

**N**O MATTER HOW MANY MILES he logs, seeing his own suitcase finally climb to the top of the baggage conveyor and flop to the carousel below is never enough for this road warrior. He needs to know how his suitcase got there: where it was tagged and sorted, how long it spent in security screening, how fast it traveled and how the airport's unseen labyrinth of conveyors carted, shunted, routed and eventually propelled it into his eager grasp.

Indeed he makes it his business to know everything about the guts of a complex system we all take for granted. As chief executive of Pteris Global, Oon Chong Howe has swiftly maneuvered this Singapore company into a position to threaten the longtime players at the top of the world's airport baggage-handling business. Five of the six airports built over the last decade with the

room for only a handful of outfits in this global market. Can Pteris penetrate the old boys' club of incumbent vendors? European conglomerates such as Siemens and Vanderlande Industries have spent decades insinuating themselves into the thicket of relationships among consultants, lobbyists, politicians and airport officials who decide who gets which project. These aren't stable relationships. Vendors fight tooth and nail for projects, filing lawsuits and challenging competitors' credentials.

For Pteris the outcome will depend on a decidedly contrarian management style and yes, an Asian home-field advantage. That counts for a lot when China is expected to open more than 100 airports over the next decade and India four dozen. "Flexibility, adaptability and an agile response to the market—these are things a smaller firm like ours can do to outflank the competition," says Oon,

before a cent is spent on equipment.

This means Pteris needs much less development time before installing a new system, says Chua Choon Beng, its head of software development. Each of the machines used to sort and transport bags needs a controller; Pteris has devised software code for the controllers to mesh them all into a single network. The code can be used over and over—it works whether the machines are Japanese, Chinese, American or European. The result: software development, normally the most time-consuming part of any system design, takes just half as long.

It's the same for predicting how well the system will function in real-world conditions. Think of an airport baggage system as a power grid that intelligently manages traffic around jams and outages, seeking the most cost-effective route. With tens of

thousands of bags a day on dozens of conveyers, the possibilities for snarls are endless. With Pteris' technology, a central command post can "see" the entire system as a network, enabling its managers to spot and avoid problems and seek solutions.

This buys time for Pteris' customers. The airport authority for Dubai faced a stringent deadline to get a 10,000-bag-per-hour system up and

running in time for a recent International Monetary Fund conference; Pteris' flexibility in adding and integrating new devices was essential in meeting the deadline, says Arshad Khan, head of airport technical systems for the Dubai Airport Co.

Pteris now has begun building its new baggage systems first as virtual systems, experimenting with variables such as the route, speed and number of bags. An unusual number of 747s arriving at the same time? Unlikely, but it happens. Plug in the numbers and find out how the system would handle the crush of passengers. Prospective customers like this feature—it can help them make tough choices when spending on a new system.

This focus on modeling has also given the

# Taking A Smarter Route

In the rough-and-tumble world of airport baggage systems, **OON CHONG HOWE** and his Singapore company are taking on the big boys. His weapon of choice: software. By Donald Frazier

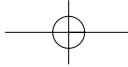
highest capacity now use at least some Pteris equipment. In the process, Pteris has invested so heavily in its business that it went into the red in 2008 before turning a modest profit for 2009 on sales of \$62.6 million.

Not that investors mind. Near the end of last year the Singapore-listed company issued share rights and watched investors oversubscribe the offering by 60%, raising \$12.1 million. The market has pushed the stock to 14 cents from 9 cents a year ago, reaching a high of 17 cents last September.

But the run of contracts for massive new airport terminals in Beijing, Shanghai, Singapore, Bangkok and Dubai is over, and now it's crunch time. After getting jobs at airports as a subcontractor, Pteris now aims to compete for large contracts on its own. But there's

caught in his usual workplace—that is, in between flights—while lining up new customers in a target market, North America. "Our customers are no longer tied to doing business the old way; they can see we are different."

That starts with Pteris' reliance on software, not machines. Airport baggage systems comprise a vast array of mechanical devices, including conveyors, motors, diverters and destination-coded carts. That's what gave the old factory-equipment companies such as Siemens a head start in the business and that's what, many say, they focus on even now. But Pteris, according to customers and consultants, was one of the first to see that the future lay with intelligent control systems and with software that can simulate the performance of a system



## Pteris Global

company a leg up in one critical piece of airport design since 9/11. Security has become a prime driver of baggage-system design all over the world since then, says Terry Brennan of airport consulting firm Cage Industries. The U.S. Transportation Safety Administration now requires baggage-system simulations; Pteris' mastery of American and Canadian requirements, customers say, has given it an advantage in a number of other international competitions. "You can't stop the system to screen bags," says Koh Ming Sue, director of engineering for Singapore's Changi Airport. "Only the ability to see the security checkpoints online can help you design a system around them. This is what Pteris offers." Pteris is the only company that has passed the U.S. certification test on the first try.

