CRANE SIMULATION
ARI offers a broad range of crane simulators for operational training in all essential aspects of container and bulk handling operations across various crane types including: QC (Quay Cranes), RTG (Rubber Tire Gantry), RMG (Rail Mounted Gantry), SG (Ship Gantry), PC (Pedestal Cranes), SC (Straddle Carriers), mobile telescopic boom cranes, tower type construction cranes, floating barge cranes, offshore cranes etc and other client specific cranes and equipment types.

ARI has crane simulation solutions to suit all requirements and budgets, from low cost desktop installations through to kit based portable multipurpose trainers and up to multiple PC, instructor controlled, full mission solutions.

ARI crane simulators provide a realistic reproduction of the visual, behavioral and operational characteristics while making the operation of the simulator extremely simple and intuitive for trainees and instructors.

The simulator provides a virtual non-destructive training environment for accelerated, hands on training to both novice and experienced operators. Trainees can repetitively practice routine and specific tasks to imbibe safe and efficient work practices. ARI simulators - with their enhanced visual, motion and sound systems - represent the state of the art in crane simulation for operations training for enhanced safety and improved productivity.

A typical crane simulator includes: a replica operator cabin; seat; swappable plug & play control consoles; high fidelity visual system; sound system; option of motion platforms; an instructor station with CCTV, stealth view & debriefing sections in a classroom or container configuration.

**Swappable Replica Crane Control Consoles**

Crane control consoles emulate those in a real crane and are designed as plug and play devices that can be swapped based on the crane type, make and model.
Operator Station:
The replica operator station simulates a real crane cabin with controls accessible on either side of the operator’s chair, out of cabin view and a microphone for communication.

Instructor Station
Multi Channel Instructor Station with control and monitoring features:
- Multi channel visual repeaters
- Instructor interface for editing & runtime view
- Stealth view for de-briefing
- CCTV camera view of the operator cabin.
**Visual System:**
The multi-channel visual system for the operator cabin view provides the trainee with a realistic out of cabin view.

The visual system is completely integrated with the simulation exercise, motion, sound system and crane controls and thus provides the necessary depth in the visual perspective.

**Motion System:**
The operator cabin can be installed on a motion platform and is designed for ease of access and maintainability.
**Operations:**
The trainee can be exposed to a broad range of virtual crane operations:

- Start-up & Shut-down procedures.
- Pre & Post-operation checks and lamp test.
- Gantry (long), trolley (cross) travel, hoist-lower operations.
- Boom operations in QC, cabin rotation movement in RMG.
- Swing control of spreader.
- Flipper operation: individual, in group.
- Spreader extension & retraction.
- Over, under deck operations, with, without cell guides.
- Misaligned prime movers.
- Twin, tandem lift operations.
- Realistic rope dynamics.
- Twist-lock operations.
- Safety & limit switches.
Instructor modes:
The instructor can operate the simulator in:

**Edit Mode**: create & save different configurations

**Run Mode**: real-time events, faults, emergencies and failures can be injected in run time.

The instructor can view the trainee's reactions to emergency situations; zoom in using Stealth view for debriefing; freeze the exercise; pause; replay; communicate with the trainee; view the trainee's actions; assess the trainee on a range of Productivity & Safety metrics.

**Control parameters:**

**Weather conditions**: rain, snow, fog, storms.

**Time of day** varying sun & shadow conditions, night operation.

**Assessment & feedback:**

**Productivity Metrics**: Number of Moves, Number of Containers handled, Average number of Containers handled per hour.

**Safety Metrics**: Total number of Collisions, Number of major mistakes, Number of minor mistakes. Mistakes can be custom defined.

All operator and instructor events are lagged and these events can be replayed during debriefing.

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**Variety of Crane Types:**
QC, RTG’s, RMG’s, SG’s, PC’s, EOT, mobile telescopic boom, mobile harbour crane, offshore pedestal and knuckle boom cranes and a variety of construction and Tower crane types.

In addition to these, ARI can customize client specific crane types and build virtual environments to customer requirements.

**Selection of Container types**: 20’, 40’, 45’, high cube, flatracks, reefers, open top, tanktainers, hazardous containers, odd dimension with OH guides or OH chains, hatchcover operation

**Selection of Break bulk cargoes**: pulp, lumber stacks, logs, steel coils, pipes, rebars etc.

**Customization** is a key ARI strength. Crane simulators can be customized for various specific crane makes, spreaders, operating visual worlds, terminals, yards, wharves, lanes, ship types and crane controls.

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**Warranty & Post installation support:**
ARI provides world class, reliable and comprehensive support throughout the life cycle of its products. Every ARI simulator comes with a comprehensive, flexible and customizable support plan to ensure minimum down time and maximum productive use of the installation for the customer.

ARI offers Location specific support plans, COTS (Common-Off-The-Shelf) equipment, ‘Train the trainer’, flexible maintenance contracts, assistance in the development of training curricula and Internet on line support.