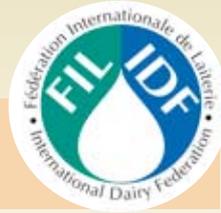


SUMMIT DAILY **TUESDAY**

STOP PRESS

Please note

Please be aware that session start times vary so pay attention to the announcements of sessions' starting..



Win a free REGISTRATION to WDS 2011 in Parma, Italy

Visit the Italian WDS 2011 booth for a chance to win a complimentary free registration for you and your companion. Winner announced on WDS2011.com website, Friday 12th November.



Technical Tours

When attending all technical tours, please note:

- Clean, flat covered-in footwear must be worn at all times. Socks will be required when changing into site safety footwear.
- No smoking will be permitted on manufacturing sites
- No photographs will be permitted inside manufacturing sites
- Delegates are reminded they are to wear no jewellery on the Plants tours. We recommend you leave your jewellery back at the Hotel.

Social Tours

Please meet at the registration desk 15mins prior to the start of your tour, on Level 3 of the Sky City Convention Centre (entry from Federal Street).



Skyjump voucher winner

Congratulations to Mark Voorbergen from Rabobank, winner of the draw for a SkyJump voucher. The voucher was donated by SkyCity.

PLEASE NOTE

Delegates are required to show their name badges on all Tours.

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IDF HOT TOPICS – EXPERT VIEWS



Expert view from Sophie Bertrand



Prior to the World Dairy Summit, IDF caught up with Sophie Bertrand, environmental technical manager at the French Livestock Institute. Sophie is the leader of the action team who developed the new IDF publication “A common carbon footprint approach for dairy: The IDF guide to standard lifecycle assessment methodology for the dairy sector”

In your view Sophie, what is the importance of developing this common method?

SB – I think it is very important because we need to get the carbon footprint of dairy products clear. This is an area where we are really being challenged, so we need to know where we are, and where and how we can make progress, and then to be able to evaluate that progress.

How was the process of developing the Guide?

SB – I would say that the development process was very thorough because it took over a year to develop and involved both scientists and practitioners from key organisations – so there is an impressive quantity of work behind it. We emailed, we wrote articles, we telephoned, which makes the Guide really robust, from that point of view. Everybody was really collaborative and very motivated.

What do you see as the importance of the Guide to the dairy sector?

SB – It is very important for two main reasons: first, to support the production of consistent and comparable carbon footprint figures at the world level. That will overcome the problem of confusion over the current quality of data. It is also important to enable the evaluation of dairy products on a consistent basis. The Guide will support the evolution of efficient and sustainable businesses that are continually reducing their greenhouse gas emissions.

...and the Guide provides that consistent basis?

SB – Yes, it allows you to calculate and then to make some changes. At the same time the Guide is important because the industry can demonstrate a credible focus on environmental issues and speak with one voice.

This area of science is still developing. How will the Guide cope with this?

SB – The science on the issue is evolving, so we have to monitor this rapidly developing area to ensure we remain at the cutting-edge of methodological development. That is why we are retaining an action team to constantly review the Guide and update it.

Expert view from David Homer



IDF also met David Homer, a hands-on UK farmer involved in various dairy-industry-related responsibilities off the farm. He shared with us the challenges ahead and the importance of the work of IDF in the area of sustainability.

What are the main sustainability challenges facing the industry?

DH – The two main challenges are economic sustainability and people. People, because it is becoming increasingly difficult to find enthusiastic young people to come into the industry to care for and milk cows. Also, of course, the environmental challenges from the point of view of water availability and potential temperature changes which may affect cows and their welfare.

Is there a link between sustainability and profitability?

