Welcome to Sensor Readings

Some notes about navigating this document

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Robots are ready for their close-ups

T he world probably isn’t quite ready for robotics. Politicians have not really seriously tackled important issues, such as unemployment caused by robots, and the dangers of allowing artificially intelligent killer robots to take to the battlefield. They mention them in passing, mostly to get media exposure, but no serious legislative framework to deal with the issues raised by robotics and automation has been put in place. To be fair to them, it’s difficult to know what can be done. Heavy industry has seen the gradual erosion of human employment caused by robots for decades, particularly in manufacturing. But now, with robots entering logistics and other sectors in a big way, even more people will be made jobless. But many are claiming that rather than jobs being lost, they will be changed and much innovation will take place.

Meanwhile, in many other sectors of business, there is potential for losing millions of jobs. In the leisure and hospitality sector, for example, robots like Five Elements’ luggage-carrying robot Budgie and Savioke’s item-carrying robot Dash could displace hotel porters and all manner of job roles that in the past could only be done by humans.

The main reason robots have not already made millions more unemployed is because they cost a lot of money. It can cost several million to equip a factory with robotic systems, and even small robots such as Budgie cost $1,400 per unit. It may seem value for money when compared to a human employee, but generally speaking, businesses prefer not to have to spend upfront, instead they want to spread the costs over time.

However, the components that go into making robots, and the software that goes into operating them, are getting cheaper. It’s unlikely to be more than five years before the widespread use of robotics is having a big impact on economies and societies. Robots are ready to move closer to humans, but are humans ready for robots?

From strength to strength

Now buys the most robots

China’s robot revolution

‘world’s strongest robot’

Japan unveils the programming tool

People behind RoboDK, the new offline...
Murai develops angular sensor
Murata has developed what it believes is the world’s smallest surface-mount MEMS angular acceleration sensor. Murata combined its technology for designing inertial sensors, such as acceleration and gyro sensors with its MEMS [micro electro-mechanical system] process technology to develop the surface-mount MEMS angular acceleration sensor. The unit is also believed to be the world’s smallest SMD-type angular acceleration sensor, the accelerometer has dimensions of just 5.2 x 2.5mm typ. x 0.8mm max. It incorporates a detection frequency band of more than 1kHz and an angular equivalent equal to an effective value of less than 1rad/s²ms.

Alps launches ‘smallest’ sensor
Alps Electric has launched the HSSPAR Series Force Sensor, which the company says is ideal for force sensing in input devices and posture control in industrial equipment and robots, using Murata’s MEMS technology to achieve the industry’s smallest size. Mass production is already under way. Demand for high-performance pen-type input devices (stylus pen) has been growing recently with the rise of digital drawing and painting. Stylus pens, or styli, are mainly used to trace the trajectory of the pen tip as well as to reproduce different thicknesses in the artwork corresponding to the pressure applied.

Kawasaki launches duArO two-armed robot
Kawasaki Robotics has launched its duArO dual-arm SCARA robot, designed to ‘coexist with humans in the workplace’, according to the company. The new robot is armed primarily at manufacturing of products with short life cycles. Industrial robots have been developed and extended mainly for mass production involving long product life cycles. However, in fields where new models are introduced frequently at intervals of a few months, automation is considered difficult despite demand for robotization, in terms of both preparation period and cost-effectiveness. Kawasaki says its duArO robot is applicable to such fields. The company says the duArO robot’s area of motion is the same as that of a person, with motions similar to those of human arms and independent movements for each arm, making it possible because of its dual-arm configuration.

Schäfer to automate Dräger plant
Dräger has tasked intralogistics specialist SSI Schäfer with constructing a logistics centre in Lübeck, Germany. The new facility will house Dräger’s manufacturing and logistics operations. Dräger operates a number of manufacturing plants around the globe, including two in Lübeck. The company has recently decided to consolidate production and logistics at its Rwalistrasse site. The new facility is designed to accelerate production processes, cut costs by eliminating the need to transfer materials between the two Lübeck plants, and reduce inventory size.

