

WILL UNITED FLY? • ZERO WORKING CAPITAL • EXECUTIVES LOOK WITH

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FORTUNE

THE NEW WORKER ELITE

Technicians are
the rising stars
of the
labor
force

*Engineering technician
Richard Mixon helps
lead Western Atlas to
oil discoveries.*

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RAIDING A COMPANY'S HIDDEN CASH

It's the latest in doing more with less: Pioneering managers are raising profits and efficiency by mining an overlooked trove—working capital. ■ *by Shawn Tully*

TALK ABOUT stretch targets: Could any corporation operate without working capital? The answer may surprise you. A fast-growing number of companies are setting that audacious goal because pursuing it—even if they never attain it—unleashes efficiencies and savings that can dramatically improve corporate performance. In an era when global competition makes raising prices difficult and when companies need hefty cash flow to expand overseas, invest in new technologies, and pay down debt, this newly articulated discipline represents a managerial tool whose time has come.

But c'mon—zero working capital? It isn't a fantasy. American Standard and Varsity Corp., two diversified manufacturers, boast *negative* working capital in some of their businesses. At General Electric, CEO Jack Welch is making working-capital reduction a corporate crusade. Whirlpool, Quaker Oats, and Campbell Soup are driving in the same direction. Says Dennis Dammerman, GE's chief financial officer: "The concept not only generates cash, it also speeds up production, which helps you run your business far better."

Those who have been out of the game for a while could perhaps use a definition of

what we're talking about here. "Working capital is the grease that keeps the manufacturing motor running," says Harold Sirkin, a consultant with the Boston Consulting Group. It consists of inventories—raw materials, work-in-process, and finished goods—as well as a company's receivables (what other companies owe it) minus its payables (what it owes other companies). On average, FORTUNE 500 companies use 20 cents of working capital for each dollar of sales—for all the companies on the list, a total of maybe \$500 billion.

Reducing working capital yields two powerful benefits. First, every dollar freed from inventories or receivables rings up a one-time \$1 contribution to cash flow. Second, the quest for zero working capital permanently raises earnings. Like all capital, working capital costs money, so reducing it yields savings. In addition, cutting working capital forces companies to produce and deliver faster than the competition, enabling them to win new business and charge premium prices for filling rush orders. As inventories evaporate, warehouses disappear. Companies no longer need forklift drivers to shuttle supplies around the factory or schedulers to plan production months in advance.

Over the 12 months that ended last May, Campbell Soup pared working capital by \$80 million. It used the cash to develop new products and buy companies in Britain, Australia, and other countries. But Campbell also expects to harvest an *extra* \$50 million in profits over the next few years by lowering overtime, storage costs, and other expenses—savings that will persist year after year.

The most important discipline that zero working capital necessitates is speed. Many companies today produce elaborate long-term forecasts of orders. They then manufacture their product weeks or months in advance, creating big inventories; eventually they fill orders from the bulging stocks.

Minimizing working capital forces organizations to demolish that system. Scrapping forecasts, companies manufacture goods as

WHERE THE MONEY IS

COMPANY	WORKING CAPITAL	
	In millions, as of 12/31/93	Per dollar of revenue
Quaker	\$399	\$.07
Whirlpool	\$884	\$.12
Varsity	\$361 ¹	\$.13
American Standard	\$525	\$.14
Campbell	\$940	\$.14
Du Pont	\$6,222	\$.17
RJR Nabisco	\$3,041	\$.20 ²
GE	\$10,054	\$.27
Eastman Kodak	\$4,639	\$.28
McDonnell Douglas	\$4,139	\$.29

¹As of 1/31/94. ²FORTUNE 500 average.



they are ordered. The best companies start producing an auto braking system or cereal flavor after receiving an order and yet still manage to deliver just when the customer needs it.

