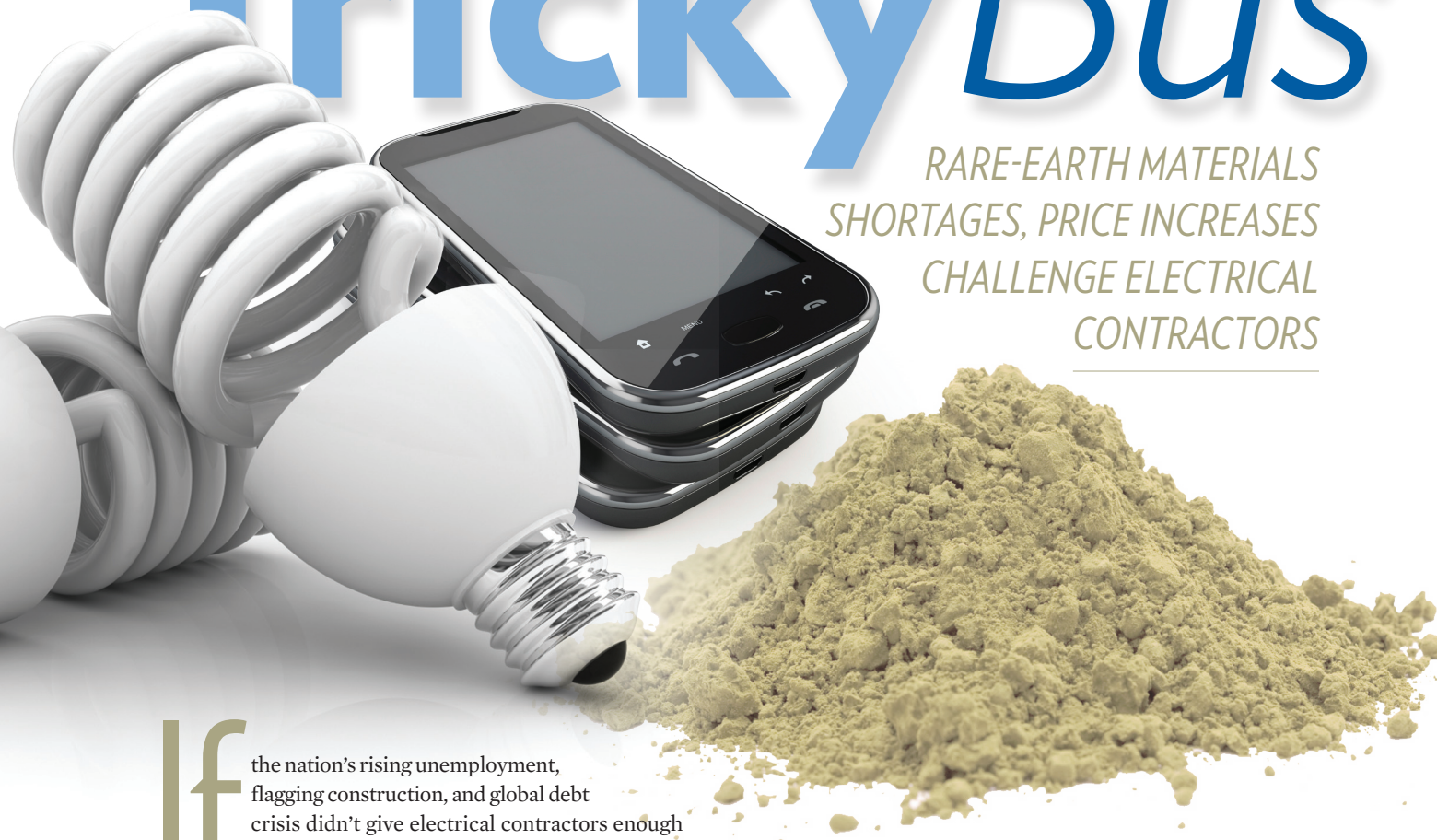
 BY SUSAN BLOOM

Tricky Bus

RARE-EARTH MATERIALS SHORTAGES, PRICE INCREASES CHALLENGE ELECTRICAL CONTRACTORS



If the nation's rising unemployment, flagging construction, and global debt crisis didn't give electrical contractors enough cause for concern, they have recently been grappling with another business woe—significant price increases on some of the market's most popular energy-efficient fluorescent lamps caused by a worldwide shortage of "rare earths." The shortage of critical materials has threatened global industries, including electronics, medical equipment and defense systems, and has sent the market for lighting products into a tailspin.

What are rare earths?

Rare earths refer to a group of 17 natural elements, including lanthanum, neodymium, gadolinium, cerium, yttrium, samarium and erbium, which are used in everything from smart phones, MP3 players, military defense items, medical imaging equipment, car parts and batteries, tools, wind turbines, and fluorescent lamps.

