



BLUEVIGIL

The Future of Jobsite Safety and Security

VTCA 12-11-25

Nighttime Work is More Hazardous and Less Productive

- More work being done at night
- Accidents are 87% more frequent with workers present
- 3X more accidents at night
- Per DOT: Lighting is one of the top 2 issues on work sites



Light Towers Don't Meet the Needs of Today's Work Sites



Dangerous Glare “Blinds” Operators

- Lights are positioned at or near operator eye level, causing direct glare into haul-truck cabs, mirrors, and windshields
- Glare temporarily blinds operators moving from dark to lit areas,

Harsh Shadows Hide Hazards

- Low-angle lights create deep, moving shadows behind berms, windrows, boulders, and equipment
- Shadows distort depth perception, making it harder for operators to judge bench edges, uneven terrain, and haul-road conditions

Inefficient Ground Coverage

- Small useable area of illumination, creates blind spots when the excavator rotates or haul truck or moves
- Lights require frequent relocation, interrupting operations and leaving areas temporarily unlit

Reduced Worker Visibility

- MSHA often cites inadequate lighting as a contributing factor when workers are struck or pinned.

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Tethered Lights Solve the Problems by Placing Lights 4X Higher



Drone + Sophisticated Extension Cord + LED Array

Eliminates Glare

- ✓ Uniform overhead illumination, preventing direct beam exposure
- ✓ No “white-out” effect on glass, mirrors, and reflective surfaces.

Removes Hazardous Shadows

- ✓ Narrows shadows that hide berms, edges, and obstructions.
- ✓ Reveals true ground conditions and improves depth perception

Broad, Consistent Illumination

- ✓ Light coverage remains consistent despite equipment movement
- ✓ 2X larger useable light field

Improves Visibility of Ground Personnel

- ✓ Workers are illuminated from above - no backlighting, no silhouettes

Rapid Deployment and Continuous Operation

- ✓ Lights can be deployed/redeployed in minutes
- ✓ No towing required
- ✓ Flexible power options; minimizes fuel logistics

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Drone Based Lighting 101



Air Unit (AKA the Drone)

- May or may not be capable of lateral flight

High Intensity LED Array

- 4-6 LED modules that work together
- Can be 'gimballed' to eliminate LED movement when drone naturally moves

Tether Line

- Think sophisticated extension cord
- Usually 'reactive' meaning it accommodates wind pressure

Tether Base

- Houses tether spooling mechanism and power management components

Controller

- Wired or wireless device used to raise/lower drone and adjust lights

External Power Source

- Generator, Vehicle Inverter, Ground Power, Battery Cube

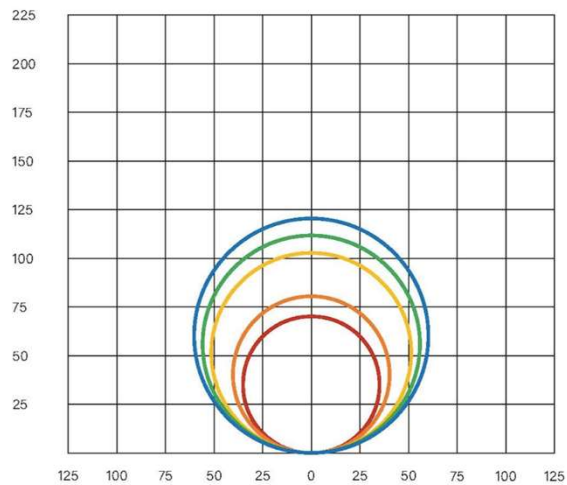
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Tethered Light versus Light Plant



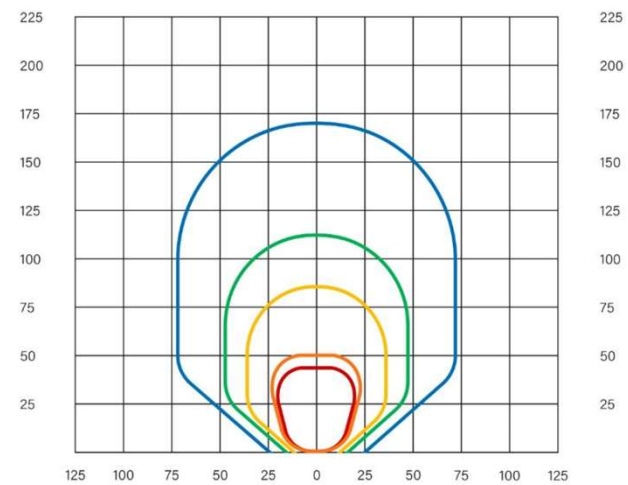
Light Fields Compared

Aerial LED Light System
75 ft Tether Height
4 200w LED fixtures at 20 degree tilt



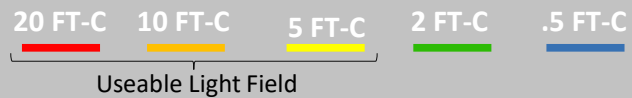
Total Light Field: 11,500 ft² at minimum 0.5 ft-c
Usable Light Field: 7,975 ft² at minimum 5 ft-c

Common Towed Portable Light Tower
25 ft Mast Height
4 296w LED fixtures at 20 degree tilt