The system, known as demand flow or demand-based management, builds on the familiar idea of just-in-time inventories but is far broader. Most companies achieve just-in-time in one or two areas. They demand daily shipments from suppliers, for example, or dispatch finished products the hour the customer wants them. But just-in-time deliveries don't guarantee efficiency. To meet the rapid schedule, many companies simply ship from huge inventories. They still manufacture weeks or months in advance.

ACHIEVING zero working capital requires that every order and part move at maximum pace, never stopping. Orders streak from the processing department to the plant. Flexible factories manufacture each product every day. Finished goods flow from the assembly line onto waiting trucks. Manufacturers press suppliers to cut inventories as well, since minimal stocks translate into lower raw materials prices to the manufacturer. Instead of cluttering plants or warehouses, parts and products hurtle through the pipeline. As velocity rises, inventory—working capital—dwindles. That's why working capital levels are such a useful yardstick for efficiency and why, in the 1990s, manufacturers with the least working capital per dollar of sales will reign as the world's best-run companies.

The current champ at squeezing working capital is American Standard, a thriving, privately held producer of Trane air conditioners, American Standard plumbing supplies, and Wabco brakes for trucks. Not long ago it was at the brink of failure. Chief Executive Emmanuel Kampouris, 59, salvaged the New Jersey company by saving working capital.

The company had taken on \$3.1 billion of expensive junk bond and bank debt in a 1988 leveraged buyout to escape a hostile takeover by Black & Decker. Interest and principal payments of \$325 million a year swallowed almost all of the company's cash

GE's appliance division in Louisville wants to shrink this mountain of warehoused working capital. The operation has already halved inventories despite rising sales.

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flow, leaving peanuts for capital investment. Then, in the early 1990s, all three of its markets went sour. To save the company, Kampouris raided a hoard of idle cash, working capital. In 1988, American Standard wallowed in over \$725 million of it, 25 cents per dollar of sales. Kampouris wanted all of it. He has set a goal of zero by 1996.

Kampouris's crusade is on its way to victory. American Standard has chopped working capital to \$525 million, about 14% of sales. He has used the \$200 million liberated to pay down debt and make capital investments. Lowered costs have raised annual operating earnings by \$100 million, or 33%, since 1990.

To orchestrate the comeback, Kampouris mobilized 90 factories around the globe. Plants from Britain to Brazil have wrested extraordinary reductions in inventory. In the U.S., a paragon is the Trane plant in Lexington, Kentucky. Nestled among manicured horse farms, it sells over \$100 million a year in large air-handling units for office buildings, restaurants, and hospitals.

The units—priced at up to \$50,000—are all made to order. Customizing the units is essential to winning customers, but in the past Trane never made an order continuously from start to finish. Instead it spewed out a plethora of parts in long production runs meant to keep machines turning at full capacity.

THESE PARTS spent only a few hours—or minutes—on the machines but sat in mountainous inventories for weeks; certain specialized parts remained for months or years. Wheels, filters, fans, and other components littered ten acres of blacktop indoors and outdoors. Warehouses covered enough floor space for three football fields. When an order came in, Trane needed an average of 15 days to find the components and assemble the final unit. Incredibly, despite the vast inventories, Trane often didn't have or couldn't find the parts it

REPORTER ASSOCIATE Robert A. Miller



NICOLE BENVENIO—MATRIX

needed. Those pulled from stocks often turned out to be damaged. Many items rusted on the blacktop or took a bang from a forklift. Paper moved as slowly as metal. Orders meandered through six departments, including design, materials purchasing, and production planning. After each step, stacks of orders piled up in an out-box, then lumbered to the next station. Getting an order from intake to the plant took as long as ten days.

Trane has since learned to gallop. The campaign—called Project Steeplechase—started with order processing. Today, representatives from order entry, design, planning, and the other functions sit side by side. Orders pass quickly from desk to desk and reach the factory floor in one to three days.

