

It's as big as a two story house, it can carry 240 tons of rock in a single load and it costs northward of \$2.5 million. Still, for all of that it turns out to be a

TRUCK IN A BOX -- and how it came to be

By Daniel B. England

This is a story about procurement. Now if "procurement," being fanciful, meant being in favor of smoking meat, it might be slightly more interesting than its customary meaning, "corporate procurement," but only just. People who work in procurement order things and eventually they arrive. Give us strategy, design, even, God forbid, PR. But procurement?

Well, don't go away just yet. It seems the Rio Tinto procurement folks have managed to pull a slow one on all of us that you might not notice at all if it didn't involve the largest truck on earth. But there is something about these latter day stegosaurus (the trucks not the procurers) that makes you pay attention. Stand by its tire, for example, and your head probably won't reach the axle.

But before we get to these unlikely adventures in procurement-land, let us begin with Sarah Lungren, a tall, blonde pretty twenty-something that might be mistaken for an airline stewardess. She studied industrial engineering in college but right after graduation went to work at the Antelope Coal Mine in Wyoming. Someone decided to ask her if she'd like to drive a Komatsu 830E, a "haul truck" that despite having a cab some 18 feet up, nevertheless has a blind spot as big as your mother-in-law's. So, after training, she did. "It was awesome!" she gushed recently on a tour of the Bingham Canyon Copper Mine in Utah. "I fell in love." She knows every inch of the things, extolling their virtues like she was telling you about her Toyota Tundra. "The seat just floats and it so comfortable and quiet. The retard speed control really gives you command and the thermostatic fan clutch is amazing." Then she lights up. "But when you can swing one of those 830s into place under the shovel so that the operator doesn't have to miss a beat, then you know you really know what you're doing," she said with justifiable pride. You'd better. At a site exercise in which 830E drivers were given permission to back over a junk pickup so they could see what it might feel like, one described it as "like hitting a rabbit." Oh. (See sidebar)

A few basics. There's a hauler called the Komatsu 830E. Like all these haulers it comes with electric motors in the wheels that control forward motion and braking. But in a DC (direct current electric drive) configuration, the wheel motor can be too small for steep grades, like the ones at Bingham Canyon Copper Mine in Utah so the trucks can be slow and hold things up. An 830 AC (alternating current electric drive, on the other hand) has a more robust system that makes it faster uphill and less stressed downhill. There is also a 930E (also

an AC) that is slightly larger and can haul bigger loads, something like 340 tons per load. (If the truck is coming from the bottom of the Bingham Copper Mine, it has to trudge up the equivalent of two Sears Tower Buildings stacked on top of one another and still would not quite get to the top. 24/7).

It might be possible to build an even more colossal model, but all of these trucks are limited in size by their tires. The 830 series takes 57" tires and the 930 line takes 63" tires. No matter what the size, there are not enough of them to go around and none of the tire manufacturers is inclined to halt production to build even bigger molds. So for the moment, mine operators will simply have to be content with these "you've-got-to-be-kidding" sized creations as they are.

THE DAWNING OF A STANDARD HAUL TRUCK

Time was, business units would make their own arrangements with a supplier like Komatsu or Caterpillar or Hitachi for haul trucks, even ordering from different sources within those companies. In the case of Komatsu, they have Japanese, German and North American divisions with an array of subsidiaries. This led to a tangled web of ordering procedures, fulfillment and relationships that developed like the wires behind your computer desk: it was hard to make sense of and harder yet to follow any given connection. Nevertheless, at some point Komatsu would supply a truck, like the 830E, but only in its most basic form. They would ship it, in pieces, to the business unit that ordered it where it would be assembled and accessorized with the ladders, lights and other bells and whistles the business unit deemed desirable. (Tires ship separately). These additional pieces would often come from local sources. But sometimes, unassembled trucks would arrive and sit on the ground longer than it took Komatsu to build them at the factory, waiting for all the assemblers and accessories to show up.

This may have been comfortable for some business units, but no one thought it very efficient. And the inevitable question followed. What if the procurement procedures could improve and, stop the presses, what if Komatsu, say, could produce a complete haul truck that conformed to all the standards, safety and otherwise, that Rio Tinto was developing out of their experience?

THE CONVERGENCE

In the past ten years or so, several factors were coming together to make a efficient procurement and standard haul truck a possibility.

First, conscious of the risks involved in moving several tons of dirt in the Komatsu equivalent of a Wal-Mart parking lot, mine operators started pushing for greater safety measures and procedures. At the same time, pressure started flowing down from on high for the same thing.

Now, if you haven't been to one of the mine sites lately, you may be forgiven for thinking that this emphasis on safety is one of those "initiatives" that comes trundling along once in a while at companies, like "total quality." Or "work and family." Or "enhanced efficiency" (read: "you're fired"). But this is the real deal.

At the mine, everyone – yes you -- wears a hard hat. And goggles. And boots. Everyone – hey, you -- tire-blocks a pick-up truck, even at the site offices. Everyone at the site looks up and down the road – several times, every time – like you're picking your moment to cross the track at the Indianapolis 500. But it's more than these day to day injury-saving practices that are driving record safety statistics. The Rio Tinto safety mandates, which have now become infused into a culture of safety, are systematic and serious. Safety audits happen regularly and irregularly (that is, surprise audits). Benchmarks are set and reports are made. More importantly, mine operators know that their bonuses are tied directly to their safety record. Sheer pride keeps any unit from the ignominy of being in the bottom quartile of safety.