"They're all around you," said Karl Gschneider, Department of Energy senior metallurgist, in an interview with National Geographic magazine, referring to the trace materials that enable everything from the colors on televisions to the operability of catalytic converters in car exhaust systems. "They're hidden unless you know about them, so most people never worried about them as long as you could keep buying them," he said.

But buying them is now a global problem, which is affecting manufacturers, channel members and customers and contractors alike.

Contrary to their name, rare earths are actually metals and are not, in fact, rare, as they are found scattered in the earth and in mines within such countries as the United States, Russia, Canada and Australia. However, rare earth oxides, the form of these elements that is used to make phosphors, are complicated and costly to extract and reprocess. While at one point the United States was the leader in the production of rare earths (largely through its rare earth mine in Mountain Pass, Calif.), China has been the world's low-cost provider since the 1980s and currently controls more than 95 percent of the earth's supply of these critical elements.

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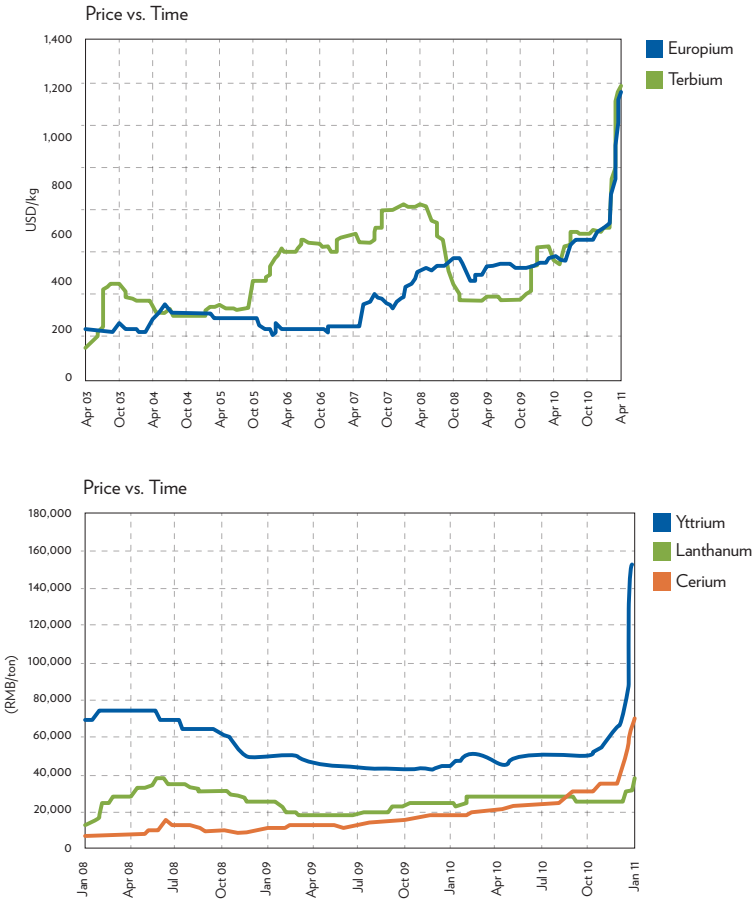
Price Trends of Rare Earth Materials Used in Fluorescent Lighting: 2003–2011



