

Technology helps grow more fish with less feed

Improving technology is allowing Mowi to feed and produce more fish with less feed.

That's the task given to Rodrigo Cristi, Feed & Water Quality Manager who works with a large team, to make sure the fish grow strong and reach market as quickly as possible, while maintaining excellent levels of nutritional value for healthy eating by customers.

"We are always looking for new tools and technologies to help us to optimize our process," says Cristi. "In this case in particular KPI's such as Feed Conversion Ratio (FCR) and growth index, focus on effective and efficient feeding which optimizes the growth of the fish and minimize the environmental impact on our sites."

Cristi, has been with Mowi for 13 years – 9 in his native Chile and 4 in Canada.

In 2016, new feeding technology was introduced using high definition cameras, pan and tilt, with winches that allow the cameras to move from the top to the bottom of the pen. These have helped Mowi Canada West achieve its best ever results.

This year, two new products are undergoing trials in hopes of producing even more positive results.

"The AKVA Observe Technology is a series of systems that through artificial intelligence and specific algorithms helps the feeding process in real-time, to identify when salmon feed is not being eaten, and recording that information on a server that can be accessed on a cloud system," he says. "Also, this system objectivizes fish behavior through image analysis recording and lets the operator know if the fish are responding to the feeding or not."

Cristi notes the software's adaptive learning capabilities makes the



Rodrigo Cristi, Feed & Water Quality Manager is tasked with making sure Mowi's fish grow strong and reach market as quickly as possible, while maintaining excellent levels of nutritional value.

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system "smarter" over time as it makes recommendations to the operator regarding which times throughout the day fish are more likely to be active.

The other is the Steinsvik Pellet detector, dubbed the "Pellector".

"This system mainly looks to detect, record and quantify pellets that are not being eaten that potentially can

drift away from the cages and cause an impact on the seabed," Cristi says.

"Overall, these technologies will help us to keep improving FCR and salmon growth rates, and minimizing the impact on the environment due to less-direct impact for feed waste and less time in salt water," he adds. "It will also improve consistency and production results in our farms."

Besides improved production, benefits include allowing staff to monitor each feeding station remotely, as they can view the process via video.

"Research is showing that salmon stick to a regular feeding schedule, and if we don't have a consistent feeding process, we'll lose out in terms of growth potential," he says.

New processes will allow staff to

analyze and make decisions quicker in three key areas:

Feeding Process, by monitoring feeding start times, camera depth, feeding rates and times for every meal.

Fish Behavior, by monitoring how fish respond when feed touches the water, the fish response magnitude, and how much deeper fish go towards the end of each meal.

Feed On Camera, as it will show when fish are satiated, as pellets will begin to appear on the camera as they aren't being consumed.

"In the future with these systems we will be able to monitor and feed our salmon remotely," he says. "This will allow us to have the best, productive results, with the lowest environmental impact."

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Growing fish and relationships with our local suppliers

A strong working relationship developed over the years is the perfect place for implementing new technology

CAMPBELL RIVER – A strategic partnership between a supplier, Lordco Auto Parts, and Mowi West Canada, has mutually benefited both companies.

Del Wagner, Industrial Sales Representative for Lordco Auto Parts 75 in Campbell River, says “with the implementation of the Opus purchasing system, it has given the Lordco team an opportunity to be on the ground floor in developing a catalogue of supplies that can be sourced with a certainty of product quality, price and immediate availability and in turn given Mowi an effective way of purchasing control.”

Founded in 1974, Lordco is a B.C. owned company with over 100 branches in locations all over the province, with 14 on Vancouver Island.

Wagner has been in the supply industry for over 40 years, and says Matt Flint is the local contact for Mowi and he makes contact each day with Mowi departments and personnel.

“We work with staff who process, fill the orders, package for shipping to all the sites and deliver or ship according to Mowis instructions,” Wagner says. “Every day we field requests and inquiries that we try and find solutions for, in the form of product that meets those needs.”

In addition, Wagner says Lordco representatives we have visited over 40 Mowi sites, farms, hatcheries, processing plants, packaging, and warehousing facilities to do surveys of diesel driven equipment, and other products used in Mowi’s operations.

The information gleaned from those surveys allow Lordco to customize its inventory to have product available for immediate delivery, in the quantities required to keep power units running.

“Our team has developed a relationship with many of the Mowi operational teams and purchasing personnel, and as a team, we are creating this new Opus catalogue of products,” Wagner says. “This catalogue is essential to the correct product being available when required.”

Specialized stainless products, fasteners, plumbing and even



Keith Petrie, Mowi Canada West Supply Chain Manager, with Del Wagner and Matt Flint from Lordco.