Crouzet to showcase IoT solution
Crouzet Automation will demonstrate its new emito nano-PLC with remote capabilities and Millennium 3 Smart Logic Controller, both designed to control, monitor, measure and log data for a variety of water and waste treatment applications, at Aquatech 2015, to be held in Chicago, US, from September 28-30, 2015. Holger Völkel, who heads Dräger’s manufactur- ing logistics team in Lübeck, says, ‘As part of our ongoing “factory of the future” project, our goal is to ensure that our manufacturing and logistics processes are truly interconnected. “In concrete terms, our goal is to supply our production staff with the materials they need within two hours of them submitting their requirements.” Dräger has commissioned SSI Schäfer to turn this vision into reality. Völkel says: “We were very impressed by SSI Schäfer’s end-to-end service offering.”

Aethon says its TraySafe can detect missing or expired items, and detect misplaced items
Leeslar has selected Aethon’s Medisys TraySafe product to streamline its medication tray and kit processing for improving safety and compliance of preconfigured trays used in crash carts. Leeslar provides supply chain and operational services to multiple hospitals in the region. Ken Greco, Leeslar’s vice president of pharmacy services, said: “We needed a solution that would meet all of our operational and safety requirements, but could also scale in a cost effective way. Replenishing and managing trays is a labor-intensive process and is also demanding from a safety standpoint. As we look to add new hospitals, we needed to increase our efficiency while still ensuring safety. We looked at other solutions, but TraySafe was the only solution that could meet all our requirements for efficiency, safety, compliance and affordability.”

Intuitive awards five da Vinci grants
Intuitive Surgical has awarded simulator grants to five US medical centers to advance the field of training for robotic-assisted minimally invasive surgery.
The University of Rochester Medical Center, University of Virginia School of Medicine, University of Nevada School of Medicine, University of Maryland School of Medicine and University of Miami, Sylvester Comprehensive Cancer Center will each receive a da Vinci Surgical System Surgeon Console and Skills Simulator for one year to pursue novel research initiatives.

The 2015 call for grant proposals encourages applicants to focus on specific key areas of interest for da Vinci surgeon training, highlighting Intuitive Surgical’s identification of training needs and the company’s plan to support research to address those needs, including how skills learned in a virtual-reality environment translate to improved inter-operative skills. This was an extremely competitive process, with many top institutions choosing to participate, said Myriam Curet, MD, senior vice president, chief medical officer at Intuitive Surgical.
That's a job for a robot

Opinion is divided as to whether or not the widespread adoption of robots will lead to mass unemployment and economic devastation. Estimates vary as to how many jobs robots have already taken, but some of the forecasts are actually quite worrying for the working man and woman of the future, if not now.

Others go further in their vision of robots as job stealers. Some people say that robots will probably be taking over lower-skilled jobs – they’ll come after your job too; or more to the point, they’ll come after your home.

However, whether artificially intelligent robots or computers can make films and take on more complex tasks like that is open to question. Or is it? Maybe we’re grasping at straws here. It’s long been argued that computers can make films and take on more complex tasks, but it’s long been argued that computers can make films and take on more complex tasks.

For example, Associated Press is using the Wordsmith artificially intelligent writing software to produce more than 4,000 business articles per quarter, a 14-fold increase over the output achieved by the agency’s human writers previously.

And the even the genuinely creative jobs, such as music making? A young Ray Kurzweil proved in the 1980s that computers can compose music (see video above).

But while some domestic robots may replace the role of caregivers to the elderly, the number of jobs potentially lost by millions of people buying robots for their homes is perhaps not as significant as millions of people buying robots for their homes. In China, at least one factory has been reported to absorb the entire labor force, working 14 hours a day for a few dollars a day. China is not even in the top 10 countries when it comes to the number of robots. According to the IFR, the 10 countries with the highest number of industrial robots for every 10,000 people employed in manufacturing are:

- South Korea, 357
- Japan, 339
- Germany, 261
- Italy, 159
- Sweden, 157
- Denmark, 145
- United States, 135
- Spain, 131
- Finland, 130
- Taiwan, 129

In terms of the percentage of workers who will be replaced by robots, it’s believed that as much as 80 per cent of workers could be replaced by robots right now, if employers were of a mind to make such a revolutionary transformation not just possible but inevitable. Or is it?

