

Airside

I N T E R N A T I O N A L

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#AIRSIDEINT



AIRFIELD LIGHTING

THROWING LIGHT ON AGL TECHNOLOGY

Ready, set, snow...

Canada's largest and busiest airport, Toronto Pearson International, handles 456,000 flights and over 44 million passengers a year. Helsinki – its Finnish equivalent – sees 170,000 aircraft movements and 16.4 million passengers every year. Although they differ in size, both gateways place equal emphasis on being prepared for winter, as Megan Ramsay discovers



Hevin Lacey is associate director of airfield operations at Toronto Pearson International Airport, which is operated by Greater Toronto Airports Authority, or GTAA. He points out that in terms of the requirements for snow clearance, every airport is unique. “It’s very dependent on the amount of precipitation in winter and also what space is available. In fact, one of our biggest challenges is finding space for snow dumping and storage.”

He explains: “We’ve got three areas right now. As the airport’s infrastructure expands to accommodate more flights, it means we have less room. We’re looking at other areas on the airport that aren’t a high priority for other users.”

In terms of regulations, once again there are differences between airports around the world. In the end, each gateway must ensure its snow plan meets the requirements of the local regulator. “The regulator here in Canada isn’t terribly specific,”

Lacey says; “they just give guidelines about overall operations but it’s up to us to determine how we meet those standards. Some countries are more prescriptive than others.”

In the “close-knit community” that is aviation, and particularly airside operations, it is common for best practice and experiences to be exchanged between airports. Conferences play the principal role in this, Lacey says, but staff from Toronto Pearson have also visited other airports to learn from them on-site. “You can always learn something from somebody else and pick up on how they do things,” he emphasises.

For example: “Many foreign airports have been visiting Helsinki Airport and learning how to do the winter operations

at a busy airport,” confirms Heini Noronen-Juhola, vice president, aviation and safety at Helsinki Airport, which is operated by Finavia Corporation. “There is nothing secret about that; we help with pleasure. We have such a lot of snow conditions that we are

One of our biggest challenges is finding space for snow dumping and storage

Kevin Lacey

constantly prepared. Many airports abroad don't have the processes ready all the time. But we do."

BEING PREPARED

Anything could happen regarding snowfall in Finland, but typically it can be slightly colder in the north of the country. Rovaniemi Airport is located exactly on the Arctic Circle and there are more airports further north, such as Kittilä and Ivalo Airports. Typically, the Finnish snow season starts in November and ends in April.

However, across Finavia's gateways, there is no such thing as an average snowfall. Northern Finland can be snowy for 170 to 200 days a year, and southern Finland for nearly a third of the year. Yet sometimes it snows more at Helsinki Airport than at the airports further north. In fact, some years ago Helsinki Airport saw 2.16 metres of snow during a single winter season.



We have such a lot of snow conditions that we are constantly prepared

Heini Noronen-Juhola

Still, the airport's 'snow-how' enables it to keep calm and carry on. It has three runways, allowing for one (or, in severe conditions, two) to be cleared of snow while the others remain operational. "We have no cancellations or postponings because of snow," Noronen-Juhola says. "We just deal with the weather. Planes fly normally. We have very good snowplowing equipment, snow plowing processes and skilled people to do the work."

Helsinki Airport uses Vammas snow clearance equipment that has been designed especially for runway conditions. The brand is Finnish, although the company has been sold to US-based Fortbrand Services. "These machines

TRAINING

TORONTO PEARSON'S in-house staff who are directly involved in snow removal include seven managers of operations aviation services; four airfield maintenance shift managers; eight technical inspectors; seven supervisors; 70 full-time airport surface maintenance specialists; 70 seasonal airport surface maintenance specialists; plus two contracted service providers on the terminal aprons and central de-icing facility.

"We have training in place for every new hire," Lacey states. "In fact we're developing a new programme for the first three years of a new employee's career with GTAA in winter ops, from theory to partnering with a mentor for on-the-job training to ensure each new hire is able to meet the required standards. The new programme is easier for new hires to follow – it includes key milestones over the three years."

That length of time is necessary, Lacey explains, because there is "a lot of different equipment to learn".

There is also additional training to make sure staff are back up to speed with snow clearance procedures and equipment after the summer season. ■ ■ ■

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were originally developed at Helsinki Airport conditions," Noronen-Juhola notes. "We have now 16 of these. Every time we purchase new ones, we have an open tender. But these [the Vammas vehicles] seem to win the tender every time because of their quality."

Vammas airfield snow removal equipment is manufactured by selected contract manufacturers in Europe and in North America and includes self-propelled runway sweeper blowers, tow-behind sweeper-blowers in three different working widths, compact-sweepers and wheel loader attached snow blowers.

In July this year, Finavia ordered four Vammas PSB 5500 plough sweeper blower snow removal vehicles, which Fortbrand Services describes as having "revolutionised the method by which snow removal is accomplished on runways and taxiways at airports across the world".

According to the distributor: "The reliability of Vammas PSB vehicles in clearing runways within predictable minimal time frames has resulted in aircraft arrival rate increases and substantial savings in delay costs to the airlines, as well as a reduction in operating, maintenance and human resource costs for airport operators."

