FRIEDMAN RESEARCH CORPORATION

For 35 years the Friedman Research Corporation (FRC) team has performed research with the vision of supporting government and industry by applying real-world studies and investigations to the development of research insight, design and evaluation approaches, and testing procedures.

We have special expertise in:

- ✓ aircraft seat modeling
- ✓ impact and blast protection,
- ✓ composite modeling techniques,
- ✓ occupant protection system design and evaluation,
- ✓ fireworthiness design and evaluation, and
- ✓ human factors research,
- ✓ airbag modeing techniques

Our multi-disciplinary team includes:

- ✓ 7 PhDs and
- ✓ 10 Masters level engineers

With background experience derived from activities including: director of controls and advanced technology at JPL, human factors research at IBM, world renowned finite element modeling scientists for LS-DYNA, human impact research, fire research, and occupant protection research.

FRC has developed an integrated approach involving sophisticated virtual testing and analysis capability. Virtual testing and analysis is supported by extensive and state of the art computing and software capability as well as impact testing facilities.
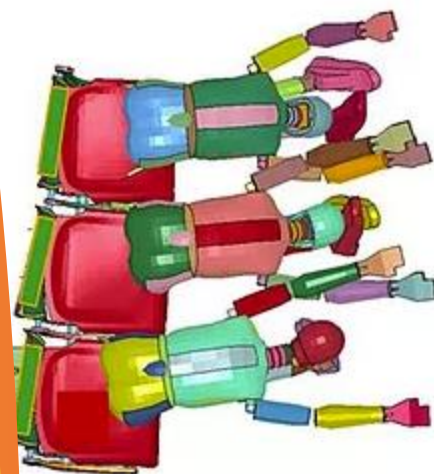
FRIEDMAN RESEARCH CORPORATION

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consulting
testing
results
support

Aircraft Seat Modeling
Basic and Advanced Courses

Courses that work for you
Aircraft Seat Modeling Competency Level Certification

CONNECTING YOUR ENGINEERS TO THE MODELING RESOURCES YOU NEED

COURSE TOPIC EXAMPLES

- INTRO TO 16G STRUCTURAL MODELING
- DEFINING PRELOADS IN SEAT STRUCTURES
- CONTACTS USAGE
- ATD POSITIONING ON SEAT
- DEFINING BALLAST FOR SEAT STRUCTURE
- SINGLE AND MULTIPLE STEP MODEL SETUP
- BELT ROUTING IN LS-PREPOST
- MESHING APPROACHES
- SLED FIXTURE SET UP FOR 14G
- ATD POSITIONING FOR 14G
- MODEL QUALITY – POST PROCESSING
- STRESS/STRAINS/FORCES – POST PROCESSING
- INTRO TO HIC ANALYSIS
- MODELING CONNECTIONS
- MODELING JOINTS
- MODELING VIDEO MONITORS
- AIRBAG MODELING IN SEATING ENVIRONMENT
- COMPOSITE MODELING FOR SEAT BACK
- HONEYCOMB MODELING FOR FURNITURE

Basic Courses

1 – CREATING A VALID SEAT MODEL (1 WEEK)

A comprehensive introduction to modeling methods and tools required to produce a valid seat model in LS-DYNA.

2 – AIRCRAFT SEAT - FROM CAD TO FE MODEL (2 WEEKS)

Trainees will create and validate a finite element seat model from CAD information using best practices.

3 – FRONTAL IMPACT TESTING & VALIDATION (1 WEEK)

Dummy integration, seatbelt fit, and structural and HIC analysis for frontal impacts will be the focus of this course.

4 – SIDE IMPACT TESTING & VALIDATION (1 WEEK)

This course will describe the methods of dummy integration, seatbelt fit, and structural and HIC analysis for side and oblique impact modes.

5 – 14G DOWN IMPACT TESTING & VALIDATION (1 WEEK)

The engineer will learn best practices for simulating the 14 g downward seat impact.

Certification Level of Excellence

⭐ Pass Course 1-2 Evaluations

⭐⭐ Pass Course 1-5 Evaluations

⭐⭐⭐ Pass Course 1-7 Evaluations

⭐⭐⭐⭐ Pass Course 1-10 Evaluations

⭐⭐⭐⭐⭐ Pass Course 1-12 Evaluations

Advanced Courses

6 – AIRBAG MODELING (2 WEEKS)

This course will discuss best practices for airbag modeling and occupant-airbag impact for with various impact modes, restraint systems, and occupant statures.

7 – IN-FLIGHT-ENTERTAINMENT (IFE) MODELING (1 WEEK)

This course will teach the engineer best practices for IFE modeling and occupant IFE impact testing and validation with various impact modes, restraint systems and occupant sizes.

8 – SEAT TESTING SELECTION & OPTIMIZATION (2 WEEKS)

The engineer will learn how to identify, select, and optimize seat testing requirements to maximize efficiency and workflow in a variety of real world use cases.

9 – SPECIALIZED TECHNIQUES (1 WEEK)

This course will teach specialized modeling methods for floor attachment hardware and testing requirements for specialized seats.

10 – PERFORMANCE IMPROVEMENT METHODS (1 WEEK)

This course will discuss performance improvement methods with a focus on what to do when the seat performance does not meet corporate goals.

11 – COMPOSITE MODELING (2 WEEKS)

The engineer will learn best practices for composite modeling and techniques for creating a composite seat back and pan according to layup and material specifications.

12 – AIRCRAFT SERIOUS INJURIES (0.5 WEEK)

This course will describe the injury measures, ATD characteristics, and injury risk related to aircraft.

Our instructors have vast experience and are recognized experts in the field

AAMIR JAFRI, MS

Aamir Jafri is FRC's Director of Aircraft Seat Division. Mr. Jafri has worked in the aerospace and automotive industries for 18 years including crashworthiness, airworthiness, structural analysis, and occupant safety. He led the seat and restraint development program at Zodiac Aerospace which included seat belts, airbags, and the use of finite element modeling to certify seat and restraint performance by analysis, building robust design using V&V and building block approach (BBA) to qualify structural integrity and occupant injury measures. He has been involved in developing recommended practices for Aerospace including airbags, restraint testing, V&V and certification by analysis.

KHANH BUI, MS

Khanh Bui is a senior engineer at FRC and has 29 years of experience with LS-DYNA simulations in a broad range of applications related to crashworthiness, occupant restraints and impact protection. Mr. Bui worked for LSTC beginning in 1993 as its third employee and virtually had a hand in nearly every aspect of LS-DYNA's development. Mr. Bui is an expert in vehicle, aerospace, defense, and nuclear energy safety finite element modeling and has worked on a wide range of projects requiring the use of numerical simulation for General Motors, Lockheed Martin, LSTC, and FRC.

Aircraft Seat Modeling
FEA CERTIFICATION

The level of competency demonstrated will be achieved by a star rating system reflecting the successful demonstration of skills needed for effective aircraft seat modeling, ultimately leading to certification by analysis and significant reductions in supplier costs and faster on dock delivery.

LOCATION

Courses will be held at Friedman Research's facility in centrally located Austin, Texas or can be tailored to your needs using a combination of online, onsite and offsite environments.

CONTACT

For questions about courses, schedule, pricing and registration, please contact Aamir Jafri at ajafri@friedmanresearch.com