DH – Yes because there are many examples where an environmental or carbon footprint improvement means a profitable gain as well. We have examples in our business where efficiency gains have improved the bottom line. For example we are using less inorganic fertilisers, particularly nitrogen, because we are making much better use of our manures with practices such as injecting slurry into the soil rather than spreading it over the ground. This retains more of the nitrogen for the crops and the plants and the roots to utilise directly. Also we are growing more clover which fixes its own nitrogen, so we don't need to apply inorganic nitrogen. These are examples of non capital-intensive changes to our business that we've been introducing and improving over the last 15 years.

Does this have a measurable effect on your business and agricultural performance?

DH – Yes, definitely. We have healthier pastures, healthier cows and a healthier bottom line as a result.

Will you be using the IDF Guide?

DH – Yes. As this methodology is introduced into all of the carbon-footprint models then it will be used on my farm where we are measuring our carbon footprint.

Will the common methodology allow for comparison?

DH – Yes, it will make it more useful from an international comparison point of view so if I wanted to benchmark against my fellow dairy farmers in New Zealand, or California, or Saudi Arabia then hopefully we would be working from a more common platform and to be able to make fair comparisons.

Visit the new IDF website at www.IDF-LCA-guide.org and discover how our industry is committed to producing safe and nutritious foodstuffs sustainably

Focus on....



Summit Daily brings you more about a very small sample of today's LactoPharma Conference speakers by conducting mini, email interviews.

Dr. Graham Mitchell Speaking at 9.15

Graham is a Principal of Foursight Associates Pty Ltd, an advisory service in science, technology, innovation and commercialisation. He is an advisor on innovation to the Victorian Government, Sustainability and Environment (DSE) and has been an active member of the external LactoPharma Scientific Advisory Board.



Graham's expertise extends over a wide range of science and technology. He has detailed knowledge of the academia-industry interface, has worked in many overseas countries and been involved with the World Health Organisation for many years.

In reply to our email Graham wrote:

"Milk contains a large number of bioactives – that is, physiologically-active constituents over and above 'nutrients'. Examples are oligosaccharide prebiotics, antimicrobials, specific cell growth promoters and mineral transporters. Bioactives' discovery and research is about identifying and securing intellectual property for commercial exploitation (in human or animal); highlighting health attributes of foods from natural sources; and to assist food regulators. The lure remains of a 'differentiated, high-value, health-enhancing dairy product or functional ingredient in an era of increased lifestyle-related and diet-related chronic degenerative diseases and massively escalating health care costs'. Part of the value adding process is to perform human studies 'earlier rather than later' and grand opportunities exist in the bioactives field to meaningfully link biomedical and agrifood research.

A. Prof. Geoffrey Krissansen Speaking at 11.00

"Any novel application of lactoferrin is a hot topic, also finding new ways of commercially exploiting the major proteins in milk and novel uses of dairy products as adjuvants.

"We have two clinical trials in progress seeking to determine 1) whether ReCharge, a novel ice cream containing two dairy bioactives inhibits the side-effects of chemotherapy, and 2) whether an enriched milk fat can combat atopic dermatitis. We have results from a preclinical trial which demonstrates the potential efficacy of lactoferrin in supporting breast cancer patients undergoing treatment. Our research will have a significant impact on human health and the dairy industry as it has revealed that dairy products can potentially be used to provide vital support for patients



undergoing conventional cancer treatments, and other debilitating forms of treatment."

"There will be an increasing emphasis on finding niche applications for known dairy bioactives, searches for dairy peptides and lipids with novel activities, application of novel technologies to isolate minor milk components with potent biological activities, and the application of dairy bioactives and formulations as adjuvants in the treatment and support of patients undergoing therapy."

Jian Guan Speaking at 16.45

Jian Guan is a senior neuroscientist in the Liggins Institute.

"My research interest has been focused on age-related decline of brain function and other age-related degenerative neurological conditions like Parkinson's Disease. As our population is aging, age-related neurological conditions have become a critical issue and a major social-economic impact to our society. Research targeted at improving brain wellness by supplementing certain nutrients will provide new insight in aging research and improve human health and quality of life. It would also be a more natural approach compared to pharmaceutical interventions."