Something else has happened too. Rio Tinto has moved from being an international company into becoming a global company. The difference? One works in countries all over the world, the other works the world. And to work globally, it's imperative to think globally.

For Rio Tinto, that has meant a gradual increase over the past 10 years in control of their subsidiaries in matters of safety, training and now, equipment.

And so, little by little, the procurement flow moved to a central source, what is now known as Rio Tinto Procurement (or RTP), headed by John McGagh. (The same thinking behind RTP has been manifest in the creation of the Operational and Technical Excellence (OTX) group, which brings together Health, Safety and Environmental matters. Its function is to provide world class technology-based service to the product groups and their businesses and advises executive management). Now each business unit has a Service Level Agreement with Rio Tinto that formally authorizes Rio Tinto to commit the funds and manage the contracts in purchasing. Alan Hustwick, Vice President of Global Supply, oversees these contracts with Tier 1 suppliers globally. Given the diverse nature of the business units, this was not an easy place to get to. But it was a big step in the right direction.

AN IMPOSSIBLE IMPASS?

However, the idea, let alone the reality of a standard haul truck was still elusive because of a historical standoff between Original Equipment Manufacturers (OEMs) and the companies they supply. Komatsu, but not only Komatsu, and Rio Tinto played their traditional roles in this expensive little drama, regarding each other with a suspicion usually reserved for competing suitors after the same girl.

Part of the uneasiness was legal: OEMs, especially when it comes to vehicles, were uncomfortable about installing safety equipment as part of the package lest they get drawn into a liability situation should something go wrong. But more than that, OEMs are used to fulfilling the contract to the buyer, not in engaging in a lot of back and forth about concepts and design, certainly not at a time when Komatsu can't make haulers fast enough. Working together with a buyer with the end user in mind? What a strange idea.

But Rio Tinto was getting to the point of having to end its piecemeal approach to ordering and delivery and to have in place a more efficient system. The safety imperative was ever more pressing and the squeeze on vehicle availability was suggesting that Rio Tinto needed a preferred supplier that would get a lot of business if it played ball. But in this case, playing ball meant coming to understand the significant changes that had taken place at Rio Tinto. In short, Rio Tinto was looking for a new partner, based their willingness to make a simultaneous change of culture.

A PARTNERSHIP EMERGES

Steve McGowan, Principal Advisor, Load and Haul, OTX, said, "It took a good five years for us to work through with Komatsu the issues we had about building a partnership. There had to be incentives on both sides. For us, we needed a steady supply of more complete trucks delivered around the world. By having the safety equipment installed at the factory, it would save us time and money at the point of delivery. And we had to get them to see just how serious we were about safety, how we needed to standardize some of those safety standards and how they could actually make and ship better trucks if they understood what we were trying to do."

Doug Tripp, Product Support Area Manager for Komatsu, could see things changing from his side of the equation. "We really listened to what they were saying and began to come to a different idea about our relationship. I can say that Rio Tinto really taught us a different culture, one in which if we were going to share in the profits, we had to share in the risks, too."

"It was a real education for both of us," McGowan said. "We get the trucks we want and they become our premier supplier." Rio Tinto will order 40-50 of them in the next year at \$2.8 million a pop. Or so.

The strength of the partnership is reflected in the fact that with the current demand, Komatsu can sell every truck they can make right now and then some, with or without the modifications and all the work that goes into designing and manufacturing them. "But we knew over the long term, this would help us, not only with Rio Tinto, but with all our customers. This transition to a new kind of supply relationship has definitely helped us," Tripp said.

There were three key areas that everyone decided to work together on: Egress from the trucks both normally and in an emergency; Working at heights, which meant addressing fall prevention, not just fall protection; and Isolation, that is isolating certain systems, such as batteries and the steering accumulator, from other related systems so they could be worked on safely without triggering some other problem. That was Phase I. Phase II in this design and implementation process will include electrical and fire protection. There could be as many as five phases all together.

Recently, Komatsu came up with a prototype they called the 860E which is an 830E with all the design and safety changes incorporated into it. Komatsu showed it to Rio Tinto engineers recently and they declared it good. It's not clear that the trucks that roll out of Komatsu's plant in Peoria will be 860s – "more likely they will be 830s," said Tripp, "with all the standards on them."

AT LAST, TRUCK IN A BOX

But no matter what the decal number, Rio Tinto and Komatsu are now on the edge of producing a truck that will be the same, whether it is delivered to Bengalla, Australia or Salt Lake City, Utah or Palabora, Africa. Safety rails will be the same height and specification, plates, gaps and kickplates will conform to the same standard and all the gates will swing the same way. And it will come complete. It will be a 244 ton, 2500 horsepower "truck in a box." Should you be lucky to see one of these unlikely vehicles when the first one arrives somewhere, probably in Spring Creek Montana where they will get the first 8 of them later this year, it will be worth considering just what you're looking at.

For to behold a new standard, safety equipped Komatsu 830E AC hauler that can pull up a 10% grade fully loaded would be quite enough. But to know that in the process of becoming, it has forged a unique partnership between two companies that has changed the way people think about the phrase "corporate procurement" – well that must be some kind of truck.