Following the same principle, the plant has clustered machines needed to produce modules that it combines to make final products. It can complete these units so quickly—in an average of 20 hours—that it starts producing most parts only after receiving an order. Inventories are dwindling. Lexington kept \$8.2 million in stocks in

CEO Kampouris wants working capital to dry up at American Standard by 1996. He has freed \$200 million so far, using it for debt repayment and investment.

1988. Today inventories are down to \$5 million, despite a 30% rise in revenues. What's left is work-in-process, along with small supplies of raw materials. Instead of building a new plant, Lexington has re-fitted newly empty warehouse space for manufacturing. It isn't sparing the whip. By 1995 Lexington aims to squeeze stocks another 10%.

Other American Standard operations do even better. An outsize success is the once-ravaged automotive subsidiary in Britain, Wabco UK. The main plant sits in Leeds, surrounded by the emerald sheep farms of Yorkshire. Its staple used to be brakes for trucks. But when the British truck market nearly vaporized in the late 1980s and early 1990s, the company responded immediately, re-tooling to produce a brace of new products: brakes for jeeps and vacuum pumps that route fuel in diesel cars.

Wabco UK financed its rebirth by recycling working capital into product development and new equipment. The gambit not only saved the company, it created a money machine. Despite Europe's weak car market, jeeps and diesel autos are selling briskly. Wabco UK's sales jumped 25% last year, to \$163 million.

As revenues rise, working capital is dipping below zero. Five years ago the operation used, on average, \$13 million in working capital at any given time. In June the figure stood at a *negative* \$154,000. That's possible because inventories were just \$2.2 million, and payables exceeded receivables by \$2.35 million.

The pied piper of this effort is the flamboyant managing director, Eric Nutter. A short, wiry Yorkshireman in Barney Google glasses, Nutter rallies his troops in a foghorn voice. "It's not the likes of me that does this!" he blares. "It's the people at the grassroots who make it happen!" A 58-year-old vegetarian, Nutter ran last year's New York Marathon in a fleet three hours 42 minutes. His business garb can resemble a color TV on the blink—or a barber pole.

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He recently mingled a short-sleeved, red-and-white-striped shirt with a red-and-black-striped tie. Shaking his hand is like steadying a power saw. "In business, it isn't over till the fat lady sings," says Nutter. "And I say she doesn't sing till you're at zero working capital!"

By preaching demand flow, Nutter has achieved astonishing reductions in cycle times. In 1989 the Leeds plant took as much as three weeks to manufacture a vacuum pump. Since order processing took another week, customers had to place orders a month in advance. Today Leeds, like Lexington, has switched to manufacturing cells that do everything from lathing to assembly in quick sequence. The result is a breakthrough in speed. Manufacturing a pump now takes just six minutes. Leeds makes all six varieties—in small quantities—every day.

That means the plant can deliver quickly, which is a key to shrinking receivables. "We deliver when our customers want the stuff, so they don't have to hold inventories," says Nutter. "That's worth money to them." In exchange for faster service, Nutter has persuaded customers to speed up payments. Wabco UK now collects its bills in 42 days, vs. 54 days in the late 1980s. From 1989 to 1993, receivables fell \$462,000, to \$11.6 million, even though sales were surging.

The fat lady isn't singing loud enough for Nutter. He's demanding a further, 30% cut in inventories by year-end. Employees know he's serious: "If we don't get there," he says, "it will make the conflict in Bosnia look insignificant." For Nutter, the secret is pursuing hugely ambitious targets. He hounds managers like a Yorkshire sheepdog. "They claim I'm haunting them," declares Nutter. "And they're going to need an exorcist to get rid of me."

Nutter recently lectured Jack Welch on the Yorkshireman's favorite subject. Welch met with executives from American Standard in March to learn more about demand flow. Of Welch, Nutter says, "He's an incredible character, an Oscar-winning performer. Jack asked for my working capital

Yorkshireman Eric Nutter, brandishing a vacuum pump, runs a \$160-million-a-year business with negative working capital. He wants to reduce it further.



figures. He never heard such figures." Nutter exhorted Welch to reach for the stars: "I told Jack, 'The only limit is your imagination.'"