Dr. Sylvie Turgeon Speaking in the Dairy Science Conference at 15.40

Dr. Sylvie Turgeon is Professor at the department of Food Science and Nutrition and Director of the STELA Dairy Research Centre at Laval University.

"Consumers are concerned about nutritional properties (and erroneous recommendations from doctors to stop or reduce dairy product consumption, salt content, etc.) and competition from substitutes (soy, etc.) Also a growing concern about the environmental impact of farming"

"General nutritional approaches consider food as a black box containing different amounts of nutrients, they do not consider the impact of food processing and the structure of the food. In our Institute (www.inaf.ulaval.ca) scientific exchanges allow us to widen the classical approach and take into consideration the impact of processing on nutrient release during digestion. A better knowledge of the factors that modulate nutrient release will help in developing functional foods.

"In Canada, there is still a strong tendency to offer healthy dairy products, so research will continue to address this need. It could be through different options as a better control of dairy nutritional properties as explained before but also pursuing the characterisation of bioactive compounds.



Focus on....

and now for some of tomorrow's speakers: two from the Nutrition and Health Conference...

Prof. Connie Weaver Speaking at 13.30

Connie Weaver is Head of Department of Foods & Nutrition at Purdue University, West Lafayette, Indiana. Her research interests include mineral bioavailability, calcium metabolism, and bone health. Connie has published over 200 research articles. She is Deputy Director of the Indiana Clinical and Translational Science Institute.



Summit Daily – “In your opinion, what are the ‘hot topics’ for the global dairy industry now?”

Connie Weaver – “The Bolland meta analysis has made people worry about excessive calcium intakes and risk of calcification of the arteries.

In efforts to reduce added sugars, flavoured milk has been targeted which reduces consumption of milk in schools.”

Benefits of types of milk fatty acids and whey proteins.

Summit Daily – “What do you see as the key issues and opportunities for the global dairy industry in 5-10 years?”

Connie Weaver –

“Reducing risk of metabolic syndrome.

Osteoporosis reduction will continue to be a concern.

Love of kids for yogurt.

Concern over fat and sodium in cheese.

Lactose intolerance.”

Summit Daily – “How do you see your role/work impact on this future.

Connie Weaver – “I will continue to study the role of dairy in developing peak bone mass but also reducing risk of metabolic syndrome.

I plan to study whether increased calcium and vitamin D can lead to increased risk of soft tissue calcification.”

“Milk avoiders have more fractures so communicating that will help.

The NIH consensus conference on lactose intolerance last February concluded that lactose intolerance is manageable and is not a reason to take babies off of milk for prolonged periods.”

Assoc. Prof. Hope Weiler Speaking at 14.00

Dr. Hope Weiler is an Associate Professor and Registered Dietitian in the School of Dietetics and Human Nutrition, McGill University. Dr. Weiler is a Canada Research Chair with a research focus on lipid nutrients, including vitamin D, and their role in bone mineral acquisition in children and maintenance in adulthood.



Responding to Summit Daily's mini interview questions, Hope wrote:

“I feel a hot topic is milk consumption rates and impact on human health and a key issue will be to find ways to enhance intakes of milk and milk products.”

“My role is researching the benefits of milk consumption on vitamin D status, bone health and other associated outcomes, knowing the benefits of milk will have an impact on consumption.”

Dr. Arthur Ouwehand Speaking in the Cheese Science Conference at 15.30

Dr Ouwehand is currently is R&D group leader of the microbiota research group at Danisco Innovation, Health and Nutrition, in Kantvik (Finland). He is, however, also Associate Professor at the Functional Foods Forum of the University of Turku. Arthur has focused his research on the interactions between prebiotics, probiotics, and other functional food ingredients, and the gastrointestinal mucosa and microbiota. Arthur has, and is, supervising research projects of several PhD students in the area of intestinal microbiota and functional foods.



