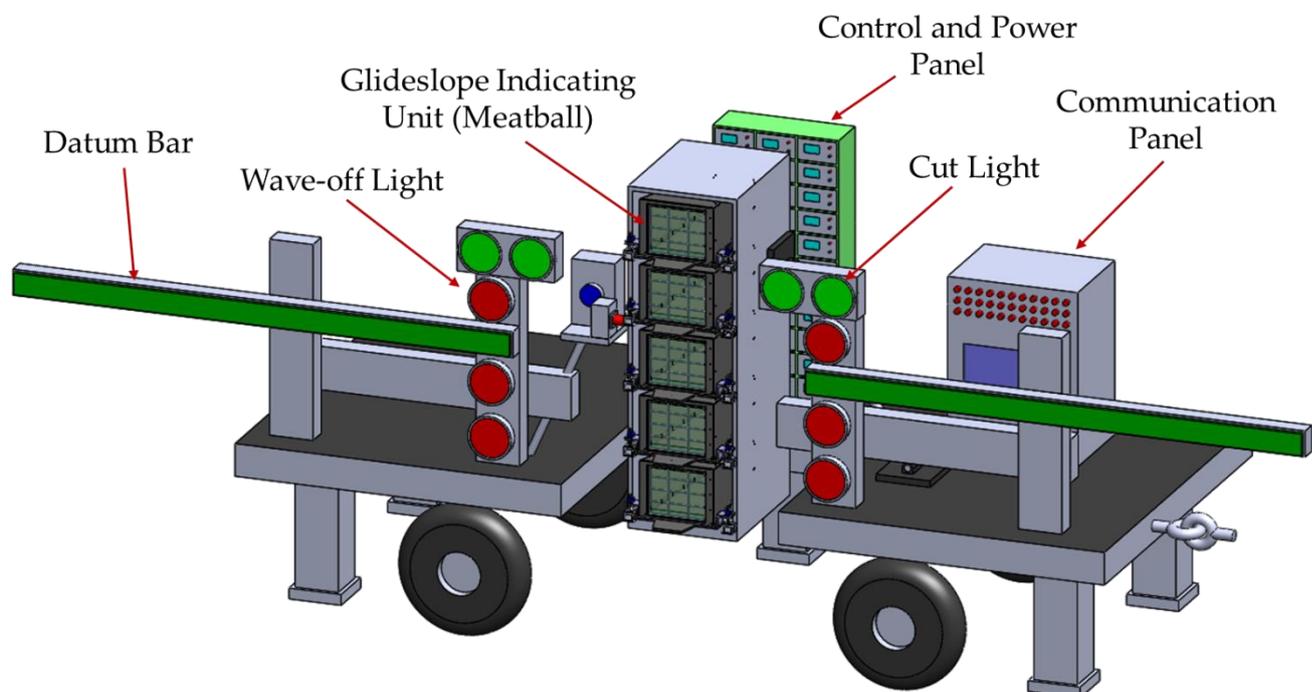


Optical Landing System (OLS) for Aircraft Carrier

Introduction

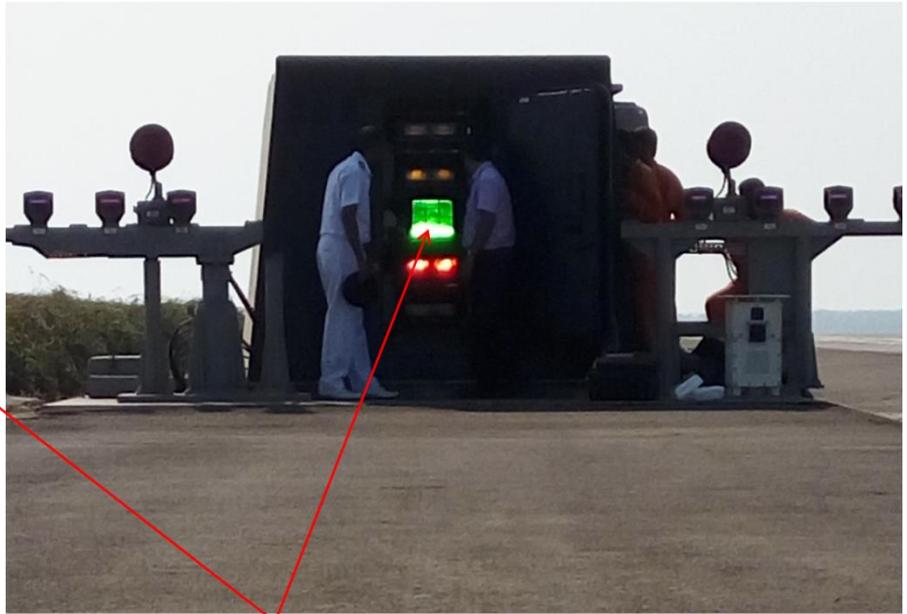
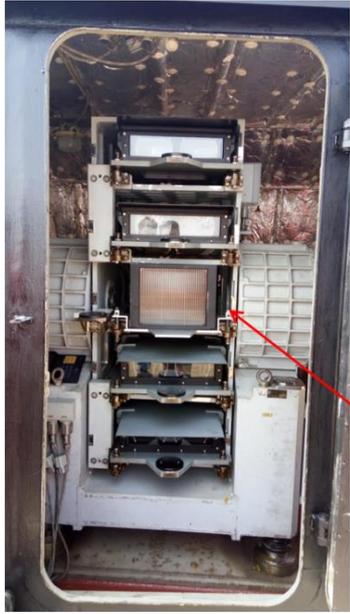
- Challenges during Landing on Aircraft Carrier:
 - Runway space for landing is about 150 m
 - Landing area is spanned by 3 to 4 arresting wires.
 - Each plane has a tail-hook. Pilot's goal is to snag the tail-hook on one of arresting wires.
- OLS provides glidepath information to pilot during landing, to place aircraft tail hook at centre of landing area.
- Meatball's virtual image is formed 150 ft. behind lens creating distinguished displacement cues for pilot.
 - Vertical beam width (one light cell): 0.3°
 - Vertical beam width (whole system): 1.5°
 - Azimuth beam width (whole system): 20°
- Distance from deck to detect meatball: $1\text{NM}=1.852\text{km}$
- Higher resolution enables resolving meatball from datum light at 0.5 NM from deck.
- If aircraft is high, ball will be above datum lights. If aircraft is low, ball will be below datum lights.
- If aircraft gets dangerously low, ball appears red. If aircraft gets too high, ball appears to go off the top.
- Retrofit solution for upgradation of LUNA-3E OLS with improved detection range & increased resolution.
- **Datum Bar:** Provides the pilot a reference against which he may judge his position relative to the glideslope