In principle, there is no problem with imagining a transformation in the labor market that substitutes technology for workers for 80 per cent of current jobs and more. What he thinks humans can do to resist the onslaught of the untruly thirsty of computers, AI and robots Schmidt didn’t clearly articulate.

Schmidt didn’t clearly articulate. At the moment, there’s too few of them to worry about. In this fight, it is very important that we find the things that humans are really good at.

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Robots replacing humans one by one

The Brookings Institution doesn’t think robotics and automation technology is the threat to the economy that some people do. In a recent blog, Brookings pointed to research that apparently shows there are robots and automation are actually a driver of economic growth. However, Brookings did seem to accept that the research showed that there may be a correlation between the installation of robotics and automation systems with the loss of jobs. Mark Muro, senior fellow and policy director, Metropolitan Policy Program at the Brookings Institution, said: “Between 1993 and 2007 (the timeframe studied by Gratz and Majda) the United States increased the number of robots per hour worked by 237 percent. During the same period the US economy shed 2.2 million manufacturing jobs. Assuming the two trends are linked doesn’t seem far-fetched.” In another article, written by Matthieu Bélanger-Barrette, of RoboTique, robots are viewed as potentially “the biggest job creators in world history”.

Bélanger-Barrette suggests the introduction of robotics and automation to the industrial production process is equivalent to the introduction of the wheel in the ancient world. “Robots are not there to steal jobs, but to help workers,” says Bélanger-Barrette, who points to research that suggests that robots have increased productivity without causing job losses. “There doesn’t seem to be any correlation between robotization density and unemployment and we can still say that robots are increasing GDP,” says Bélanger-Barrette. Japan, where robots have always found more favour and been treated with less suspicion, is seeing increasing number of business sectors employing robots. Already a widespread feature of the industrial and manufacturing landscape, robots are now being seen in department stores and hotels, if not directly serving customers, then at least interacting with them in some way. Mosamms have also employed robots in customer relations. Directly speaking, those are androids, but they are taking human jobs in situations where customer expect there to be a human, so it’s understandable that they are made to look as human as possible. 

Eric Schmidt (left), former CEO, Google

There is quite a bit of research that middle class jobs that are relatively highly skilled are being automated out

Eric Schmidt (left), former CEO, Google

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One in which entirely new jobs are created in industries that never existed before, or business sectors which were previously relatively small. No obvious solution comes to mind, but space does seem to offer one growth area. As more people, organisations and businesses become interested in space tourism and space exploration, it’s likely to be a significant employer in the coming years. And despite there being so many mega-cities in the world, even more cities will be created and more people will live in them. The world’s urban population is thought to have outnumbered that of the countryside in or around 2008. Of the world’s total 7 billion, around 3.5 billion now live in cities. China’s urban population is though to have exceeded its rural population in 2013. All these people need places to live. Billions live in slums. That is likely to change. If it is probably inevitable. Until new, construction, even of a small home with all the modern facilities, has been too expensive for the vast majority of the world’s population. But with construction robots, the overall cost of construction is likely to come down. At which point the benefit of having robots around fills not down to the working man and woman at the bottom of the pay scale, or no-pay scale, instead of simply translating into more profits for construction companies remains to be seen.

Two scenarios could emerge: one where mega-construction companies monopolise the technology, or smaller teams of builders invest in robots and take on more ambitious projects. Either way, building will be cheaper. The first robotic bricklayers are just now being released into the market, and it seems obvious that there is a demand for them. Whether they will create more jobs than they eliminate is difficult to answer at this stage. It probably depends on whether the rate of growth in new buildings increases or stays the same. The property market in some countries is propped up by artificial scarcity created by ancient or restrictive planning and building restrictions.