In response to our email, Arthur wrote:

“For me, the contribution of fermented, and especially probiotic dairy products to reduction of disease risk and a better understanding of the mechanisms behind that to further optimise these benefits are the ‘hot topics’ for the global dairy industry now.

Thorough substantiation of health benefits is of prime importance in order to be allowed to make health claims in many parts of the world. We aim to provide this documentation. We also look at new potential health targets; metabolic syndrome being one of them.

We may not be able to solve the obesity epidemic; but we can contribute to reducing the risks associated with it, for example metabolic syndrome. This undoubtedly will be an important target for future dairy research; not only probiotic research.”

Innovative Technologies for the Dairy Industry

Over the course of more than 100 years, Ashland has developed a state-of-the-art product portfolio for the dairy industry and has earned a reputation for delivering innovative chemical technologies that address customer needs. Whether you produce liquid milk, cheese, butter, cream, yogurt, or powdered goods, we can help you enhance the safety and quality of your products, improve your operational efficiencies, protect your plant assets, and minimize your impact on the environment.

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On their way to lunch (above), yesterday, l – r, Johan Kruithof, Rob van der Horst, James McVitty and Henry van der Heyden stopped for a quick chat

Hayden Lomax and Kelly Fitzgerald take a brief break from distributing fine Tip Top products for a mock interview



Jerry Anderson of Synder Filtration chats with Richard Archer



As seen from the Mezzanine at the Auckland Maritime Museum during the Orica Welcome Reception, delegates chat and learn below the hull of Black Magic (NZL 32), winner of the America's Cup for New Zealand in 1995



Technical Tour 1

Today, Technical tour 1 travels 90km south of Auckland to the Waikato – just one of New Zealand’s highly productive dairy production areas to visit state of the art dairy product manufacturing and leading edge raw milk testing facilities.

GENEROX™ ensures water supply for Open Country, Waharoa

A unique microbial control technology, called GENEROX™ has been an important part of Open Country’s Waharoa factory’s strategy to ensure it has enough water to meet its manufacturing requirements.

“The factory has gone through two major expansions since it was established in 2004, which has significantly increased water consumption”, says factory manager, Clayton Harris, “this and limited water availability from the regional authority meant the factory was facing a potential water shortage”.

The construction of a whole milk powder plant in 2008 provided an opportunity for Open Country to implement a water recovery programme to capture and use milk condensate from its two evaporators as a source of process water. “The recovery system provides us with approximately 1 million litres of water per day and has allowed us to reduce our reliance on the regional authority” said Mr Harris.

“To enable milk condensate to be used as a source of process water it is critical that microbiological growth is controlled effectively”, says Andrew Dine, marketing manager for Ashland Hercules Water Technologies, who supply their Generox microbial control technology to Open Country for this purpose.

The Generox technology has a number of unique advantages over traditional microbial control options, such as chlorine and UV, in this type of application, where residuals of volatile organic material make it very difficult to treat the water effectively. “In addition to its superior chemistry the Generox programme combines a comprehensive equipment and service support package that ensures very low customer input and a highly reliable solution,” says Mr Dine.

“I like my suppliers to be invisible,” says Mr Harris, “If I am not seeing them it generally means the solutions they are providing are working. I do not see a lot of the people from Ashland Hercules Water Technologies.”

Open Country facts

Open Country Dairy Limited – Waharoa Site

The first milk was processed at Open Country in late September 2004: in the first season (2004-05) 6000 tonnes of cheese was produced and target cheese production capacity was reached in the 2006/07 sea-



son. Since then, the site has had two major expansions, including a whole milk powder plant in 2008.