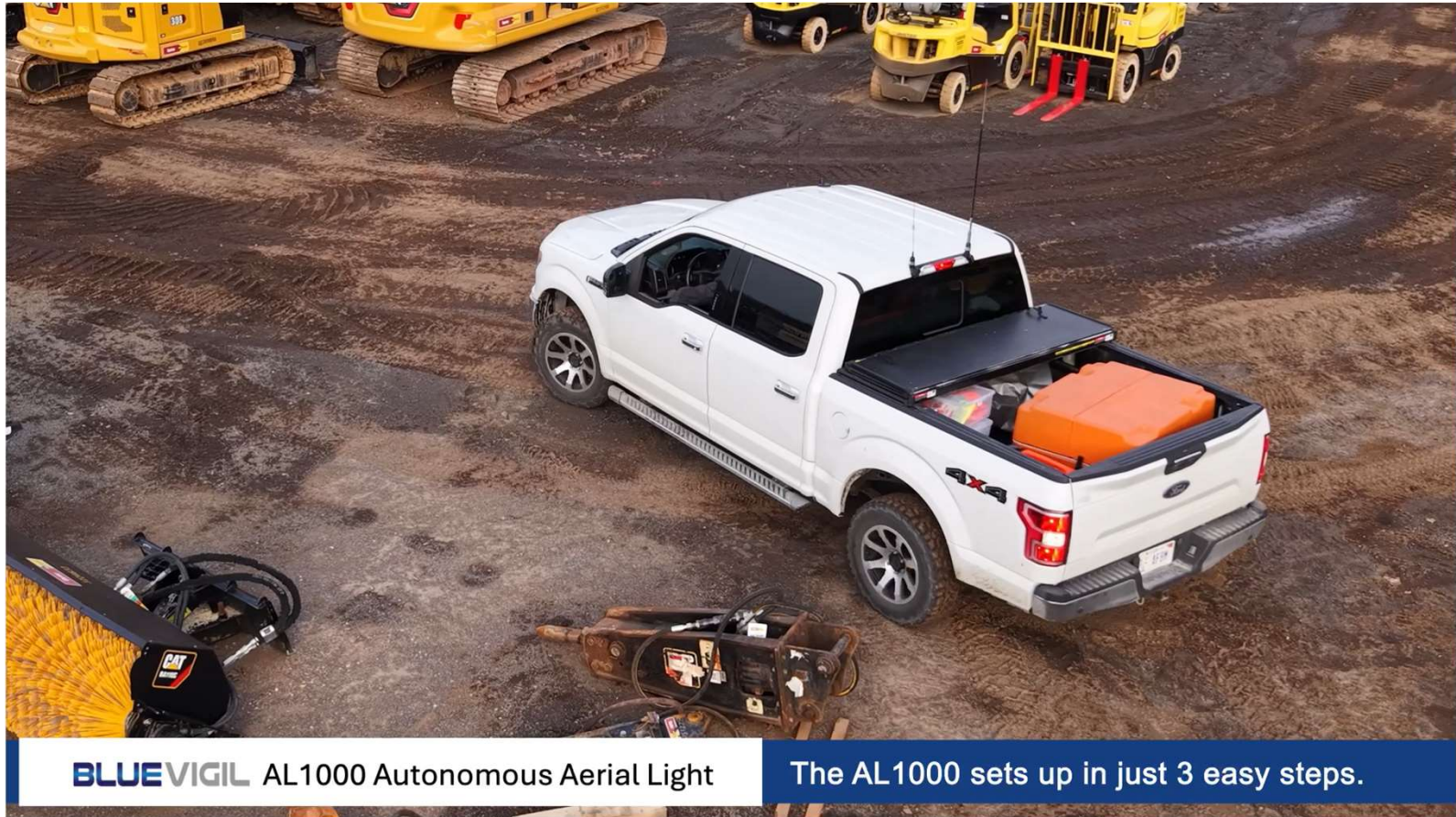


Total Light Field: 19,500 ft² at minimum 0.5 ft-c
Usable Light Field: 3,950 ft² at minimum 5 ft-c

LEGEND


















Setting Up the AL1000



Lighting Landscape

Our thought leadership and our innovations in this space have been recognized by the American Traffic Safety and Services Association (ATSSA)

| |  BLUE VIGIL | Towed Light Plants | Freefly/PegaPod/ etc. |
|---|---|---|---|
| Operate for 8+ hrs |  |  |  |
| <u>Useable</u> Light Field > 5,000sq/ft |  | |  |
| Operating Height >50ft AGL |  | |  |
| Reactive Tether |  | | ? |
| Purpose Built for Construction |  |  | |
| Rental Market Ready |  |  | |
| Dynamic, Aimable Lights |  | | |
| Autonomous Operation |  | | |

Drone Lighting FAQ



Subject to FAA Regulations? Yes, any drone lighting solution requires:

- FAA registration
- FAA part 107 certificate holder to be within line of sight of the drone
- Adherence to applicable airspace restrictions

Can these be moved without bringing air unit down? This is solution and circumstance dependent; there is not a regulatory or technical issue preventing this form of operation.

Are there other operating restrictions? These are not a one for one replacement for light plants in all scenarios. Example, drone lighting is probably not a solution for remote, scheduled lighting needs.

Are there environmental limitations? This varies from product to product. Generally, drone solutions operate in a wide temperature range, and handle rain/snow but not freezing rain/sleet. Wind robustness varies by solution.

What are the normal maintenance items? These solutions typically require scheduled prop (~500hrs) and motor replacement (~2,000/hrs). High dust will likely require more frequent prop replacement

Can these have a camera? Inclusion of a camera is product specific; there is nothing that would inherently prevent the inclusion of a camera or other sensors, measuring devices, etc. We have several planned on our road map.

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Contact

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The Future of Jobsite Safety and Security

AL1000 In Action



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