

**Searidge Technologies Inc.** is a provider of mission critical technology solutions and services in support of Air Traffic Control and Airport Operation markets. Searidge combines a unique blend of experience working with Air Navigation Service (ANS) providers, with expertise in imaging and optical technologies, to design and develop solutions that address current industry challenges and directly impact the safety and expediency of traffic throughout the airport surface.

Searidge is the market leader in the deployment of stand-alone system using camera sensors and video analytics in an air traffic control tower for the purpose of airport surface surveillance and control. Through the use of its enabling-technology platform, IntelliDAR™, Searidge also provides other best-of-breed solutions to its customers including augmentation of A-SMGCS, gate and stand management, and weather observation applications.

### Key Features

- Improves situational awareness
- Provides visual confirmation of targets
- Configurable one-look ATC-Grade video display
- Video diagnostics include video timestamp analysis, and stale or invalid data warnings
- Continuous video archiving and playback
- All-weather performance

### Key Benefits

- Automated ground surveillance enhances the effectiveness of air traffic controllers by increasing traffic throughput
- Reduces the amount of radio communications especially during inclement weather conditions
- Mitigates the risk of runway incursions
- Contribute to the safety and overall efficiency of airport operations
- Modular and flexible design allows airports to prioritize focus on problem-specific area(s) first

*In cases of ambiguity, full visual confirmation of the situation helps to decrease the amount of radio communication between pilots and the ATC tower thus reducing their overall workload.*

ATC-Grade Digital Camera



- High Resolution
- Smart Bandwidth Options
- Military Grade Image Sensor
- 80,000 hour MTBF

# ATC-Grade Video System

## Product Overview

In many airports around the world, the “see and be seen” mode is still the most common practice to handle ground traffic. During low visibility conditions, visual reference is impaired, which severely impacts surface operations, leading to an increase in workload for air traffic controllers and pilots alike. Providing surveillance through ATC-Grade Video enables controllers to effectively manage the ground traffic with a high degree of confidence, and is a cost-effective approach to handling ground traffic whether as a primary system or in conjunction with other Surface Management Systems.

Searidge Technologies ATC-Grade Video System is a situational awareness system designed to be customizable and configurable specifically to support air traffic controllers. It employs many key operational principles from the Searidge IntelliDAR™ platform for surface management, such as operational safety, redundancy and all weather performance in an air traffic control setting. The system continuously monitors and presents real-time video feeds from digital camera sensors to a one-look display. In cases of ambiguity, full visual confirmation of the situation helps to decrease the amount of radio communication between pilots and the ATC tower thus reducing the overall workload.

IntelliDAR™ is an enabling-technology platform that is used in multiple Air Traffic Control and Airport Operations applications. It's a non-cooperative surveillance system which can be used in a variety of solutions ranging from airport surface detection, hot-spot and blind spot coverage, and augmentation of existing surface surveillance technology, to apron management, wild-life control, and automated weather sector visibility assessment.

## ATC Experience

Searidge Technologies combines a unique blend of experience working with Air Navigation Service (ANS) providers and expertise in video and imaging technologies to design and develop systems that address current industry challenges and directly impact the safety and expediency of traffic throughout the airport surface. Before starting any project, Searidge works closely with its clients to thoroughly understand their ATM operational requirements and constraints. The net result for our clients is a system of the highest quality, which is delivered on time, and on budget.

## Evaluation of Equipment for Use Within ATC-Grade Digital Video System

Searidge Technologies utilizes specialized laboratories and state-of-the-art equipment to evaluate multiple digital camera sensors, and all related hardware components from industry leading manufacturers before using them in the system. All hardware goes through Searidge's rigorous environmental testing processes, including thermal and humidity testing for quality control. In addition, the cameras are placed in an environmental chamber within a vibration setup for all-weather conditions performance testing. Based on these results, Searidge will recommend a system that would be most suitable in meeting the client's needs and the site requirements.

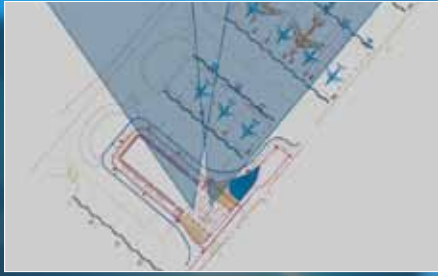
### Testing Facilities

- Visible and IR MTF measurements
- Clean room space
- Environmental chamber
- Vibration setup

### Environmental Testing

- Quality control
- Thermal and humidity test

Airports with existing CCTV infrastructure can use the ATC-Grade Video Display to feed video data directly to ATC tower.