Waharoa is supplied milk by 310 local dairy farms. The site has the capability to process 400 million litres of milk per annum, producing some 70,000 tonne of products. Processing top quality milk from dairy farmers, Open Country provide a range of milk powders, milk proteins, milk fats and cheeses that are used in a variety of applications including food, beverage and nutritional applications by export customers. Open Country Dairy has two other sites in New Zealand – one located in Invercargill and the other in Wanganui. Both these plants manufacture Milk Powders.

Technical Tour 2



You can't miss it! – Fonterra Te Rapa

For anyone driving to Hamilton from Auckland the first clue that you are approaching your destination is the tall milk powder plant building of Fonterra Te Rapa.

Established in 1967, Te Rapa is today one of Fonterra's largest manufacturing sites, producing nearly 300,000 tonnes of milkpowders and cream products for export every year.

The site processes more than seven million litres per day – or about 300 tanker loads – during the peak of the milk production season, and accounts for about 20% of the Co-operative's annual milk powder production.

Innovative sustainability strategies

Fonterra's Operational Excellence Programme has seen the site achieve significant gains in eco-efficiency, energy reduction, effluent losses and health and safety performance.

- The introduction of Lights-Out automated packing technology in 2006 was a first for the industry.
- The site has a gas-fired cogeneration plant which adds power to the national grid, with waste steam used to run the site's milk powder driers.
- Te Rapa's eco-efficiency campaign has cut the volume of waste it sends to landfill by more than 30% and the site's energy efficiency drive has achieved a 19% energy reduction over the past four years.
- The site also has an advanced waste water treatment plant which uses extended aeration, and a water treatment plant that complies with NZ Drink Water Standards 2000.
- A substantial investment in rail transport to and from the site means fewer truck movements on roads, reducing traffic congestion, and carbon emissions.

Raw milk testing New Zealand – SAITL

Situated on the Te Rapa site, a small, unassuming building, houses the operation which tests raw milk from 97% of New Zealand's dairy farms.

While the purpose built facility is at Fonterra's Te Rapa site, it is leased by South Auckland Independent Testing Laboratories (SAITL) and operates autonomously. With strong links within the global dairy industry, SAITL is ranked as a world-leading testing laboratory.

The company's history began in 1984 when five dairy companies formed the South Auckland Independent Testing Society Limited to operate an independent laboratory to test the composition of milk samples from farms supplying milk to the companies. The decision was made to ensure that all farmers in the participating companies were treated equitably, and was made possible by the development of new milk-testing technology. The laboratory was later expanded to include testing for milk quality.

The facility tests raw milk from 97% of New Zealand's dairy farmers, every day. The bulk of the samples are tested over an eight month season where SAITL receives and processes approximately 25,000 samples a day. For the other four months of the year approximately 1000 samples a day are processed. Results for samples are released the same day as sample receipt. Results are posted online so farmers and the dairy companies can readily access the information.

Every sample is tested for fat, protein and total solids using Milkoscan analysers from Foss. This data is used in calculation of payouts to individual farmers. Lactose and freezing point depression are also tested on all samples. The raw milk is also tested for inhibitory substances, aerobic plate count, coliforms and thermotolerant coliforms. Apart from thermotolerant coliforms and coliforms, which are currently grown in hand poured plates, microbial analysis is done with Bactoscan technology which uses flow

cell cytometry. The thermotolerant coliform and Coliform plates are read using automated technology which photographs each plate and stores the digital images for later referral if required. Microbial tests are carried out on every sample on a random basis over a ten day cycle.

In addition to supplier testing, the laboratory performs a range of chemical and microbiological raw milk testing for the member companies, non-member dairy companies and other dairy industry groups and veterinarians.

With the adoption of RFID technology for sample identification, SAITL started on the road to significantly modifying the way raw milk testing is undertaken. Hand pipetting thousands of samples is a thing of the past, as is manual recording of results.

RML Engineering – automated sample handling at SAITL

In 2009 SAITL achieved the goal of (almost) completely automating sample handling, including splitting, in the laboratory, working with RML Engineering of Hamilton

Having incorporated RFID (radio frequency identification) technology into sample identification and recording throughout their collection and analytical operation the management team at SAITL were keen to add robotic sample sorting and splitting.