But Oon's most significant impact on Pteris since he joined in 2006 and became chief executive in mid-2007 may lie in how

As a student at U.S. and U.K. universities he made a point of living outside of the sometimes-insular communities of Asians abroad, "to see what people are like," he says. Even now he returns to Colorado, where he earned a graduate degree in engineering, as often as he can to ride motorcycles into the Rocky Mountains and across the wide open spaces that are so unlike Southeast Asia.

After school he had to decide where to spend his career. Working in the West was out of the question: "I am the only son in my family." Born and raised in Malaysia, with Chinese origins, he knew opportunities would be much greater in Singapore. But he also knew that he had none of the family and school connections that are so important in starting a career there, and he had to find an employer with an unusually receptive corporate culture. At Pteris, then named Inter-Roller Engineering, he found

Oon jumped into his new role with a burst of pent-up energy. After opening an award-winning new headquarters, the company rebranded itself around its new name, based on the Greek word for "wings" that also means a variety of fern that can survive in harsh conditions. The decision to spend on new staff and offshore capacity was a harder sell to the board. "We were involved in so many new projects that it made no sense to not use that expertise to leverage the next phase," he says. To save money he dramatically scaled down Pteris' European subsidiary.

Now is the time to deliver on projects won last year in Taiwan, China, Jordan and the U.S. Passenger and cargo air traffic, both down in 2009, are expected to rebound this year. Pteris won its first U.S. contract last year, Sky Harbor Airport in Phoenix, where it is the lead contractor, and promptly opened a North American office in Denver and a demonstration site in Charlotte, North Carolina. Prestigious projects such as Dubai International Airport and Queen Alia International Airport in Jordan position it for a good chunk of the \$86 billion to be spent in refitting 12 airports in the Middle East.

But China remains the main prize, with its 100 planned airports. Chinese officials have made it clear that they expect these projects to require significant local content. Among the market-share leaders, neither Siemens nor Vanderlande have manufacturing plants there. Oon expects Pteris' foothold in China to convince airport officials that his company deserves some of the action: "They like it when you can do business as more of a partnership, giving them something they want as well."

Meanwhile, a new scheme to affix two-way RF (radio frequency) tags to all bags would allow a Pteris system to track each one of them individually, in real time. This level of complete gate-to-passenger control over each bag, Chua points out, positions Pteris for a new line of business that's economical for small airports: a subscription service, so that customers pay Pteris simply to run the system itself.

For now there's no need to think small. Pteris just made the shortlist for two of the biggest projects in the world, in Mumbai and Muscat, Oman. Sweeter yet, they did so as a the lead contractor, competing with its old partners Siemens and Vanderlande. **F**

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it is run. He has accelerated the outsourcing of all manufacturing out of Singapore to lower-cost countries such as Malaysia and China—which is anathema to European companies that face regulations to keep jobs at home. He has kept hiring new talent, even when the company lost money. He has distributed his management talent all over the world to a degree highly unusual for a company the size of Pteris.

And he travels. Even for an executive of his level in a global industry, Oon spends an astonishing amount of time on the road—a quarter-million miles last year. "We are trying to run Pteris as a company based on trust," he says. "I have to look people in the eye if my handshake is to make any difference." A handshake, for contracts of this scale? One consultant explains: "This is a business with a lot of sharp dealing around the edges. People lie and bribe all the time. Oon is a straight shooter, but he's not an old-timer and people don't really know him yet. So he has to make it clear what he's like, one customer at a time."

Reaching out to people of other cultures has long been a habit for the 46-year-old Oon.

a company with an outright ban on hiring family members, avoiding the kind of nepotism that can limit possibilities for an up-and-coming young executive without family ties. The chairman mentored him, kept in contact, while Oon honed his skills as a general manager and turnaround expert for companies in Malaysia and Singapore, and after ten years hired him.

The timing was just right. Pteris had built a reputation for completing tough projects under demanding conditions as a subcontractor. The company posted sales of \$96 million in 2006, making the FORBES ASIA list of the 200 best companies in the Asia-Pacific region with sales under \$1 billion. Customers were increasingly asking it to bid on its own, but the big-name incumbents felt threatened. "They were doing their best to block our opportunity," Oon recalls. "They tried to convince airports that we do not have software solutions." Meanwhile the global slowdown in construction hit subcontractors first, as usual, and revenue fell.

Pteris needed to reinvent itself. It needed to become a leader, a complete source of everything for an airport baggage system.