SOURCE: CHINA COMMODITY MARKETPLACE, SEALAND SECURITIES

The problem? Since late 2010 and throughout 2011, China has been restricting exports of rare earths to world markets and is expected to continue to do so over the next decade in order to protect its own growing industrial needs. China's exports will likely amount to less than half of the amount that world markets demanded in 2011, and with world demand forecast to more than triple to 185 million tons by 2015, the reality of this severe supply-demand mismatch has sent shock waves throughout the many industries reliant on these materials and sent product prices soaring. According to an analysis by the National Electrical Manufacturers Association (NEMA), prices of rare earth oxides increased from an average of $14,400 per ton in July 2010 to $109,000 per ton in February 2011 and tripled between January and June of 2011.

Based on their unique properties, rare earth materials are critical to a broad range of clean-technology products, among them fluorescent and compact-fluorescent lamps. When struck by ultraviolet rays, the presence of rare earth phosphors enables fluorescence, and their use (as opposed to less costly but less efficient and lower quality halophosphors) "increases lamp efficacy while dramatically improving color quality and lumen maintenance," according to the Department of Energy's Division of Efficiency and Renewable Energy.

As a result, "China's export restrictions have affected pricing on the market's most popular fluorescent lamps today because demand for rare earths continues to grow in line with the growth in green technologies," said Rebecca Bompiedi, lighting transformation and strategic programs leader for GE Lighting, Cleveland.

"The lamps, which require the largest quantities of rare earth phosphors, tend to be among the highest performing, highest efficiency fluorescent models in the industry and are unfortunately the ones that will experience the most price impact and fluctuation," said Paula Ziegenbein, strategic marketing manager, Osram Sylvania, Danvers, Mass.

Increases range from 500 percent to more than 2,000 percent for some types of rare earth materials in less than 12 months, Bompiedi said.

"In a nutshell, rapidly changing prices on rare earth materials will have a continued effect on the cost of fluorescent lighting, which represents approximately 40–50 percent of the installed lighting in the United States. These market fluctuations will require both distributors and contractors to pass these price increases on to the end-user," said Eric Marsh, senior marketing manager, Philips Lighting Co., Somerset, N.J.

An industry responds

All of the major lamp manufacturers informed distributors about the supply shortages in June and announced initial rounds of fluorescent price increases, which took effect in August and September, doing their best to give distributors as much advance notice as possible, though some smaller manufacturers who were unable to absorb initial losses like their larger competitors announced price increases effective immediately. While product shortages have created tenuous conditions for the industry, the ongoing supply instability has also sparked rumors of the potential for periodic price increases, creating additional hardships for electrical contractors and distributors.

"We've had several special price agreements [SPAs] that had to be redone because the pricing was no longer in effect," said Stephen Shepps, construction solutions manager for Harrisburg, Pa.-based Schaedler Yesco Distribution Inc.

CHARTS COURTESY OF PHILIPS LIGHTING

NAVIGATING THE ROCKY RARE EARTH TERRAIN

TIPS FOR CONTRACTORS

- **Get it in writing:** "A bid is only good as long as the price is good, and you should get that in writing from the manufacturer," said Southern Contracting Co.'s Jim Filanc. "Timing is everything here, so getting confirmation on how long a quote is good for will help ensure that the contractor isn't left holding the bag."

- **Cover your risk:** "Build the price increase into your bid to cover your risk, so you're not stuck absorbing any losses," Filanc said. "Similar to situations the industry has experienced with volatile commodities, like copper, contracts will have to be written to address price increases," said Ron Padilla, a manufacturer's representative with Del Sol Resources, Solana Beach, Calif.