SAITL wanted a robotic machine that would receive samples in the 50-vial trays currently in use, read the samples' data from the RFID tags, interrogate SAITL's (MADCAP) database, sort samples by required tests, and then split samples as required for more than one test. Then, finally, the split samples had to be sorted back into the required testing sample streams. The process is straightforward, the machinery to do so looks simple, but is supported by software which has to account for a wide array of parameters, not least that samples



Viewed down the sample sorting chamber, the Robot takes sample vials from trays, as received, and using RFID tag information, sorts them into trays for required testing regimes. The sorter also selects and gathers samples requiring splitting

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rml have developed a range of solutions for milk sample testing from manually operated solutions to high tech RFID guided, robotic sorting and splitting systems. Our strength is being able to develop tailored solutions for customers specific needs whilst being both reliable and cost effective.



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must complete sorting within 20 minutes (the time they can stay out of the chiller).

Two separate machines complete the process, the Vial Sorter and the Vial Splitter.

Vial sorter

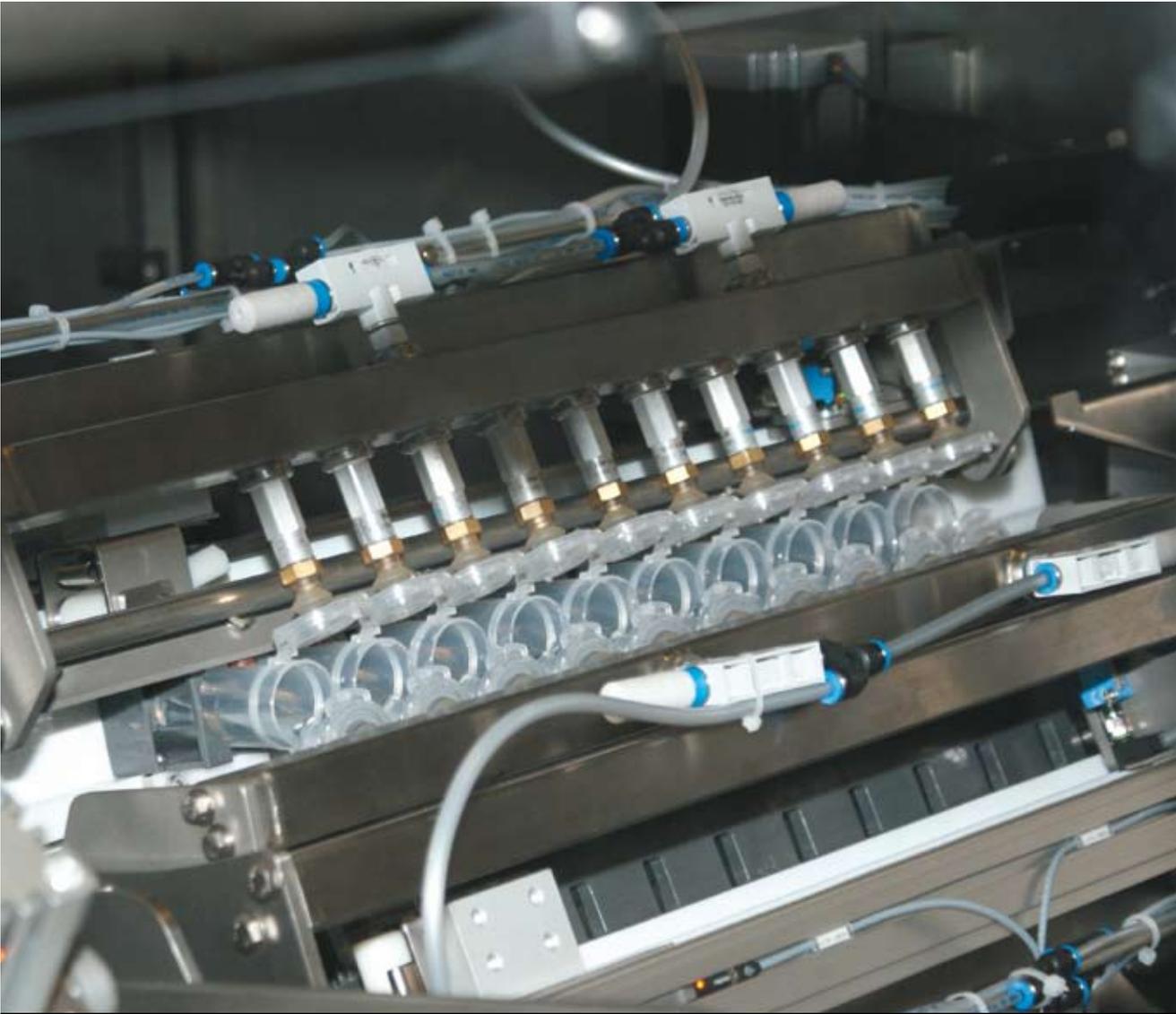
Robot

The primary tool inside the sorting machine which does the manipulating is an ABB IRB340 high speed flex-picker robot mounted on an overhead gantry rail, or 5th axis. In theory, the robot can achieve speeds of well over 120 picks per minute, in practice, many factors influence this, such as distance of travel, weight on gripper and gripper response times. For this project, the pick to place distance is not always short so the engineers targeted an average robot speed of 60 picks per minute. rml Engineering are not aware of any other installations worldwide which use a flex-picker on a gantry rail.

Programming

Extensive simulation was conducted in the robot studio to develop the solution to ensure a workable concept prior to cutting steel.

rml Automation engineers fully programmed the robot application within a virtual controller, part of ABB's Robot Studio robotics simulation platform.



Samples needing splitting, i.e. dividing between sample phials so more than one test may be carried out on a single sample, are dealt with in the splitting machine, which pours part of a sample into a second vial, then RFID-tags the second vial appropriately