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RONC parts are some of the items that Lordco has identified that Mowi regularly needs, and these are stocked, along with filtration

and lubricant products for regular servicing of Mowi equipment.

“This catalogue is an ever growing project vital to the Lordco/Mowi relationship and Matt has taken on the responsibility of developing it to its full potential,” says Wagner. “From Lordco’s perspective, stocking all these unique products has greatly expanded our presence in the marine market in Campbell River, which further justifies the supporting inventories for Mowi.”

Lordco Parts Ltd. was incorporated in 1974 by its two founding members, Roy Lord and Ed Coates. A simple combination of their surnames gave the company its name, and they hired one employee to help them in their modest 900 square foot store in Maple Ridge, B.C.

From the beginning, the two shareholders agreed that success would only come through a diligent, common sense approach to selling automotive parts. Knowledgeable salespeople selling quality merchandise, backed by a commitment to service wouldn’t create instant success, but would give

them a fighting chance to make it in the long run.

The formula has proven to be the right one, and it is on display with the company’s relationship with Mowi.

“Lordco is a strong advocate for the aquaculture industry and other major industry throughout B.C., and looks forward to being part of Mowi’s growth,” says Wagner.

“I’ve been working with Del and the team at Lordco for many years, and we both have fostered a great relationship. They’ve always been proactive and willing to take on any challenge we ask of them, from stocking unusual or industry specific products, to surveying on site equipment to create a Mowi specific parts data base.

Recently they have welcomed the challenge of taking on cataloguing their products for the new Opus system, they could see the benefits from the beginning and have been working hard to get it up and running. I appreciate the support Lordco provides to Mowi, and the industry at large.” – Keith Petrie, Mowi Canada West Supply Chain Manager.

Mowi sponsors B.C. Championship Soccer Teams

CAMPBELL RIVER – Building championship sports teams takes a lot of time, hard work, dedication, talent and a lot of support.

That's why Mowi's sponsorship of the Upper Island Riptide is so important, as it enables the teams to compete at the highest levels of their respective age groups. And this summer, both the Under 15 Girls team won the gold medal and the Under 18 Boys team captured silver at the BC Soccer Association A-Cup Provincials in Surrey July 4-7.

Shel Brodsgaard is the VIPL Riptide Soccer Development

Each of the players have received the benefit of the added instruction, guidance and experience of the technical team help to shape their future soccer goals



Upper Island Riptide's gold medal winning U15 Girls team, and silver medal winning U18 Boys soccer teams



Coordinator for the program, a regional franchise with eight soccer teams (Under 14-18 years, boys and girls) with 130 players and 45 coaches, managers and administrators from the Comox Valley, Campbell River, Powell River, Port McNeill, Alert Bay and Port Hardy.

Mowi has supported the team as the title sponsor for the last four years, Brodsgaard says, adding it has helped pay for Match Analysis System which

helps create recruiting videos for college scholarships for its players.

"Each of the players have received the benefit of the added instruction, guidance and experience of the technical team help to shape their future soccer goals," he says. "The players have also benefitted from the opportunity to play under many guest coaches who have passed through the program thanks to the Mowi sponsorship."

Work is a family affair for the Rileys

CAMPBELL RIVER – Working at Mowi is a "family affair" for Andrew Riley and Ashley Riley.

The father/daughter team works in different areas: Andrew as Fresh Water Fish Transport Manager out of the Campbell River office and Sayward fresh water hatcheries, while Ashley, recently graduated from North Island College with an Aquaculture Tech Diploma, works as a Fish Tech in the salt-water based Monday Rocks site at Quatsino.

While studying for her degree, Ashley learned about plankton identification, fish diseases, health and husbandry.

As she grew up, the aquaculture business was very familiar to her, since her father worked in the industry.

"Dad used to bring us out to sea sites and we would feed the fish

I really enjoy being in the outdoors and like to go fishing as well

and watch the reaction," she recalls. "I really enjoy being in the outdoors and like to go fishing as well. I wasn't sure if I wanted to follow in his footsteps, but it just seemed like a good job to get into. I'm glad I've chosen this as my profession."

Andrew, who has been with Mowi since 1994, says "I'm happy she works for us. At first, I was kind of laughing at the idea, of my daughter coming to work at the same place as her Dad. But I'm happy for her. She always liked fishing, and she still goes

fishing with me a lot as well."

In 2018, Andrew moved into his current position that has him responsible from transferring fish from hatchery to sea, and from hatchery to hatchery, and he's seen plenty of change in the industry since he first started.

Along the way, starting as an assistant manager, then sea site manager, Andrew worked all over the West Coast, from Campbell River, the West Coast and as far north as Klenmtu. He managed brood stock, from 2006 and was there until taking this job over a year ago.