Though they sound radical, these are realistic scenarios. But what is even more realistic is the concept put forward by industry conglomerates in Europe and in America.

In Europe, it’s called Industrie 4.0, and in the US, Industry 4.0, and it refers to a number of transformative developments in manufacturing and other sectors, brought about largely by robotics and automation. Far from worrying about job losses, proponents of Industrie 4.0 believe it will create jobs and increase revenue. Then there are the “futurists”, such as Thomas Frey, who lists 24 future industries that “will lead to an era of super employment.”
Many drops in the ocean

The total surface of Planet Earth spans some 510 million square kilometres, and the ocean accounts for more than 70 per cent. If there’s one man who would be familiar with these kinds of numbers it’s Eamon Carrig, co-founder and chief roboticist at Autonomous Marine Systems (AMS), a US robotics startup which could scarcely have more compelling origins.

AMS was started by three aerospace engineers – Carrig, T.J. Edwards, and Walter Holemans, although Holemans has since left the company.

“We had all been working together on spacecraft systems – T.J and Walt mostly mechanical and structural electrical and software – since 2006,” says Carrig in an exclusive interview with RoboticsandAutomationNews.com.

“Specifically we worked on satellite separation systems, which are the last systems that have to work to get a satellite on orbit. In my career as a systems engineer, we produced about 15 systems for flight. I would have bet my life on every single system we delivered.”

AMS has built small robotic vessels it calls “Datamarans”, which act as data collectors for meteorology and oceanography. In the simplest form, think of them as self-guided buoys that happen to look like futuristic sailboats. The company is offering custom surveys of the world’s oceans for the defense, energy, shipping, fishing, and research sectors. Although accurately summarized on its website as a “marine data service”, the description doesn’t quite sum up the epic scale of the task AMS has taken on and the potential benefits to a variety of sectors.

“The company says it is building the world’s first global water-borne, intelligent sensor network and data collection device. And while Carrig may be intensely proud of this ambitious but realistic goal, it seems unlikely that such a long search would have been necessary, and it’s equally unlikely that it would have ended in failure to find the plane.”

Carrig tells the story of how AMS came about. “We decided to try to do something big, building an infinite duration surface vessel after learning about the needs in the scientific community for co-local simultaneous measurements of partial pressure of CO2 above and below the surface. These measurements are critical to our efforts to understand carbon transport and climate change. There is no good remote sensing solution – you have to be there. This project is our best effort to get vessels out to the middle of the ocean as cost-effectively as possible. We see the oceans as the most important area on which to concentrate our stewardship efforts in the coming century.”

“In the distant past, some might have dismissed it as an impossible dream, or at least slightly eccentric, and may have been reluctant to back it with money. But with new communications technology advancing and proliferating as they have, combined with Carrig and his team’s skills, the ‘wacky idea’ became an ambitious but realistic goal.”

“Our grand vision is centered around networking systems of heterogeneous robots to collect big ocean data.”

— Eamon Carrig (left), chief roboticist, AMS

“Our approach has been to focus on the network, as opposed to the individual boats from the beginning. After all, it is the utility that matters, not the glory. To this end we have chosen to pour our efforts into squeezing as much performance as possible out of low-cost materials. And if it is not just the cost of goods sold – what we spend on materials to make a boat – that matters, one must also consider the legal obligations of operating such a system over its entire lifetime.”

The Datamaran uses a combination of systems for power, including a rigid sail to harness the wind, and onboard solar panels to charge the battery to operate the electronics. AMS is planning to use a number of communications networks to connect the Datamarans: the Intradate satellite constellation, GSM (cell phone), Wi-Fi, and RF (like an RC airplane).

The company says each Datamaran acts as a node in the network. Using peer-to-peer communication, and redundant host systems on land, swarms of Datamarans can self-organize for maximum efficiency in carrying out their mission. This capability allows for ocean surveillance of unprecedented richness and responsiveness to changing conditions, says AMS.