Site layout - Apron/Gate Coverage



Site layout - Runway Coverage

**FEATURE COMPARISON CHART**

FEATURES	CLOSED-CIRCUIT TELEVISION	ATC-GRADE VIDEO
<b>Video Camera Sensors</b>		
All Weather/Visibility Performance	☆☆☆☆☆	☆☆☆☆☆
Video Quality	☆☆☆☆☆	☆☆☆☆☆
Military Grade MTBF	✗	✓
Certified for IntelliDAR™		✓
<b>OVERALL</b>	☆☆☆☆☆	☆☆☆☆☆
<b>Video Display</b>		
Basic Video Presentation	✓	✓
ATC-Grade Design (Safety Critical, Rigorous Testing, Operational in ATC Towers today)	✗	✓
Timely Alerts for Video Latency	✗	✓
Timely Alerts for Component Failure	✗	✓
Video Diagnostic Information	✗	✓
One-Look Situational Awareness	✗	✓
<b>OVERALL</b>	☆☆☆☆☆	☆☆☆☆☆
<b>Video Archiving &amp; Support Hardware</b>		
Basic Video Storage	✓	✓
Timely Alerts for Video Archive Failure	✗	✓
Timely Alerts when Video Archive Reaches Capacity	✗	✓
High Availability Storage Hardware	✗	✓
Redundant Storage with Hot-Swappable Hard Disks	✗	✓
Maintenance Workstation (Camera configuration, diagnostics & troubleshooting, retrieve archives)	✗	✓
<b>OVERALL</b>	☆☆☆☆☆	☆☆☆☆☆

## What Makes this ATC-Grade?

The ATC-Grade Video System is designed to perform automatically and continuously without user intervention once it is configured. The system enables air traffic controllers to have faster reaction time, thus mitigating the risk of runway incursions, and contributing to the safety and overall efficiency of the airport's operations.

Airports with existing CCTV infrastructure can use the ATC-Grade Video System to feed video data directly to ATC tower.

**Customizable Video Panel** – The configurable one-look ATC-Grade video display offers controllers a quick view of the monitored zone(s) and the targets in question. This feature allows controllers to take immediate action if required, without the need to further manipulate what they are seeing on the display.



ATC-Grade Digital Display

**Video Latency** – This refers to the amount of time between each frame received from the camera. This condition is checked when a frame is received. If the difference of time between two frames is older than a pre-set amount of time, a warning is issued. This is built into the system to ensure that the update rate meets specific ATC requirements.

**Video Staling** – This refers to the actual real-time age of each image that is displayed. This condition is checked within the video display code. Each time the screen is updated, the system checks the timestamp of each video frame. This is built into the system to ensure that controllers are always viewing the most up to date video.

**Video Diagnostic Mode** – Running the system in diagnostics mode provides additional information on the status and performance of cameras and the display. In diagnostic mode, additional information such as frame rate and average latency time between each frame received are presented on the display to further optimize the configuration of the system to the controllers' specific viewing needs.

## Site Layout and Deployment Services

**Site Survey** – The primary goal of the site survey is to determine optimal deployment criteria for the cameras. The criteria include camera viewing angle, elevation, inclination, orientation, stability, power, and network.

**Site Layout** – Searidge work closely with its clients to thoroughly understand the controllers' tasks and their operational requirements. From there, the camera sensors are strategically positioned to align with the line-of-sight from the ATC tower thus acting as an extension of the controllers' eyes.

**Camera Configuration** – Once all of the camera hardware has been installed according to the site survey the cameras must be calibrated. The calibration process begins when all camera hardware (focus, aperture, orientation, inclination etc) has been configured to the required specification. An internal and external sensor calibration is performed on each camera.

**Camera alignment tools** – Specialized software tools are developed to assist airfield maintenance technicians in order to easily remove and reinstall cameras for maintenance purposes without the need to reconfigure or re-calibrate.

## Video Archiving

All ATC-Grade Video System deployments contain video archiving for us in:

- Incident Reporting
- Operator Training

The video archive comes with built-in timely alerting functionalities and storage redundancy. Storage is supplied for archiving a minimum of 60 days.

## Remote System Maintenance

The Maintenance application plays a key role in the setup and through-life maintenance of the overall system. Maintenance can be performed from any PC with a connection to the database. This application provides direct access to all necessary surface movement and processing data.

**Core features include:**

- Hardware & Software Status Monitoring
- Diagnostic & Performance Metrics
- Live Video
- Sensor Calibration & Filtering

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