AFAN of Kampouris, Welch is dispatching GE executives to study American Standard's plants. GE isn't discovering inventory reduction afresh. Since 1989 it has cut stocks from \$9 billion to \$6 billion. But Welch is raising the hurdle. He spotlights inventory turns—the cost of goods, divided by stocks—as a key meter for performance. He stresses that for GE, one additional turn generates an extra \$1 billion in cash, plus big savings in storage and labor. Welch wants to jump from 7.5 turns a year to ten by 1995. Dammerman, the chief financial officer, says the company would need 20 turns—a mere \$2 billion in inventories—to achieve zero working capital. Can GE reach the pinnacle? Says Dammerman: "We want to get there."

A trailblazer is GE's appliance business in Louisville. Until four years ago, the \$6-billion-a-year division leaned on the shaky crutch that most manufacturers still use: long-term forecasts. Each month planners ran reams of data through a mainframe computer to predict appliance demand for the next 12 months. Compiling a production schedule took six weeks. Factories spent another six weeks producing models in long runs of 50,000 or more. Deliveries added two weeks. Result: Products planned in January arrived at the customer's door in May.

Frequently the big rollout didn't match what customers wanted. Total demand for ranges or dishwashers is fairly predictable,

but tastes in colors and features change like quicksilver. By 1990 GE was saddled with \$160 million of obsolete inventory. Rows of big, bulky refrigerators, then out of vogue, stood in limbo.

Today GE is racing to tie production to orders. It has scrapped elaborate long-term forecasting. Four of its eight plants now make

every model, every day, often in lots as small as 50. GE now plans, produces, and delivers a truckload of dishwashers in three weeks, vs. 18 weeks in 1990. Inventories have fallen from \$800 million to \$400 million.

But the appliance group is still chasing the prize: making products to order. The rub is that many customers want deliveries in anywhere from 48 hours to a week or two, which is faster than GE can manufacture and ship. So it still has to produce goods before it receives orders, then store the ranges or dishwashers and fill orders from inventory. Because it can manufacture more quickly than before, the operation uses shorter-term and thus more accurate forecasts. But by producing to order, it could drastically lower stocks. Its target: Make and deliver in ten days—and run a huge and growing business on trim inventories of \$200 million.

GE and American Standard are far from the only hawks on working capital. Kelsey-Hayes of Livonia, Michigan, a subsidiary of Varsity Corp. that produces antilock brake systems and brake components, rivals Wabco UK. As carmakers have switched to antilock brakes, Kelsey-Hayes's sales have exploded from \$600 million in 1990 to \$1 billion last year. Yet working capital is evaporating. Kelsey-Hayes manufactures and delivers antilock systems in seven days, down from a month in 1990, matching the pace of customers' orders. The Ford plant in Lorain, Ohio, sends in new orders on Tuesday, for example. Kelsey-Hayes then buys the parts, makes the products, and ships them to the Ford assembly line the following Tuesday. Working capital in the antilock brake operation has shrunk from \$70 million in 1990 to negative \$18 million.

For Whirlpool, running lean is the ticket to growth in a competitive, low-margin industry. Whirlpool borrowed heavily from 1989 to 1991 to purchase Philips's appliance business in Europe. Raising prices was impossible, so Whirlpool turned to working capital as a source of cash to pay down debt, build plants in Latin America, and develop new products. Since 1990 it has lowered working capital from \$1.1 billion to \$900 million. In that period, fresh investments have helped buoy sales from \$6.4 billion to \$7.4 billion. Says chief financial officer

Since 1990, Quaker has reduced working capital from 13% of sales to 7.3%, freeing \$200 million in cash.

Michael Callahan: "As sales keep growing, we'll continue cutting working capital. That will substantially increase cash flow."

