Steam Cracking
Coil-outlet Temperature Measurement

EXACTUS® technology enables increased profit through yield improvement, cost reduction and streamlined maintenance at your facility
Innovative optical measurement improves profitability and operational efficiencies

BASF EXACTUS® technology enables more profit from your existing facility by tightly measuring the coil-outlet temperature in the cracking process, optimizing yield and product mix, allowing longer run length, and eliminating maintenance of thermocouples and thermowells.

Optimize Profit by Maximizing Yields and Product Mix

- Achieve and maintain process temperature set-point more accurately while minimizing temperature swings to realize additional potential profits of $10K/furnace/day*
- Tighten process control leveraging our ultra-low drift of 0.1˚C, and our accuracy of ±0.15%
- More accurately measuring the coil-outlet temperature will enable longer run lengths and more production out of existing assets

Reduce Maintenance Costs

- Save over 100 labor hours per furnace per year by eliminating maintenance costs for thermocouple and thermowell replacement and typical thermowell rotation activities
- Tube skin measurements using our EXACTUS® technology do not require welding which will greatly decrease installation time and can be easily retrofitted while furnaces are operating

Improve Safety & Environmental Conditions

- EXACTUS® systems are not directly welded to the coil surface, which enhances operator safety and minimizes tube failures
- No active electronic components are exposed to the operating environment, minimizing the need for intrinsically safe requirements
- Accurately monitoring coil-outlet temperatures optimizes run lengths, which minimizes the volume of product delivered to flare, decreasing your emissions footprint

Low Risk Installation, Retrofit and Maintenance

- Easily evaluate EXACTUS® effectiveness against your existing thermocouples without changing control set-up
- Unique mounting design provides for simple installation and retrofit, meaning lower costs and lower risk
- Novel design does not require welding, allowing installation and routine maintenance while furnace is operating
- Multiplexing capability allows for simultaneous communications of up to eight sensors with a single output module

The EXACTUS® Competitive Advantage

<table>
<thead>
<tr>
<th>Long-term Drift</th>
<th>Accuracy</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1˚C/yr</td>
<td>±0.15%</td>
<td>10 yrs</td>
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<tr>
<td>&gt;20˚C/yr</td>
<td>±0.75%</td>
<td>6-8 mos</td>
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Thermocouple
### EXACTUS® Specifications

**Measurement ranges**
- 100–1900°C (1.55 µm measurement wavelength)
- 350–3000°C (0.90 µm measurement wavelength)

**Accuracy**
Greater of 1.5°C or 0.15% of reading

**Resolution**
Up to 0.01°C

**Repeatability**
0.1°C

**Drift**
0.1°C/year

**Speed**
Up to 1000 readings per second, 1ms response time

**Target size**
Designed at less than 10mm

**Maximum environment temperature without cooling**
10-60°C for electronics
(lense assembly and high temperature fiber optic cable suitable for 250°C)

**Available Communications Profiles**
- Option User Configurable 0-10V, 4-20mA, 0-20mA
- EXACTUS® Mode (RS232, RS422, Ethernet TCP/IP)
- Modbus RTU (RS232, RS422, RS485)
- Modbus TCP
- Ethernet TCP/IP
- Other Field Bus Options Available
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