AMS has concentrated on developing a system that makes the most of the burgeoning – components market in robotics without packing too much into it, and the company has developed the system in a way that allows for future expansion and augmentation.

The small vessel it has developed that will serve as the data points is claimed by the company to be the world’s first self-righting catamaran, which has been named a “Datamaran.” The vessel offers savings and performance unmatched by any other vehicle in its sector, says AMS.

“Many of the claims in our first patent, granted several months ago, focus some clever tricks to get the most performance out of a system composed of low-cost materials and scalable construction methods.”

“A craft is not credible commanidable if it cannot overcome surface currents, yet we believe that in the past, may have helped find aeroplanes that crashed speed drop off sharply soon thereafter. We don’t want to make the best boat, quixotically, we want to make the least boat that satisfies the need.”

“Keeping the individual node costs as low as possible allows us to deploy the technology as widely as possible. Distributed networks are the only way to address this global requirement.”

“Walter has been a bit more ambivalent, whereas in the past it may have been the atmosphere that was the problem, now it’s the water. But with robotics and communications technology advancing and proliferating as they have, combined with Carrig and his team’s skills, the ‘wacky idea’ became an ambitious but realistic goal.”
company, he indicates that the company has identified clear gaps in the market and has strong backers who will help AMS to bridge those gaps.

“Our initial customers are from the US – primarily the energy and defense sectors,” says Carrig. “Our first missions are concerned with data collection and validation. Metocean data collection in particular is a global problem – the amount of data currently being collected is sparse, and the tools being used are inadequate.”

“The nice thing about these mission sets from a business development perspective is that the needs look the same all over the world. We will earn our stripes by speaking with the highest quality product to marquee customers,” he adds. “We’re seeing startups rise with truly impressive teams, and we’re uniquely able to access to ample environmental energy and vessels are critical to any such network because they are the largest unmet needs first. That said, we

AMS is all set with its fleet of Datamarans to achieve its objective of networking the world’s oceans, but as enormous as that enterprise sounds, it is actually just the beginning for the company.

“Our grand vision is centered around using networks of heterogeneous robots to collect big ocean data. We hope to reach a critical density of proprietary data, and reap the added value of an integrated longitudinal data set. Nothing like this has ever been achieved. By making each node in our network – surface, air, and under water – as flexible as possible, we are able to rapidly integrate advanced sensors and flex to customer needs.

“We anticipate a panoply of specially outfitted Datamarans working in concert to cover the spectrum of sensing needs. Any such network needs to employ a multitude of physical channels, data protocols, and command and control structures.

“Fortunately we have a leg-up on building these tools from our experiences in the spacecraft industry, and prior work in bandwidth constrained environments. Surface vessels are critical to any such network because they are uniquely able to access to ample environmental energy and both satellite and acoustic comm. We do our best to be data driven, and are focused on addressing the largest unmet needs first. That said, we have lots of wacky ideas, both derivative and tangential, floating around (pun intended).

“The best part of a technology like this is that it opens up possibilities that no one has thought of, or if they have, have done so only in theory without a direct, plausible, pathway to achievement.

“Our power-positive, persistent, affordable platform is a necessary condition to building the next generation of ocean observation tools, and rising to the global challenge of ocean stewardship.

“In general, I think very few working roboticists truly understand the implications Moore’s Law [myself included]! We’re counting on having a special breed of technologies only to be overtaken by even more impressive technologies that come around five years later. This is true across the board.

“At AMS we’re trying to get to the time-and-computation-independent heart of the problem – the algebra if you will. It’s tough to build a strong stable business around something that may ultimately become a commodity, which is why the Datamaran is only the beginning.”

“The world needs cheap reliable boats, but more to the point, the world needs low-cost tools to garner ocean intelligence. We will not rest until that goal is achieved.”

“GTL affords startups real lab space in addition to business enrollment services. This heady combination is very special and cannot be found anywhere else. And, of course, Surge, would be nowhere without (a family). The ‘team capital’ access to experts, investors, and professionals working in ocean science.’

