

HOW TO CONDUCT A THOROUGH PRICE/PERFORMANCE ANALYSIS OF PRESSURE TRANSDUCERS



This guide is designed to help you fully analyze the price-to-performance of competing pressure transducers. Maintaining a complete product comparison guide can be very difficult, so engineers can independently verify information provided by any external vendor.

This guide can help compare any of Setra's products, or compare competitors to each other if you feel any Setra products isn't a fit for your application.

1. Primary Performance Measurements and Considerations

General Considerations:

- Pressure range to be measured
- Compatibility of device to the contact media that's being measured
- Accuracy (What type of linearity?)
- Desired output
- Compensated temperature range
- Response time
- Proof pressure range
- Burst pressure range
- Cycle life
- Compensated/operating temperature ranges

Environmental Considerations:

- Moisture/humidity ingress protection
- Corrosion resistance
- Electrical immunity
- Size restrictions or limitations
- Footprint and form factor (Drop-in replacement capability)
- Intrinsically safe requirement
- Over-voltage protection
- Reverse polarity protection

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2. Peripheral Performance Measurements and Considerations

Peripheral performance considerations are mostly the intangibles that inevitably impact your bottom line, but are often not directly considered when comparing products from different manufacturers.

For example, a company that sells, but doesn't manufacture their own products may offer better pricing, but can't customize products or orders to fit your specific application requirements. These resellers often won't provide the level of support available from the product manufacturers. They lack the in-depth product knowledge that ensures you get the right product for your specific application.

A challenge every pressure sensor manufacturer faces is the complexity of selecting the right transducer for the application. For example, several transducers may work within your required pressure range, but one or two may offer superior accuracy within that range. Knowing which sensor works best in a specific application requires a level of knowledge very few online resellers will have.

Peripheral Considerations Include:

- Who has control of the manufacturing process? Setra, for example, has complete control over all our manufacturing processes. This ensures tight quality control and the application of ongoing continuous improvement projects within the manufacturing facility.
- Are the application engineers tied to one manufacturer, or must they know a little about many different manufacturers? Setra application engineers know Setra's products at a deeply intimate level. They'll know which of several products works best with your specific application.
- Who handles support? What if you begin experiencing transducer failures in the field? Compare and contrast the level of support you'll receive from the manufacturer, including time-to-resolution and product replacement support.

3. Purchase Price vs. Cost of Ownership

One of the primary reasons for pressure transducer failure in the field is selecting the wrong transducer for the application. The total cost of ownership includes the reliability of the products, environmental protection capabilities, stability of the products in harsh conditions and the cost to replace transducers in the field.

Form factor, ingress protection, cycle life, and vibration protection all come into play when doing a thorough price-to-performance comparison, but is often overlooked. In general, the costs associated with a transducer failure in your equipment or product are being evaluated. What does it cost when a transducer fails?

Selecting the best transducer for your application that offers superior reliability in the specific environment is a critical component of a thorough price-to-performance analysis.

Cost Considerations:

- In-field replacement costs (travel, payroll and time to work on new business opportunities).
- Cycle life as related to unit cost (replacement cost over the life of your equipment/product)
- Reputation (making sure that your current customers remain customers because of your product reliability and performance)

Other Considerations Related to Cost of Ownership:

- Warranty time period as compared to cycle life
- Form factor flexibility
- Ease of/opportunity to recalibrate in the field
- Ease of installation
- Environmental protection capabilities related to the specific application (media type, physical environment, etc.)

4. Comparing Apples-to-Apples

To accurately compare one product to a competing product, ask these questions:

- Does the manufacturer say this is the best product for your specific application? Be careful that the seller isn't selling you a less expensive, but a less capable sensor just to get your order.
- Do all the specifications match? This includes both the general specifications and specifications that are relevant to your unique application: Accuracy, ingress protection, wetted material, Electromagnetic capability (EMC) immunity, vibration and proof and burst pressure. One sensor may state similar accuracy specifications, but they may use a different method of calculating non-linearity; i.e. "Best Fit Straight Line" vs. "Endpoint".
- Has cost of ownership been considered? How do the sensor compare in terms of reliability? What's the level of manufacturer support you'll receive? What's the sensor warranty?
- Does the sensor manufacturer provide on-site troubleshooting? Will the manufacturer stand behind their product, taking the time to discover the root cause of your failure? Will they only send out a replacement unit?
- What is the lead-time for a new product or replacements? Will the manufacturer be able to meet or exceed your time requirements for product delivery?

If selecting a pressure transducer was as simple as choosing toothpaste, there wouldn't be a need for design or application engineers and manufacturer's representatives. Unfortunately, not all pressure transducers are created equal. Even transducers that meet specifications may not be the best choice for your specific application and environment.

Conducting a thorough price-to-performance comparison of competing products is an difficult challenge. By using this guide and comparison chart on the following page, there's a greater certainty of selecting the right sensor.

Consideration/Criteria	Company/Product 1	Company/Product 2
Primary Considerations		
Pressure range to be measured		
Compatibility of device to the contact media that's being measured		
Accuracy (What type of linearity?)		
Desired Output		
Compensated temperature range		
Response time		
Proof pressure range		
Burst pressure range		
Cycle life		
Compensated/Operating temperature ranges		
Environmental Considerations		
Moisture/humidity		
Corrosion resistance		
Electrical immunity		
Size restrictions or limitations		
Footprint and form factor (drop-in replacement capability)		
Intrinsically safe requirement		
Over-voltage protection		
Reverse polarity protection		
Peripheral/Other Considerations		
Who has control of the manufacturing process?		
Are the support people or application engineers tied to one manufacturer, or must they know little about many different manufacturers?		
Who handles support?		
Cost Considerations		
In-field replacement costs (travel, payroll, time to work on new business opportunities, etc.)		
Cycle life as related to unit cost (replacement cost over the life of your equipment/product)		
Reputation - making sure that your current customers remain customers because of your product reliability and performance		

Warranty time period as compared to cycle life		
Form factor flexibility		
Ease of/opportunity to recalibrate in the field		
Environmental protection capabilities related to the specific application		
Comparison Considerations		
Does the manufacturer say this the best product for your specific application?		
Do all the specifications match?		
Have you added in cost-of-ownership considerations?		
How does the product compare in terms of reliability?		
What's the level of manufacturer support you'll receive?		
What's the product warranty?		
Do you have local support?		
What is the lead time for new product or replacements?		

About Setra:

Founded by former professors of Engineering at Massachusetts Institute of Technology (M.I.T.), Setra has been designing and manufacturing sensor products since 1967. Our specialty is in the pressure and sensing in a wide range of markets including HVAC/R building automation, pharmaceutical, energy, medical sterilization, industrial OEM, test & measurement, meteorology and semiconductor.

Setra Creates Solutions:

- Over 40 years of expertise in sensing and sensing applications
- R&D and Design Engineerings focused providing application solutions
- Sensors cover a wide range of pressure ranges with unique expertise in low pressures
- Sales and manufacturing in the U.S., Europe, and Asia for fast solutions and products