The four PSB5500s are intended for use at Helsinki Vantaa International Airport.

Finavia also ordered three Vammas B400 loader-mounted snow blowers back in April this year, for use at various airports in its network. A statement from Fortbrand Services says these blowers are rated at 3,000 tons/hour and will be

mounted on Finavia-owned loaders – and that all three units are expected to be delivered in the fourth quarter of 2017.

Like Toronto Pearson, Helsinki has snow collection areas and is fortunate in having enough space for the collected snow to be dumped out of the way. Eventually the sun will melt the huge snow piles – by the beginning of June, typically.

Across the Atlantic, Toronto Pearson's average winter snowfall stands at 106.4cm, based on a 20-year average. It has had its fair share of particularly challenging seasons. In the winter of 2007-08, for instance, the Toronto region registered snowfall of 194cm, 110.8cm of that falling in December and January. Under such circumstances, Lacey says, "You just keep slogging! It was an extremely long winter."

"Then in January 2014 we had the 'polar vortex' – Arctic airflows coming down from the north. It was -40°C for four or five days in a row with no moderation; there were snow events and freezing rain, and things moved slowly – but we kept operating. We used apps, for instance, to keep passengers informed."

The airside surface area requiring snow clearance at Toronto Pearson totals 5,275,814m², while roadways and parking lots come to an additional 1,660,861m².

In order to keep all that space clear of snow, Toronto Pearson has a range of in-house snow clearance equipment – and, like Helsinki's, this gateway's fleet also features the Vammas brand. For its five runways, high-speed exits and taxiways, the winter ops team uses 11 Vammas 5500 PSBs,



two Vmmas 4500 PSBs, two Boschung Jetbrooms, up to nine high-speed snow blowers from various manufacturers, three International trucks and Sweepster tow-behind sweepers and two ATI Snowmaulers and Wausau sweepers.

When it comes to clearing the apron, five Oshkosh HT trucks with MB tow-behind sweepers, three International trucks with MB tow-behind sweepers, Case and Volvo front-end loaders with Craig ramp hog push blades, and six RPM Tech LM220 Load and Go Blowers are used.

Extra support is provided by Epoke chemical spreaders and Batts liquid sprayers.

Lacey says: “We are extremely fortunate at Pearson because by 1997 we were at the leading edge of snow clearance equipment. We already had multipurpose equipment such as PSBs. We have a continuous fleet replacement programme: as well as minor refurbishes, we currently have a major replacement programme for our runway maintenance fleet. This is out to public tender right now and we expect deliveries of the new fleet to start next year.”

EFFICIENCY

Back at Helsinki, Noronen-Juhola states that, “There is no rocket science about snow clearance. The amount of flights has been growing [international passenger volumes at Finavia’s

FORESIGHT

“OUR MAINTENANCE and air traffic control staff together keep a constant eye on weather forecasts. When a flurry is in sight, extra staff are called in,” says Veli-Pekka Pitkänen, area manager at Finavia.

Snow is removed using snow ploughs, sweepers and blowers; this might be done during a break in the flight schedule, or under some circumstances (such as during a blizzard) a runway might have to be closed and/or traffic stopped.

Weather sensors and forecasts are becoming more and more sensitive, Pitkänen says, which leads to better timed winter maintenance.

“In addition to people keeping an eye on the weather, all our runways are equipped with high-tech sensors that monitor tiny changes in the tarmac temperature 24/7. We are particularly interested in temperature changes around zero degrees Celsius, as this is the trickiest temperature from an air traffic safety point of view.”

Even with little to no snow, if the runway is wet and temperatures drop to freezing, ice can be a serious problem and the de-icing team would be called into action to ensure runways do not become, or remain, dangerously slippery. ■ ■ ■

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Veli-Pekka Pitkänen



airports grew by more than 10% between January and June this year] and this stresses the speed and ability to do the clearance very quickly. Of course everything will develop and the amount of flight traffic will grow, but I don't see any major changes in snow clearance coming. As I said, it's not rocket science.”

Indeed the process of shifting snow away from an area where it poses a problem for the safe and timely operation of aircraft has changed little. Nonetheless, Lacey observes that things have moved on in some ways over the years. “As the airport gets busier and busier we have to change the way we do things, mainly in terms of the apron surface. We used to do gate closures and use in-ground melters but we're too busy now, so instead we load and go at the edge of the apron.”

As regards equipment, Lacey remarks: “The biggest changes we've seen are in terms of operational comfort and efficiency. Snow clearance equipment has more attuned ergonomics nowadays, as well as reduced noise levels and better cab layouts, making it more comfortable for operators to be out there for extended periods. Our winter ops staff work 12-hour shifts and they can be out in their vehicles for several hours solid at times.

“Also, computers and electronics are more prevalent; this technology simplifies things, although the operator is still in control of the vehicle, of course.”

Furthermore: “Multi-purpose equipment is here to stay and that's been the biggest change in the last decade. As I said earlier, we had it in the late '90s already. With this equipment we can clear a runway in 15 minutes rather than it taking half or whole hours.”

Finally: “We're seeing autonomous equipment in smaller vehicles – could it end up in heavy vehicles, too? We'll have to see how the technology plays out,” he considers. ■

Finland's airports see plenty of snow during many months of the year