“Carrig elaborates on the support AMS has received, in particular from Greentown Labs (GTL). "I can’t resist the temptation here to shout out Greentown Labs in Somerville, MA, our home for the last seven months or so. Greentown is an amazing community of people working on big ideas that are instantiated in real things. Being accepted there, and getting to move to the heart of the robotics ecosystem, has been invaluable."

“AMS recently received a $1.7 million innovation grant from the Virginia research and development government programme to nurture innovative startups. The mentors there opened our eyes; from babies to businessmen in a few short weeks (feels like a lifetime ago). We could never have imagined that our participation in these programs would have had such a profound effect on our company, our lives, and our ability to engage the problem with which we are so lucky, and thrilled, to work.”

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Elements Robotics

Wendy Roberts,
Interview with
Helper robots
Budgee for launch

Five Elements sets
Budgee for launch

Five Element Robotics is all set to launch its Budgee robot later this month, and the company is aiming for bumper sales within the first year. The US company was founded in 2012. “It is self funded by Wendy Roberts, the CEO, who financed the venture herself. She may or may not open the books to outside investors but so far, it’s a business she runs with colleagues Jim Pari, Nick Lynch and Norm Lunde.

In an interview with Sensor Readings, Roberts says Budgee the “follow-me” robot is ready for service. “It is expected to ship the end of August. We expect to sell around 50,000 when at full manufacturing capacity. The robots are made here in the US, in New Jersey,” she says.

About 3 feet tall, on three wheels, and featuring what could be called a pouch in which bags and other items can be placed, Budgee is basically an intelligent trolley, albeit more aesthetically pleasing and more functional.

The company’s “follow-me” tag is meant to describe what the robot does – it follows the user around. “The person [user] carries a transceiver which is about the size of a key chain and the robot follows that using sonar technology,” says Roberts.

The robot keeps a certain distance between the transceiver and itself, which is configurable. There is a virtual ‘egg’ around the robot, meaning that if you are within the ‘egg’ it will follow you. If you are outside of the ‘egg’ it will not.

“The reason is to prevent the robot charging after someone if they are far away and turn on the transceiver. The robot does have collision avoidance sensors and cliff sensors so it won’t go over a cliff, stairs, curb or other cliff-like situations.”

Roberts says Five Elements wants to be part of the robotics revolution. Specifically, it’s dedicated to revolutionising the human robot relationship with its follow-me technology, which the company has trademarked.

As well as producing the Budgee robot, Five Elements also supplies computer services and customised software for the robotics market, particularly the collaborative robotics sector, with an emphasis on personal robots.

The company has initially aimed at the elderly and disabled, many of whom require assistance carrying stuff around in shops and in the home. Five Elements sees robots becoming part of everyday life, and envisions robots being part of the family unit, and “integral to our society and the collective mindset.”

Roberts says: “So far the interest in Budgee has come from consumers and businesses. Consumers are generally either disabled or elderly or have an occupation that requires them to carry a lot of things. And lawyers, [who often have to carry around a lot of documents] have expressed interest.

“Businesses that have expressed interest are shopping malls, many in US and internationally, airlines – Alaska Airline for helping people carry their luggage in the terminal, postal delivery service – in Germany, for the postal carriers who carry the latter by hand; libraries, for when librarians are restocking the bookshelves; and retail stores, for shoppers to use as cars.”

Roberts may have expected orders mainly to come from customers in the US, and although there has been significant interest locally, she says orders have come from around the world. “Interesting that orders have come from all over the world – the word is out regarding Budgee,” she says.

As a result of the strong interest from abroad, Five Elements has signed distribution deals with companies in Italy, China, Denmark, and Israel.

The company was founded in 2012. “It is self funded by me – no crowds funding or venture capital yet,” says Roberts, whose background includes the founding of Future Skies, which develops software for the US Department of Defense. In the time Five Elements has been developing the Budgee robot, the costs of materials and technology that goes into making robots have been decreasing, which has enabled the company to offer Budgee at a lower price than it had originally anticipated when it first started.