In food processing, titans are transforming their sales strategies to conserve working capital. While such companies need less working capital than heavy manufacturers, savings can still be huge. The leaders include Campbell Soup and Quaker Oats, which are shelving the hoary practice of

trade loading. Though supermarket sales of soups and cereals are steady and predictable, production at both companies typically careened from high peaks to deep troughs. Campbell and Quaker offered deep discounts—frequently at the end of each quarter—to maximize short-term sales and profits.

BY THE END of each quarter, inventories were immense. Then Campbell and Quaker would ship huge stocks to customers, who actually sold the soup or cereals over weeks or even months. In addition to raising costs through huge inventories and overtime, trade loading lowered the prices Quaker received because customers demanded extra discounts in exchange for carrying big inventories.

Today Campbell and Quaker produce not to pack customers' warehouses but to smoothly replenish their shelves. They're running promotions for longer periods and spacing them throughout the fiscal year. The result is reduced working capital. Since 1990, Quaker has reduced working capital from 13% of sales to 7.3%, freeing \$200 million in cash.

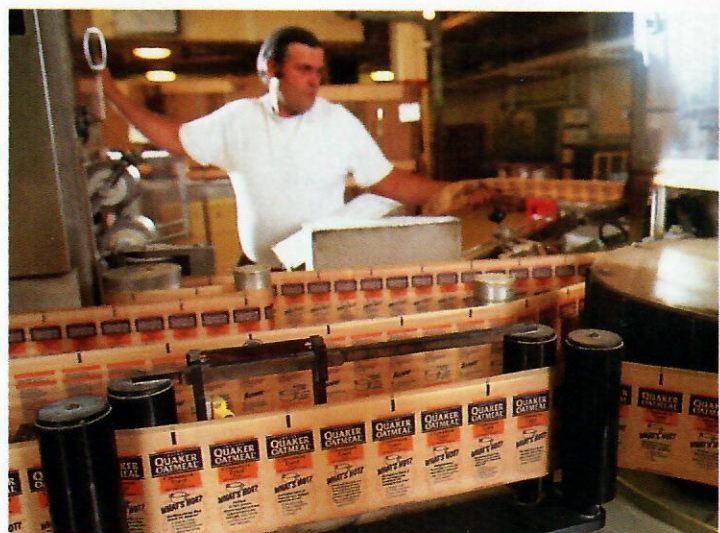
A tower of progress is Quaker's plant in

Quaker Oats pared inventories by more rapidly changing over machines from making Apples & Cinnamon instant oatmeal to Cinnamon Toast. Old time: 3.7 hours. New time: 1.8 hours.

Shiremanstown, Pennsylvania. In 1990 the factory carried big inventories to meet the quarterly push. Stocks of snacks and cereals covered a month to six weeks of orders. The credo was simple: Keep the machines running full tilt. Making all nine flavors of Instant Quaker Oatmeal cereal could take as long as six weeks. Apples & Cinnamon, a hot seller, ran for a week at a time in huge batches of 25,000 boxes.

Today the factory produces every flavor about once a week. Apples & Cinnamon emerges in lots of 8,000 boxes. Producing small quantities more often carries a price: Workers have to reset the machines far more frequently than under the old system, with the machines sitting idle during the changeovers. Quaker is accelerating changeover times impressively, but workers still spent 27 more hours resetting equipment last year than under the old system, at an annual cost of \$20,000.

The savings in lower inventories, however, exceed \$500,000 a year. Instead of quarterly spasms, the plant simply replaces the product its customers sold the previous week. The smooth, rapid flow of deliveries has cut stocks from \$11.7 million to \$5.8 million. "This meant thoroughly relearning production," says plant manager Arnie Wodtke. "Until three years ago, I never thought about inventories." But then, around the globe, managers like Wodtke and Nutter are also achieving results they'd never dreamed of.



ALAN DOROW (2)