STAY COOL, SAVE COSTS, AND CARRY ON

COOL TROLLEY, YOUR CATERING CHANGE FOR THE BETTER
The requirement to hold food at low temperatures within an aircraft has become far more significant, with operational and costs challenges for the airlines. This white paper document will explore the needs and pain points from the airlines in regards to cooling and present how Safran Cabin is answering those with the Cool Trolley.
Before a flight takes off, trolleys with food items undergo lines of operations before loaded onto an aircraft. These operations include assembly of trolleys, correct distribution of meals, and complete delivery to the aircraft’s galley, on time.

Keeping the trolley’s goods chilled until secured onto an aircraft is only part of the challenge. The airlines and handlers need to consider the whole journey, which is more complex and longer than the flights alone. Most importantly, airlines have to comply with HACCP’s regulations when food is being served onboard. When food surpasses a certain temperature, airlines are required to serve the food within the hour, as shortly after, it will be considered as waste.

As airlines require to keep their contents cool, these are some methods that they engage in to keep their cooling under the best of their control.

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**Replace perishable food in all flights that are longer than 2 hours.**

*Increasing catering costs, food waste, and logistics handling.*

**Reload dry ice during uplift and handover.**

*Increasing cost of operations.*

**Invest in alternative cooling accessories.**

*Reducing catering equipment capacity.*

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Catering for a large number of people can be difficult, but catering to the skies is an even greater challenge.

As product experts in the catering equipment industry, we understand the complexity of airlines’ catering operations and the process that involves many elements and stakeholders. Our team analyzes how we can achieve the catering and cooling goals of each customer, while utilizing our current developments to support the optimization and improvement of every step.

We have learned that one of the most critical things airlines need is to keep food evenly chilled for a long period of time. Airlines currently rely on galley air chillers and/or dry ice to accomplish the job, but we wanted to take it a step further and develop a product that would provide the right cooling performance for short and mid-haul flights, while addressing the operational and costs challenges faced by customers. Keep in mind that not all aircraft have galley chillers.

Better insulation, smarter design, and optimized capacity were key targets in that exercise, allowing us to also address the overall weight of the solution and of the galley environment.
Safran Cabin performed cooling test trials with more than 20 airlines and discussed their cooling requirements and catering demands. Through personal, hands-on collaboration, we were able to gather all their inputs. In result, we identified 4 main drivers of pain points and challenges that we needed to focus on in order to solve the right problems.

On-Board Food Waste
Airlines constantly plan for food safety, hygiene, and freshness. To maintain good quality food, airlines must have an efficient cooling chain, no matter the duration of the trolley’s transport. The problem is that all food that is not consumed will become waste. Failing to keep perishable food in the desired temperature range result to food being discarded, and the lack of reliable cooling sources in the catering chain is a challenge that airlines continue to combat. Because of insufficient low temperature stability, food is also at risk of spoiling and will become waste. Imagine if you could keep food under the regulatory temperature for 5, 10, or 20 hours.

Dry-Ice Utilization
When aircraft did not have air chillers, dry ice was the only source that kept food safe. That is why airlines sometimes load dry ice directly in the cabin. While it is a common cooling source, dry ice can only be used once and has a short shelf life with limited time before condensing. This is not a very efficient, cost-effective method for daily operations. If airlines are well-equipped with an efficient cooling equipment, they can perform return catering instead, which will help avoid outbound costs. Return catering also makes it easier for airlines to enlarge their network of operations without having to expand their catering outstations. Unfortunately, this is not always possible, which makes it more difficult to manage the logistics and prevent unforeseen issues.

RESEARCH & CUSTOMER PAIN POINTS

HACCP Regulations
The aviation industry is very strict with food safety and food quality. Thanks to HACCP, developed by the International Flight Services Association (IFSA), food safety practices have improved by using temperature control guidelines when serving food onboard. Depending on the region, airlines have to comply with keeping food contents under 4°C - 8°C (39.2°F - 46.4°F). When food reaches this temperature, airlines are required to serve the food within the next hour, otherwise it needs to be discarded.

Catering kitchens prepare large amounts of ready-to-eat meals that need to be assembled. After assembly, food is stored in a trolley, in a refrigerated area, to maintain its temperature below HACCP limits. Catering carts are then taken out of the chilled area 1-3 hours before flight departure, transported to the trucks, and then installed in the galleys. Caterers make an effort to do this as close as possible to departure time.

While catering trucks are better equipped than ever before, food may still be exposed to dangerous temperatures during this journey. This explains the need of dry-ice: to maintain low temperatures during transit and for galleys with no chillers. Trolleys would then need to be stored in the galleys to maintain its safe temperature. The last link of this logistics chain is in the hands of the flight attendants serving the food to passengers.

