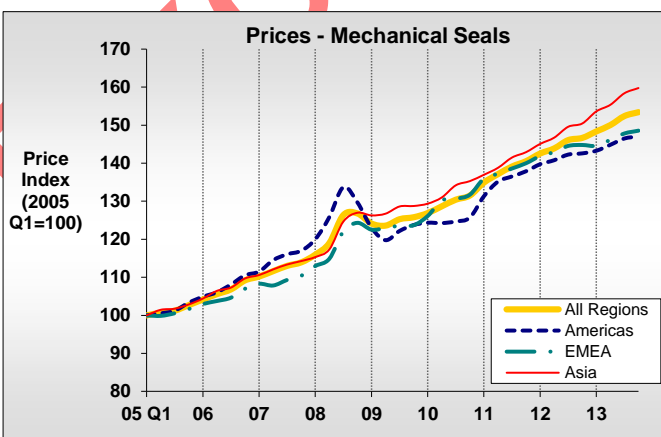
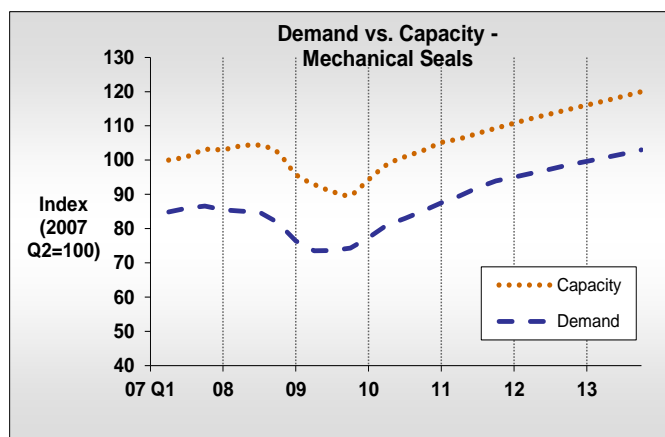


## 10 Mechanical Seals

Sales grew 2.5% in Q3 and will grow 2% more in Q4 on orders from oil refinery turnarounds and water supply projects. Sales growth will fall to 4.5% annually in 2012 and 2013, as water supply spending growth slows from 13% in 2011 to 7% in 2012, driven by water pipeline projects in Australia and the US, and Saudi Aramco, BP, and Petrobras' new refineries. Demand growth will outpace capacity additions in Q4, raising utilization rates by 1% in Q3 (to 86%). Utilization will stabilize in 2012 as Chesterton and Freudenberg expand US plants and SKF builds a new plant in China, keeping up with demand growth. Lead times will hold steady at eight weeks through 2013 as suppliers add new, faster CNC machines and increase component inventories in Q4, and utilization rates stabilize in 2012. Prices rose 1.3% in Q3 on rising plastic and rubber costs, and will rise 1% in Q4 as suppliers capitalize on demand growth to raise margins. Prices will rise 4.5% per year in 2012-2013 on 4-7% annual aluminum and nickel price increases.

Figure 16: Key Indicators for Mechanical Seals

Key Indicators	Q4 2011 - Q1 2012	Q4 2011 - Q4 2013
Demand	▲ 1.2%	▲ 9.7%
Order Lead Time	▲ 0.2%	▲ 0.7%
Prices	▲ 1.4%	▲ 9.2%
Capacity Utilization	▼ -0.1%	▼ -0.1%
Supplier Concentration	LO 0.3%	LO 2.4%



Smiths added \$10m in mechanical seals aftersales revenue by acquiring US-based Turbo Components, a specialist that repairs seals for rotating equipment in the refining, chemical, and energy industries. Utex and Klinger, smaller manufacturers of elastomeric seals, bought competitors Arefco and Acorn to gain UK market access and economies of scale in manufacturing and procurement. Freudenberg claims that its new FKM<sup>®</sup> material for mechanical seals can withstand coolant temperatures of 200°C, higher than any other available seal.

Figure 17: Top Mechanical Seal Suppliers

	Name	Home Country	3-Year Annual Growth Rate	Power Transmission as a % of Sales	2010 Mechanical Seal Revenues (\$M US)	R&D % of Sales 2010	Stock Price Change Last 90 Days	Q4 News
1	Smiths	UK	-2.9%	16%	\$552	2.5%	-29%	Bought Turbo Components to strengthen after sales service
2	Freudenberg	Germany	2.3%	6%	\$385	3.2%	N/A	New seal rated at 200°C, which it claims is highest available
3	SKF	Sweden	6.4%	49%	\$360	1.9%	-24%	Opened first South American seals distribution center.
4	Flowserve	USA	-4.5%	8%	\$339	0.7%	-35%	Will repurchase \$300m of its own shares to raise share value
5	Trelleborg	Sweden	1.2%	7%	\$280	1.7%	-24%	Launched new Isolast <sup>®</sup> perfluoroelastomer seal line
6	EnPro <sup>1</sup>	UK	17.8%	19%	\$194	1.4%	7%	Increased manufacturing capacity for brush and abrasable seals
7	Parker	USA	-9.3%	5%	\$171	3.2%	-31%	Won US military contracts for round non-metallic round seals
8	AES	UK	N/A	100%	\$167	N/A	N/A	Supplying gas seals for new power plants, Turkey and Vietnam
9	ElringKlinger	Germany	8.0%	7%	\$76	5.0%	-4%	Credit rating dropped due to European economic uncertainty
10	Chesterton	USA	N/A	80%	\$68	N/A	N/A	Expanding metallic seals testing abilities in Massachusetts, US

1 EnPro acquired Tara Technologies, adding \$40m in revenues to its sealing division.

### **10.1 Sourcing Recommendations – Mechanical Seals:**

1. Reduce inventory levels of 0.5-16 inch diameter metallic mechanical seals used for ANSI pumps. During H2, John Crane cut lead time for these seals by 25-50%. ANSI mechanical seals orders larger than 500 can be ready in at most two weeks. During Q4, John Crane increased the number of guide rings held in stock ready for assembly, speeding up production. John Crane also expanded its distribution network to increase stamping production, allowing simultaneous production on other parts of the seal such as the seal mounting and coil spring, reducing overall lead time.
2. Use EnPro as a price lever for purchases of brush and abradable seals for reciprocating pumps and compressors. EnPro acquired Tara Technologies in August and then restructured its brush and abradable seal division, increasing its manufacturing capacity by 33%. The increased manufacturing capacity resulted in economies of scale, enabling EnPro to price its brush and abradable seals more competitively.
3. Include Chesterton on bids for all types of seals. Chesterton has recently expanded its emissions secondary containment seals to accommodate API 682 standard. These seals prevent evaporation of hydro carbon across the outboard seal phases. Chesterton also introduced large mechanical split seals to accommodate 18-36 inch diameters. These seals are used in water pumping applications.

Sample EXHIBIT