

## CASE STUDY

# Homologation of Jump Seats for eCommerce Delivery Vans.

## SUMMARY

The customer is Fortune® 500 global OEM conglomerate with over 14 brands sold all over the world

This case study provides an in-depth look at the process undertaken to homologate the a jump seat for side impact compliance according to FMVSS (Federal Motor Vehicle Safety Standards). The project, completed over an 8-week period, required a multidisciplinary approach to address unexpected requirements, ensure vehicle safety, and preserve design integrity.



## THE PROJECT

The vehicle under consideration was Class 2 Cargo Van under the full-size commercial vehicle segment. This vehicle was commissioned by a large global eCommerce major as their exclusive delivery vans.

The bespoke vehicle, includes a passenger jump seat that required homologation for side impact protection.

## OBJECTIVES

- Primary Objective: Achieve FMVSS compliant design for side impact certification for the passenger jump seat.
- Secondary Objective: Implement necessary safety features without compromising the vehicle's design, particularly the space required for passenger ingress and egress.

## AT A GLANCE

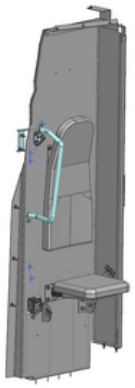
### Opportunity

- FMVSS side impact certification for the jump seat
- Not initially included in the design requirements.
- 8-week timeline required rapid development, simulation, and testing.

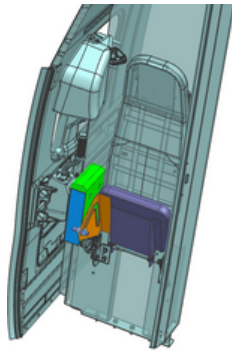
### Outcomes

- Achieved FMVSS side impact certification
- Developed a rotating pelvis shock absorber that maintained passenger space and safety
- Secured top management approval

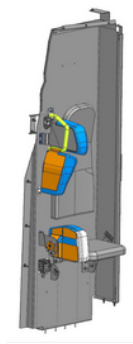




Starting Point



First CAD



Design Validated



Final Assembly

## THE APPROACH

### Phase 1: Identification and Initial Design

Defined the needs to install shock absorber to protect passenger head, shoulder, and pelvis. For head and shoulder installation of fixed absorber and for pelvis needed to adapt to the seat rotation.

### Phase 2: CAD Data Release and Virtual Crash Simulations

Study of installation of the absorber and all the CAD data. Performed side impact virtual tests to identify the stiffness of the whole system and the density of each shock absorber.

### Phase 3: Prototype Development

Prepared static prototype to perform physical side crash to verify the correlation with virtual results and release the design for tooling.

### Phase 4: Validation of Kinematics

Validated the rotation of the pelvis shock absorber with the seat along with specific prototypes to tune the return spring.

### Phase 5: Final vehicle assembly and leadership Review

Review and approvals by customer's leadership team including the CEO.

## ABOUT OXI

Since 1996 OXI supports its customers into exciting new development process, acquiring a relevant experience in Automotive components and in Household appliances and contributing in the creation of some symbol of the Italian style and technology around the World. OXI Srl is a company of the Caresoft Global Group, of which it represents the Competency Center for the development of automotive plastic components.

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## OUTCOMES

### FMVSS Certification

The vehicle jump seat successfully met all FMVSS side impact requirements, securing the necessary certification for production and sale in the North American market.

### Design Integrity Maintained

The final solution preserved the vehicle's design, particularly in terms of passenger ingress and egress, without compromising safety.

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