The purpose of these regulations is to reduce the risk, to the lowest level possible, of bacteria formation and food decomposition of in-flight food. However, airlines still struggle to comply due to the current cooling systems in place that lack the necessary performance to avoid any bridge in the cold chain.

Did you know that airline operations uses over 160 million kg of dry ice every year, which is equivalent to over $500 million dollars? This commodity is one of the biggest money burners in the catering logistics.

Outbound Catering
Airlines strive for efficiency, as they wish to keep their planes grounded for as short as possible. Turnaround times are essential and is becoming more critical in short-haul operations. Due to cooling inefficiencies, the airlines have no recourse but to reload from an outstation. In most cases, refilling meals in an airline’s outstation actually costs more than a meal catered in their home base. Trucks that enter an apron area and loads an aircraft consume more time, which also generates costs. Unfortunately, this is not always possible, which makes it more difficult to manage the logistics and prevent unforeseen issues.
KEY TAKEAWAYS & SOLUTIONS

Workshops and test trials with more than 20 airline customers gave our product experts better insights. It allowed us to evaluate each customer’s cooling data results to further assess what would be the best approach for them. These are some key takeaways that we have discovered from our sessions, in which we applied for the development of our latest generation of the Cool trolley.

Stabilized Cooling
The test trials helped us identify which zones of the trolley needed more attention. Through our observations, we were able to improve the insulation design of the Cool trolley that now provides an even distribution of temperature and stabilized cooling inside the trolley, optimizing its cooling performance up to 50%.

Eliminate the Use of Dry Ice
Dry ice was found to be an unreliable cooling source for trolleys. It condensates too quickly and fails to distribute its cooling temperature throughout the entire trolley. Dry ice was also expressed as a costly commodity. With that in mind, the Cool trolley was redesigned for non-dry ice operations that will save airlines a lot of costs and provide consistent cooling performance.

An Alternate Design with Better Performance
With our customer pain points in mind, we needed to come up with a cooling method that does not involve dry ice. This steered us towards the direction of using cooling cassettes. The Cool trolley has been specifically redesigned to use cooling cassettes, solving the problem of undistributed temperature and dry ice. We removed the dry ice compartment, which gave us the opportunity to utilize that extra space for an additional runner position, increasing the loading capacity of the trolley for more storage and/or a cooling cassette.

SAVE COST
- Eliminate outstation handling cost, food prices, and uplift

REDUCE WASTE
- Reduce untouched food waste

FASTER TURNAROUND TIME
- Reduce catering delivery in outstations and risk of delays

INCREASE QUALITY
- Replace frozen goods with fresh foods and extend its shelf life

IMPROVE MENU CONSISTENCY
- Load more from homebase port

OPTIMIZE A/C CABIN
- Remove galley chillers while reducing weight and maintenance cost
Both solutions create a more uniform distribution of cold temperature throughout the entire trolley. Cooling cassettes offer continuous cooling and reusable solution that eliminates the need to use dry ice. The cassettes are filled with a cooling agent that can be refrozen but do not surpass -3°C (26.6°F), -11°C (12.2°F) to name a few, to prevent physical damage of the food and provide a controlled, prolonged source of cooling. The cassettes are also washable and food safe, according to international standards.

**Slim Cooling Cassette:** The slim cooling cassette is specially designed to take no space from the trolley. It simply sits as a lid when combined with drawers in the trolley.

**Standard Cooling Cassette:** The standard cooling cassettes are designed for the utmost challenging cooling requirements.

The Cool trolley has been designed to optimally perform with the slim and standard cooling cassettes developed by Icebridge.

We partnered with Icebridge to extend our cooling solutions and portfolio to provide our customers the right cooling accessories that they would need to optimize their cooling chain. Icebridge products were designed to offer cooling solutions for various catering needs and scenarios that will be applicable for some special applications. If the cooling cassettes are not sufficient to meet our customer's specifications, we have additional accessories for an alternate solution. All accessories are suitable for all trolley equipment models We believe that in most cases, all demands can be matched with our cool trolley and cooling cassettes. For other additional special requirements, we also offer unique cooling Icebridge accessories.

Every airline is different and each have unique cooling requirements. The Cool trolley was designed with all of our airline customers in mind. We know that it is not a one-size-fits-all solution, and this is where we want to offer our customers the experience and help solve their cooling challenges. Our test trials are specially organized to support our customers, every step of the way, in defining the best cooling set-up for their catering load and cooling demands. With firsthand collaboration, we are able to understand and identify challenges, allowing us to put extra focus on their cooling needs. This gives us the opportunity to fine tune their equipment, as accurately as possible.
IMPROVE YOUR COOLING CHAIN AND REQUEST FOR A TEST TRIAL TODAY.

Do you need to improve your trolley’s Cooling performance? Safran Cabin would like to invite you to a test trial, so that we can evaluate together how we can improve your cooling chain. Please contact your Sales representative to request for more information or email us at Catering@safrangroup.com