"Now, we are one of the most regulated industries and are monitored closely."

"The gains in technology have been unreal, and we're using underwater cameras to watch the fish feed, now, for example. There is much better housing now,



Ashley and Andrew Riley

safety is a main focus, and the industry has just become that more efficient."

Mowi gets into the FILOMI Days spirit



Mowi employees love being a part of the BBQ serving food to their community and raising money for a very worthwhile cause.



Cori Wheeler, the Mowi Salmon BBQ chef, first last serves fresh cooked salmon fillets to hungry visitors.



Mowi Canada West is a proud supporter of FILOMI Days, Port Hardy's biggest community celebration of the year.



The volunteers from Mowi's salmon BBQ celebrated a successful day with the Port Hardy Volunteer Firefighters.

Graduation for Gwa'sala-'Nakwaxda'xw Nation Students



Cody Walkus was awarded a scholarship from Mowi, Cody has been accepted in the Heavy Mechanical Trades Foundation Certificate Program with Vancouver Island University and starts in September.

Georgia Walkus also was awarded a scholarship for her future endeavours the University of Lethbridge in Alberta, she will major in Kinesiology and 2nd major in Physical Education. Cody and Georgia are pictured with Chrissy Chen from Mowi.



Chief Paddy Walkus honoured all the students individually during the event.

12 graduates from Gwa'sala-'Nakwaxda'xw Nation and they are from left to right of picture- Cody Walkus, Georgia Walkus, Lucy Wallace, Haley Scow, Tyrone George, Thomas Henderson, Taleah Nelson, Bree-Anna Henderson, Sonja Walkus, Alfred Charlie, missing Seth Hunt and Norman Charlie Jr.

Employee health a prime focus at Processing Plant

PORT HARDY – It's Rob Fontaine's job to teach people how to move better. For the employees at Mowi's Port Hardy Processing Plant, it is not just for productivity, but to enjoy a better life.

Fontaine is the Principal Consultant for MoveSafe, which has been contracted to help prevent strain and sprain injuries (musculoskeletal) that can come with repetitive movement occupations.

Kathy Baker has been the Primary Processing Manager at the plant since 2011, and is Mowi's lead with the MoveSafe program, which started in 2016.

"The program consists of warm up/stretchers that we do twice daily, once early in the morning and once in the afternoon," she explains. "The crew is encouraged to stretch whenever we have a stop on the floor (called micro-breaks)."

Baker notes that new hires do sessions with one of MoveSafe's Certified Athletic Therapists, Ashley Cross, where she guides them individually with specific exercises to suit their body types and work.

"The program is ongoing, and we have MoveSafe at the processing plant twice a month," she adds. "If we have an employee

that is sore or hurting, they will have sessions with Ashley to give them guidance on stretches, special taping and posture, just to name a few."

Fontaine is impressed with Mowi's commitment to employee health, adding "This approach is reflected in the care that Kathy exhibits with every employee.

He notes MoveSafe was able to collaborate with leadership to develop a customized approach that fit in with the critical operating demands of a processing plant.

"There were already a lot of key elements in place such as job rotation and workstation adjustability where practical," he says. "With our help, the processing plant has implemented some important improvements."

The current program involves:

1. Warm-up. The goal of the warm-up is to practice proper movement patterns so employees are more likely to complete their job tasks with healthy postures and movements.
2. Recovery. Employees are encouraged to take brief recovery exercise breaks throughout the day as production allows.
3. Ergonomics. The maintenance group has worked with



Stretching and warmups help staff to maintain good posture and good movement patterns.

MoveSafe to implement recommended changes to workstations that allow for adjustability

so each employee can set up the immediate work environment to match their physical abilities.

4. Coaching. In addition to healthy posture and movement coaching on the production floor, interested employees are able to access the expertise of Ashley Cross for specific concerns. The goal is always to teach employees how to take care of themselves and use their work to stay strong and healthy. The results?

"Employees feel better at the end of their shift and can better enjoy their life outside of work," Fontaine says. "They understand better how their body works and can make their own good decisions about posture and movement, and have more physical resilience for work - which helps everyone work together to accomplish the safety, quality and production goals.

"Employees positively influence their friends and family with the importance of posture and movement for all our daily activities."



Taking advantage of micro-breaks to stretch makes a big difference.

Staff input a key ingredient for Health & Safety

VANCOUVER ISLAND – Having an open door for staff input is a key to the strong health and safety record at Mowi Canada West.