Initially, its manufacturer’s suggested retail price was $4,000. As a result of improvements and cheaper components, this has now been reduced for its August launch. “We are currently accepting pre-orders for Budgee,” says Roberts, adding: “The Budgee costs $1,399 which is very reasonable for a robot that performs a much-needed function.”

Increasing functionality will be added to Budgee, says Roberts. Already it can be equipped with a scanner and checkout capability, which means it can take on more of the chore of shopping than just carry the bags.

Budgee can either be a push or a personal helper robot, bought by individual customers, or could make its way into businesses. Shopping malls and hotels have shown an interest in the robot, and it’s unlikely to be long now before we see Budgee and its like in many more public places, carrying out their duties with robotic reliability.

Interviews www.roboticsandautomationnews.com editorial@roboticsandautomationnews.com

Sensor Readings

The RoboDK Library has many robots, external axes and tools from different brands. We are constantly adding new robots to RoboDK. The library can be directly accessed from our desktop app.

Python powered
RoboDK is a robot development kit that allows you to program any robot from any brand through Python. Python is easy to learn yet powerful and flexible. Robot offline programming has no limits with RoboDK’s Python API.

CNC friendly
Use your robot like a CNC. Convert CAM files into robot programs, your robot can be used like a 5-axis CNC. Easily simulate the result with RoboDK and avoid collisions, robot singularities and joint limits. Download and try our robot milling example.

Offline programming
Offline programming has never been easier thanks to RoboDK. You don’t need to learn brand-specific languages anymore. RoboDK handles the robot controller syntax and outputs the right program for your robot. Try a basic Pick and Place example.

Multiplatform
RoboDK is the first multiprocessor robot offline programming software. It works on Windows, Mac, Linux and Android devices. It even works on your phone or tablet! Check the download section.

Robot accuracy
Certificate robots. Check the accuracy of your robots with a ballair test. Obtain a PDF report describing the accuracy and repeatability of your robots. RoboDK allows you to calibrate your robots and improve production results. Contact us for more information.

Download

Extended library
The RoboDK Library has many robots, external axes and tools from different brands. We are constantly adding new robots to RoboDK. The library can be directly accessed from our desktop app.

Pick and Place example.

Multiplatform
RoboDK is the first multiprocessor robot offline programming software. It works on Windows, Mac, Linux and Android devices. It even works on your phone or tablet! Check the download section.

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Extended library
The RoboDK Library has many robots, external axes and tools from different brands. We are constantly adding new robots to RoboDK. The library can be directly accessed from our desktop app.
A waveless picking and warehouse automation project for 165-year-old premium chocolate producer Lindt & Sprüngli put Invata Intralogistics' FastTrak Warehouse software and control system at the heart of the company's new distribution center in Stratham, New Hampshire. The waveless picking and warehouse automation system included a Pick-to-Light system, extensive conveyor systems, a sorting system with a sliding shoe sorter (aka slat sorter), and Invata's own FastTrak Warehouse Software which included Warehouse Control System (WCS) and Warehouse Management System (WMS) functionality. Invata's FastTrak Warehouse enabled a seamless integration with Lindt's JD Edwards business system for inventory allocation against orders and lot tracking. Invata's FastTrak Warehouse Software acts as a central monitoring system enabling complete visibility of the overall system and the individual component performance. At a rated speed of over 100 parcels per minute, the FastTrak-directed waveless picking and warehouse automation system enabled a five-fold increase in Lindt's business, while reducing processing costs and labor requirements across the board.

Situation

The distribution sites in Europe, in two, in the U.S., and distribution and sales on four continents. Chocolates from around the world, produced in Stratham, New Hampshire, were being delivered to customers around the world. Lindt & Sprüngli All has been long recognized as a leader in the market for premium quality chocolate. Offering a large selection of products in more than 100 countries around the world, Lindt & Sprüngli is also known as one of the most innovative and creative companies making premium chocolate.