- **Wave Off Light:** Switched ON in case the deck is not ready for landing or the aircraft is too low on glideslope that it may hit the deck (Manually controlled by LSO).
- **Glideslope Indication Unit (Meatball):** Indicates the relative position of the aircraft with reference to glide slope.
- **Cut Light:** Earlier in no-radio or “zip-lip” approach, it is flashed for approx. 2–3 seconds to indicate that aircraft is cleared to continue the approach. Subsequent flashes are used to prompt the pilot to add power.



Technical Specifications

Number of Cells	05 (1-2: Amber, 3: Green, 4-5: Red)		
Azimuth Beam Width	$\pm 20^\circ$		
Vertical Beam Width			
Amber Cells (1-2)	0.3°	18 arc min/cell	
Total Amber Cells	0.6°	22,500 candelas	
Green Cell (3)	0.3°	18 arc min/cell	6,000 candelas
Red Cells (4-5)	0.3°	18 arc min/cell	
Total Red Cells	0.6°	5,500 candelas	
Total Vertical Coverage	1.5° or 90 arc min		
Virtual Image	Approx. 150 feet behind the lens		
Additional Attributes	Colors: Amber (above glideslope), Green (on glideslope) & Red (below glideslope) Flash: Upper & lower extreme lights		
Size	As per LUNA-3E housing		

Integration Trials at Shore Based Test Facility, Goa



CSIR-CSIO designed light cell
replacing the middle green light cell of LUNA-3E
OLS



Trials at CSIR-CSIO, Chandigarh



Status

- Form, fit and functional prototype ready.