Chris McNeill, who has been with Mowi for 19 years, including the past eight as Manager at Big Tree Creek Hatchery, notes receiving valuable input from employees makes a big difference, as “we face multiple potential hazards on a daily basis. Anything from machinery, chemical use, confined space, repetitive strains, slip trip and falls.”

Hazards can be identified by assessing the site, the job itself, and any changes that may have occurred - as well as consideration of the time allotted for each task.

“As a manager, it’s important to allow the staff the time to look at any job before they start and have that in your plan, so as to not be rushing them to meet their deadlines,” McNeill says. “It’s

always important to have the right materials and equipment, and we have that here.”

McNeill says worker and equipment safety is paramount, adding “Mowi has done a great job rolling out and supporting the managers financially to protect our workers. To get buy-in from staff, it has to come from the top down and the staff can see that is what’s happening.”

Monthly meetings where topics are discussed and tracked from previous meetings, morning ‘coffee pots’ (tailgate meetings) to discuss the days’ work, and contractors that come on-site and offer their observations are all taken into consideration.

“We also have tools at our disposal that help us track safety on the site,” McNeill adds. “DATS is a computer-based program that allows us to input safety concerns, tasks identified with correcting the concerns and follow up to ensure



Chris McNeill and Elliott Thorne take time to discuss a task before getting started.

jobs have been completed.”

Eye Observe is a booklet that identifies the tasks workers are doing and creates an itemized list to go through and check off on how he/she is performing each task.

The commitment to health and safety provides peace of mind and security to Mowi employees, and McNeill adds that at the end of the day, “we all want to go home and be with our families and enjoy our life adventures.”

Think before you move

Talking about Health and Safety

Think before you move. That’s what **Blaine Tremblay**, Health and Safety Manager for Mowi Canada West, would like employees to do, to avoid ergonomic injuries, aches and pains.

This summer has brought an unusually high number of reoccurring musculoskeletal injuries, and Blaine has been focusing on educational programs to reverse that.

“We can turn these lessons into opportunities by understanding the events and conditions surrounding these injuries and utilizing the information we have to prevent reoccurrence,” Blaine says, adding that the WorkSafeBC document (Typical Physical Limitation for Common Injuries) is a simple and effective guideline to help.

“Information in the document can be easily and effectively used in many different types of documents to help educate staff, control hazards and raise awareness of the commonly overlooked ergonomic

hazards currently injuring our staff,” he says, adding it can be used for risk assessments, work instruction, and for site-specific tool box meetings.

Having workers “self-pace” and/or take micro-breaks is the best way to avoid common physical injuries on the job. Typical areas of the body that are susceptible to injury, how to limit, and avoid, follow:

Neck

Limit: Activities with arms above shoulder level, including reaching down.

Avoid: Lifting and carrying with arms above shoulder level; Extremes of looking up, down, or over the shoulder, especially if sustained for more than a few seconds.

Shoulder

Limit: Climbing ladders; Activities using arm above shoulder level, including reaching down; Activities requiring lifting and carrying light or medium loads.

Avoid: Holding the arm

outstretched for periods, especially while holding weights and applying force; Lifting and carrying with arm above shoulder level.

Elbow/Forearm

Limit: Repetitive or sustained gripping, especially where high forces are required; Repetitive elbow bending; The Total time spent keyboarding or driving; The use of impact tools.

Wrist/Hand

Limit: Repetitive gripping, especially where high or sustained forces are needed; Lifting and carrying light or medium loads; The total time keyboarding or driving.

Avoid: Extreme postures of the wrist, especially with force.

Low Back

Ensure: Workers can change position between walking, standing and sitting.

Limit: Walking on uneven ground; Lifting and carrying light to medium loads, depending on frequency and postures.

Avoid: Jarring; Repetitive bending; Long periods of static standing or sitting; Extreme bending of the back; Twisting of the back.

Knee

Ensure: The worker can

occasionally elevate their knees; The worker can frequently change position between standing, walking and sitting.

Limit: Walking on uneven ground.

Avoid: Long periods of standing or walking; Deep squatting, kneeling or crouching; Pivoting of the knee; Participating in activities requiring bracing, balancing or running; Stair use or ladder climbing.

Ankle

Ensure: The worker can occasionally elevate the ankle.

Limit: The use of stairs.

Avoid: Long periods of standing or walking; Walking on uneven ground; Climbing ladders; Deep squatting and crouching; Activities requiring balancing, bracing or running.

National Occupational Classification provides a standardized framework for handling loads:

Limited: Work activities involve handling loads up to 5 kg.

Light: Work activities involve handling loads between 5-10 kg.

Medium: Work activities involve handling loads between 10-20 kg.

Heavy: Work activities involve handling loads more than 20 kg.