By 2007, Lindt's success in the US had brought it to the point where its distribution center was bursting at the seams. The facilities production capacities were not keeping pace with the rest of the industry, and the company was also having problems meeting wholesale retailer compliance labeling demands.

Opportunity

Lindt was committed to utilizing its JD Edwards enterprise software, but needed some way to fill the gap in its business system when it came to the Warehouse Management System (WMS) and Warehouse Control System (WCS) functionality needed to optimize a warehouse automation system utilizing material handling subsystems, conveyor systems, and sorting systems.

The company needed to find a way to comply with looming governmental regulations for tracking the identity of production lots to wholesale clients without bringing the distribution center to its knees.

Lindt needed to expand its ability to meet wholesale/retailer compliance labeling requirements, as the company’s existing manual approach had become very costly and back charges for non-compliance had gotten out of control. The company wanted to find ways to minimize labor and production costs associated with its distribution operation. Lindt was committed to dramatically enhance its distribution center productivity standards, which had fallen below established industry best practices at that point.

That's when the FastTrak team from Invata was tasked with designing and integrating a waveless picking system incorporating the latest in warehouse automation technology that would act as the backbone for the new facility.

Waveless Picking Solution

In creating a new waveless picking system for Lindt, the FastTrak team not only automated the movement of materials within the distribution center, but also they automated the flow of data, eliminating what had been a costly and cumbersome manual data collection process.

The distribution center design features the following material handling systems:

- Automatic pick line for cases and totes, incorporating Pick-to-Module logic for quantity and lot visibility
- A print and apply labeling system, incorporating 4 printer application
- Utilizing a robotic algorithm
- A sliding shoe sorter system with 11 sorter lanes, 1 exceptions processing lane, and 1 return line lane
- An extensive network of conveyors, including 12 different types of conveyor, and paperless pallet building system, using digital display boards to direct palletizing activities

The distribution center design capability includes:

- Waveless picking/sortation
- Production lot control identification, control, and tracking
- Wholesale/retailer compliance labeling
- Real time control of the material handling equipment
- System wide inventory flow
- High visibility of operations and data
- Warehouse management system and warehouse control system functionality needed to fill pick lanes left by Lindt’s ERP

The system works in the following way: When a pickup is completed, pallets of manufactured product are moved to the warehouse via a pallet conveyor. Pallets are then moved into an extensive storage area where they are inventoried by lot number for traceability through the distribution center’s warehouse system, and ultimately to the wholesale retailer. The order fulfillment process is complete, it is wrapped, labeled, and merged, and then through the print/pallet labeling system, the barcode labels are selectively applied to those cases going to clients requiring compliance labeling. This eliminates the manual approach to compliance labeling that Lindt previously used.

Invata’s FastTrak Warehouse Software uses the bar codes on the cases to identify the item and lot number, and then automatically merges, and then through the print/pallet labeling system, eliminates the manual approach to compliance labeling. Once cases arrive on the distribution center, the pickers are assigned to each case using a dynamic pick line for cases and pallets, or a dynamic pick line for cases and totes, incorporating Pick-to-Light display logic for quantity and lot visibility. Cases on route to palletizing are merged, and then through the print/pallet labeling system, the barcode labels are selectively applied to those cases going to clients requiring compliance labeling. This eliminates the manual approach to compliance labeling that Lindt previously used.

As part of the project, Invata also upgraded its control system to comply with new governmental regulations for tracking the identity of production lots to wholesale clients without bringing the distribution center to its knees.

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invata@roboticsandautomationnews.com
www.roboticsandautomationnews.com
Marketplace

Associations: Robotics and Automation

British Automation & Robot Association
bara.org.uk
The aim of the BARA is to promote the use of, and assist in the development of Industrial Robots and Automation in British industry. In 2009 BARA joined forces with the PPIMA (Processing & Packaging Machinery Association) to become a special interest focus group.

Robotic Industries Association
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Marketplace

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IRobot
Roboticists
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Aurotek
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