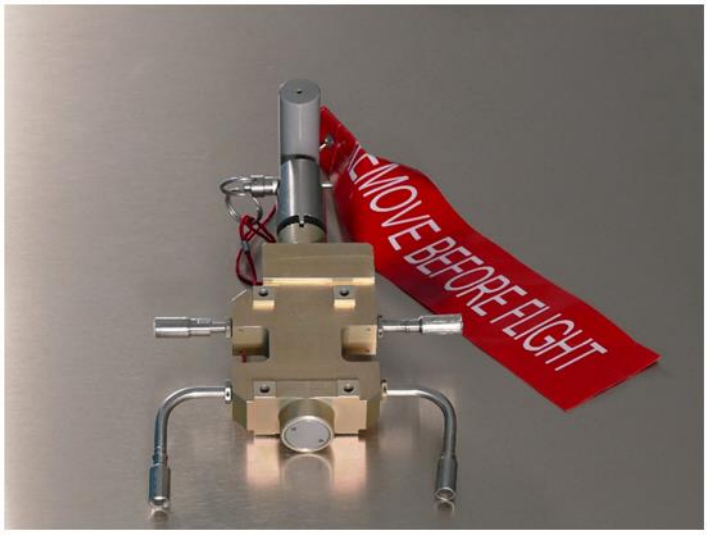
Pyroalliance
arianeGROUP



SPACE

FLIGHT TERMINATION SYSTEMS (FTS) FOR LAUNCHERS

Pyroalliance designs and manufactures pyrotechnic systems involved in different actuation functions for space applications. A typical application is the Flight Termination function required for space launchers.

The overall dimensions as well as the nature of the structures to be severed to terminate the flight can be very heterogeneous. Our solution is then customized depending on the requirements. Based on a generic architecture presented hereafter, we can accommodate a large portfolio of severance solutions to elaborate the appropriate design and optimize the performance while limiting weight and size of the embarked equipment.

More generally, Pyroalliance delivers complete pyrotechnic chains adapted to its customers' needs. They are designed and manufactured under Pyroalliance design authority.

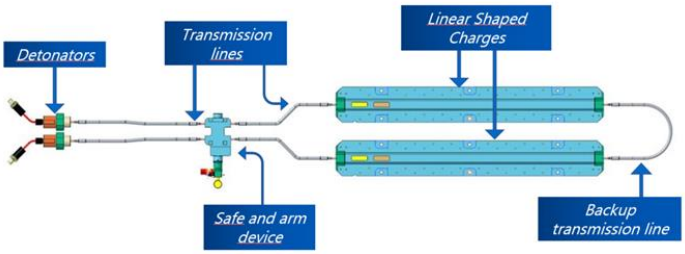
FTS FOR LAUNCHERS

Operating mode

A Flight Termination System is made of a chain of components designed and assembled to operate a termination sequence. It is typically made of electro-pyro detonators, a safe & arm device, pyrotechnic transfer lines and destruction charges.

As depicted in the diagram shown below, our generic solution is based on a set of redundant detonators that will receive from the avionics the flight termination order under the form of an electrical signal and convert it into detonating orders. The manual safe & arm device previously activated before take-off will authorize the transfer of the detonating signals down to a couple of linear shaped charges designed to severe critical parts of the launcher (usually fuel tanks in the case of liquid propulsion or motor cases in the case of solid propulsion). Our generic solution can accommodate different quantities and lengths of linear shaped charges.

One additional transfer line can be added to the architecture as a back-up initiation of linear shaped charges in case one of the two channels would be defective. It thus improves the overall reliability of the FTS set.



Typical performances and features*

Off-the-shelf available lengths for linear shaped charges	Typical sizes are 220mm, 850mm and 1340mm
Cutting performances	Up to 22 mm steel and 35 mm carbon composite
Range of operating temperatures	Typically from -50°C to +110°C
Reliability	Better than 0.999 at 95% confidence
Mass of the set	Depending on size and number of charges

** Indicative typical performance elements*
Please consult us for customization

Benefits

- The design of our generic FTS solution is compliant with the RCC 319 Commonality Standard as well as with European space standards usually made applicable to most launch sites
- Functioning time of such equipment is extremely short, thus perfectly fitted for the responsiveness expected from a Flight Termination function
- Redundancy and physical separation of two distinct initiation chains usually contribute to the extreme reliability of the function
- Appropriate pyrotechnic components are selected to meet the environment constraints – especially temperatures – associated to the mission profile
- Such system is energetically autonomous. Its integration and check are very easy

CLASSIFICATION

Transport regulation:

	Detonator	Detonating Transfer Line	Linear Shaped Charge
UN Number	UN0323	UN0384	UN0288
Proper shipping name	CARTRIDGES, POWER DEVICE	COMPONENTS, EXPLOSIVE TRAIN, N.O.S	CHARGES, SHAPED, FLEXIBLE, LINEAR
Division / Compatibility group	1.4S	1.4S	1.1D

Not restricted by ITAR regulations

For more information

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