- **Seek out alternatives where possible:** Hardest hit among fluorescent lamps are 4-foot linear models, such as the energy-efficient 32-, 28- and 25-watt T8 products, which are popular in today's lighting upgrade projects. According to Filanc, however, "the rare earth issue could end up shifting market attention towards products with less phosphor content or towards nonphosphor technologies altogether." For example, Osram Sylvania has supported the market by introducing a new T8 family, its Octron 800 XV Supersaver Ecologic 4-foot fluorescent lamp series, which reportedly features "optimized phosphor blends" to provide a new energy-efficient lamp choice and help minimize the impact of price volatility on customers. "Wherever possible, we're certainly promoting different fluorescent lamps or alternative product technologies, like LEDs, to help address customer needs," said Rob Mills, president of Baltimore-based distributorship C.N. Robinson Lighting Supply.

- **Stay connected:** "Contractors should stay in touch with lamp manufacturers, so they have some insight on future increases and should avoid locking into longer term contracts, such as ones that extend out one to two years," said Del Sol's Padilla. "We advise contractors to know their customers, share information and stay educated about the factors causing the increases," said Sylvania Lighting Services' David Alpert.

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"The significant increase in fluorescent lamp costs due to the rare earth issue has introduced tremendous volatility to the market," said David Alpert, executive major account representative with national contractor Sylvania Lighting Services. "To remain competitive, pricing has become very dynamic."

"We've seen a 2,000 percent increase in the cost of rare earths and a 5–10 percent increase in fluorescent and induction lamp prices," said Jim Filanc, director of business development for San Marcos, Calif.-based Southern Contracting Co. "This situation will force public agencies to make buying decisions sooner rather than later. For example, we recently had a contract with the city of San Diego that they had to rush to sign by Aug. 1 in order to avoid $700,000 in price increases, so the rare earth situation has created a lot of scheduling and contractual issues for contractors, not to mention the added cost and difficulty it's introduced into the lighting upgrade sales pitch and the negative effect it's had on ROI and payback calculations. Some large contractors can stockpile product to protect their customers from the price volatility, but most are not in the business of hedging," he said.

Lamp manufacturers have been doing their best to manage an untenable situation with an uncertain end date. All of the major players have proactively reached out to their customers and the marketplace with informational web pages, webinars, brochures and videos and have worked collectively through NEMA to report the fallout that customers and the entire industry have experienced at the hand of the Chinese policies.

In July, based on a complaint filed by the United States, Europe and Mexico, the World Trade Organization found that China had violated international trade law by artificially restricting exports of nine raw materials, though it is believed that China is appealing this ruling. While trying to promote consistency as long as they can and avoid enacting serial price increases, lamp manufacturers have also been proactively helping customers to explore other lamp alternatives that are less affected by price increases.

The United States and other countries are currently racing to increase mining and production of rare earths to alleviate long-term dependence on Chinese supplies, but insiders expect that these measures will likely have little bearing on the short-term issues at hand.

"Expert opinions vary, but this supply situation could remain for another three to five years," Marsh said, referring to the time required to bring inactive mines online and the fact that, according to NEMA experts, these mines are not necessarily primed today to produce the specific rare earths used in the manufacture of fluorescent lighting technology.

"In the end," Ziegenbein said, "increasing costs and sell prices impact whether energy-saving projects can be justified with payback times and ROIs that are acceptable to end-users. With the uncertainty of rare earth material costs and anticipated continued cost inflation, firm pricing on future projects may not be possible."

"It's a situation we have to manage for now, but hopefully it will be a short-term bubble that will pass as global players work to find alternative sources of rare earths," Filanc said.

Overall, manufacturers report that no one in the lighting industry has benefited from the rare earth crisis, as millions of dollars have been lost that will never be recouped. But all players are working diligently with customers and end-users throughout this situation to ensure timely and accurate communication regarding rare earth updates and issues.

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