



ZIN Technologies

# ISS Crew & Ground Personnel Training

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### OVERVIEW

ZIN maintains qualified crew training personnel and performs crew and Ground Support Personnel (GSP) training/certification. Crew and GSP training is performed prior to each International Space Station (ISS) Increment.

ZIN personnel plan, develop and execute training for both the crew that will configure and operate our payloads once in space and also Ground Support Personnel (GSP) that will operate our experiments from the ground (cadre and payload developers).

Our Team develops interactive courseware for complex experiments and research facilities such as the ZIN developed and operated Fluids and Combustion Facility (FCF) that operate on the ISS. We also develop courses for training payload operators including data, video, and payload support systems. Our payload training initiatives includes classroom instruction, electronic media, and web-based delivery.



The ZIN Team is responsible for ISS payload operations that include development of operations products, on-orbit crew and ground personnel training/certification, and the real time payload operations on the ISS. ZIN has provided systems and crew operations training for more than 25 years in support of over 230 payloads flown on shuttle, MIR and ISS. Our expertise includes planning, integrating, maintaining, and administering training programs and operations for NASA.

ZIN maintains training materials including curriculum, lesson plans, and computer-based training. We typically train Crew members at JSC using Training Units designed and built by ZIN, located in Building 9 at JSC.

ZIN updates the training materials to be consistent with any hardware modifications, upgrades and crew procedure changes. ZIN develops and maintain the GSP Training and Certification Plan and maintain a certification status of the training completed for each person required to support on orbit operations. Prior to start of Increment, the training team will create an Increment operations overview for our payloads to be used for console operations training.

- ZIN develops detailed crew mockups and trainers used by our dedicated crew trainers to train our on-orbit crew.
- Our ISS operations team is trained and certified for real-time operations and are also experienced with hands-on trainer, simulation and virtual training for each payload operated.
- ZIN designs and implements payload training initiatives, from classroom instruction to simulator/crew training unit design, development, maintenance and operation.
- Since 2001, ZIN has trained over 65 astronauts for over 50 ISS Increments.
- ZIN develops crew training classes for facilities and payloads that are skills based rather than procedure based whenever possible.



**ZIN Technologies Inc.**

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## ISS National Lab CASIS Implementation Partner

For 25 years, the ZIN engineering team has partnered with NASA management, scientific experts and industry to manage and develop space flight systems, from concept definition, design, development, and fabrication to system assembly, integration, test, launch, operations and return.

As an implementation Partner for the ISS National Laboratory ZIN can streamline ISS science facility utilization to researchers, businesses and educators to take advantage of the unique benefits offered through space-based investigations providing a variety of services to enable efficient execution of science initiatives.



Focus on Quality - Certified and Compliant with Industry and Government Quality Standards



Over 200 Payloads delivered, integrated and operated for shuttle, MIR, and ISS – 75% of all physical science research on ISS since 2001

## OUR PRODUCTS & SERVICES

### PRE FLIGHT:

ZIN provides a wide range of products and services and demonstrated experience for space-based science investigations.

- ❑ Access to a large repository of previous space experiments that align with promising commercial applications
- ❑ Collaboration with experienced payload developers and other subject matter experts to ensure successful experiment operations
- ❑ Utilization of unique capabilities and facilities for developing payloads
- ❑ Coordination with NASA and launch vehicle providers for transparent and easy interaction with investigators

### IN - FLIGHT:

ZIN can support private sector product development and ensure seamless investigation implementation, including:

- ❑ Support of “real time” on orbit payload operations -Telescience Support Center
- ❑ Interfacing with ISS crew during experiment interaction
- ❑ Facilitation of data and software interfaces
- ❑ Coordination of contingency planning for mission changes to preserve science objectives

### Primary Services:

- ❑ Hardware design, manufacture and certification
- ❑ Hardware analytical and physical integration
- ❑ Full lifecycle software, integration & testing
- ❑ Program management
- ❑ Export Compliance
- ❑ Hands-on crew training
- ❑ On-orbit operations

### POST- FLIGHT:

After the project comes back to Earth, ZIN can assist with the following:

- ❑ All post-flight data & report requirements are submitted to the principal investigator in a timely fashion
- ❑ Post Flight Testing and Data Analysis
- ❑ Logistics support for sample and hardware return from ISS
- ❑ Identification and support at appropriate facilities for post-processing activities

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