.



## For all devices

Step 1	Step 2
<p>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.</p>	<p>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.</p>
Step 3	Step 4
<p>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.</p>	<p>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.</p>
Step 5	Step 6
<p>1 month before delivery you will receive the 2nd invoice (30 %). After receipt of payment we will send the system to you.</p>	<p>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.</p>