This simulation provided the optimum positioning for the robot within the gantry and the pick and place positions for the vials. RobotStudio also allowed the engineers to programme the robot path calculation, as this is different on every pick and place, along with a calculated flyby point to maximise the robot's speed.

Database interrogation

All vials enter the sorter loaded in their racks and trays and stacked onto a trolley magazine. Individual trays are then automatically unloaded from the magazines and driven over RFID antenna banks so that all data from the ISO vials in each tray are read. This data is then compared with the site vial management software (MADCAP) to determine which vials are selected for which tests. This information is then fed forward to the robot system along with the physical tray. Additionally, pre-programmed special rules can be applied to the sort methodology. For example, trays for Inhibitory substance samples will be loaded with ninety-three vials only in a predetermined pattern.

The tray carrier attached to the flex-picker robot then carries that tray with the robot as it hovers over the destination lanes, transferring vials as required.

Splitter Machine

The splitter machine splits or clones vial samples (including their RFID tags) prior to them being sent back to the sorter to be sorted into their destination lanes.

Again, operators feed and unload the machine with full trays of 50 vials. The splitter machine processes the vials in racks of 10 at a time. Each rack is first tipped several times to mix the sample, then the lids are opened and some of the milk is poured into a waiting rack on the opposite side of the machine. At the same time the RFID tag data is read from the source vials and copied to the cloned vials, before the vials are closed and transported back into their trays.

This machine shares the same Rockwell RSViewSE operator interface as the sorter, but both machines have separate operator PC clients. This means that the splitter can be monitored from the sorter and vice-versa. The machine also runs on a rml middleware application which controls the cloning of the RFID tags on each vial.

While this machine is quite a complex machine with many moving parts, most of it is based on proven technology previously installed into SAILL.



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