Information about MINE THREAT:

Armed forces, especially US forces suffered heavy casualties as a result of landmine and Improvised Explosive Device (IED) threats during the Iraq war. To prevent such casualties and to transport military personnel in a more reliable vehicles providing a high level of protection, the concept of Mine Resistant Ambush Protected (MRAP) vehicles emerged early in the 2000s. Mine blast attenuating seats equipped with an attenuator were developed in all parts of the world as a result of that concept.

Today, mine blast attenuating seats with an attenuating system have become a requirement for the new generation of land platforms that many armed forces are using now and will use in the future as a result of the needs and efforts mentioned above. Presently, these types of seats are used in many tracked vehicles, 4x4, 6x6, 8x8 wheeled armored personnel carriers and MRAP vehicles. In addition, protection against mines and thus mine blast attenuating seats are preferred in modernization projects in various parts of the world.

Shock waves caused by the explosion of a landmine, pushes the vehicle upwards with a very high acceleration. This impact causes injuries and fatalities when it is transferred to personnel via their fixed seats. Use of energy attenuating systems on the seats, reduces the transferred acceleration amount to the crew, minimizing the risk of injury.

T-KALIP’s variable load attenuating system, ensures equal protection for different weight crews and do not require any preparation or adjustment according to crew.

Level 1 Mine Blast Threat
Hand grenades, unexploded artillery fragmenting sub-munitions, and other small anti-personnel explosive devices detonated under the vehicle.

Level 2 Mine Blast Threat
6 kg (explosive mass) Blast Anti-Tank Mine:
2a– Mine Explosion pressure activated under any wheel or track location.
2b– Mine Explosion under center.

Level 3 Mine Blast Threat
8 kg (explosive mass) Blast Anti-Tank Mine:
3a– Mine Explosion pressure activated under any wheel or track location.
3b– Mine Explosion under center.

Level 4 Mine Blast Threat
10 kg (explosive mass) Blast Anti-Tank Mine:
4a– Mine Explosion pressure activated under any wheel or track location.
4b– Mine Explosion under center.
T-KALIP’s MINE BLAST ATTENUATION SYSTEM:

- Blast attenuation performance that fits to the STANAG 4569 standard
- Equivalent blast protection from the 5th percentile female to 95th percentile male
- Equivalent blast protection without any preparation or adjustment according to crew weight
- Equivalent blast protection under different shock scenarios,
  - high vertical acceleration magnitude-short acceleration duration
  - moderate vertical acceleration magnitude-long acceleration duration
- The embedded fuse feels the blast, prevents unnecessary stroking during severe driving conditions
- NOT affected from temperature changes (-32°C to +49°C)
- NO maintenance required
- Compact structure saves space at the back of the seat
- Efficiently used stroking distance saves space under the seat
- Suitable for various applications, wall or floor mounted
- Easily adopted for crew seat, driver seat, commander seat or gunner seat
- Multiple usage after easily replacement of the attenuating tube
- Attenuation amount can be adopted according to STANAG Levels required from the vehicle

Figure shows Stroked Attenuators during a drop test.

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TESTING:

- Tested on drop tower tests with Hybrid III Test dummies.
- Very high repeatability in attenuating performance during the tests.
- Our seats are subjected to vehicle mine blast tests at STANAG 4569 protection levels based on requirements in NATO AEP-55 Vol. 2 standard. The results were successful for all protection levels and our DRI (Dynamic Response Index) values remained below 17.7.

- Test in mine blast tests with Hybrid III Test dummies.
- Unfortunately, we are not allowed to share mine blast test data since such data treated classified or confidential by the armor vehicle manufacturers.
SEATING FEATURES:
• The seats meet the standard MIL-STD-1472G
• Easy assembly and disassembly from the vehicle
• Low weight
• Cushions can be made custom design
• Seats can be easily adapted to various vehicles and its variants

SEATING OPTIONS:
• Safety belt, Static 5 point or retractable 5 point
• Fire retardant cushion cover
• Foldable seating pan
• Foldable back rest
• Removable head rest
• Foldable arm rest
• Floor mounting
• Height adjustment mechanism over floor mounting
• Fore-aft adjustment over floor mounting

APPLICATION:
T-KALIP blast attenuating seats can be used in all the land platforms in accordance with the internal geometry of vehicle. Our seats designed, optimized and customized for use in crew compartments of restricted volume.