

Hoisting missions, a safety jump is possible

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REEL



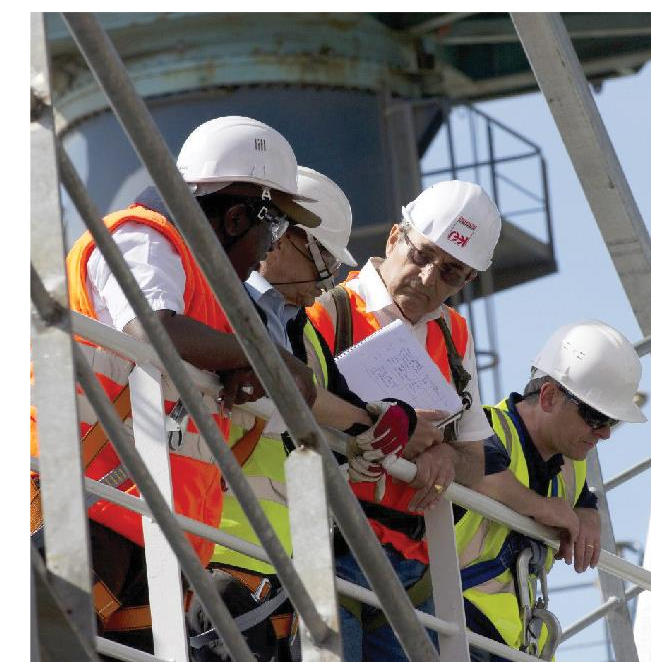
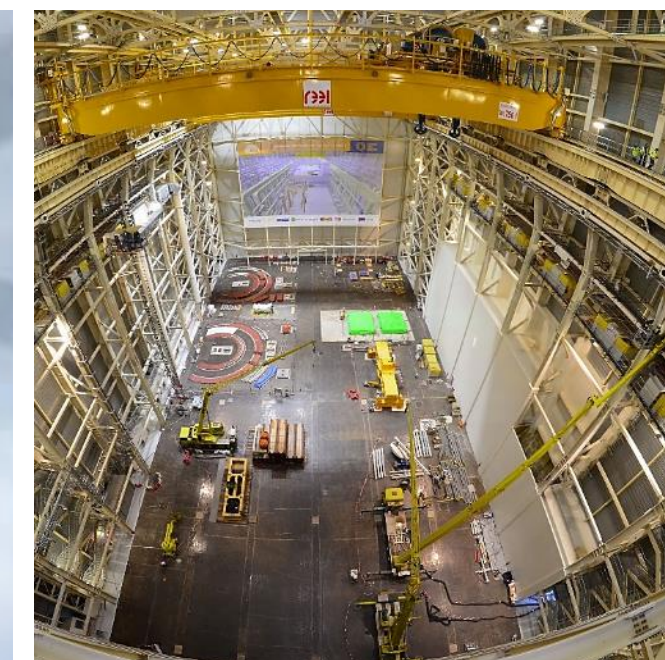


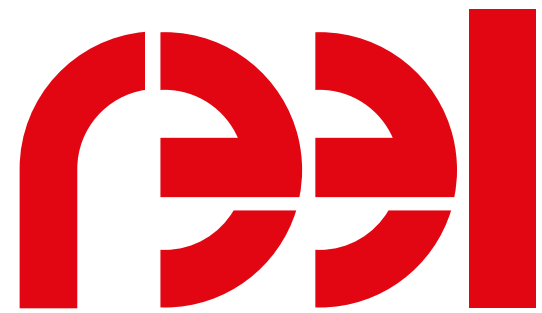
**HANDLING
AND LIFTING
EQUIPMENT SYSTEMS**



EASA Symposium presentation 17/11/2021

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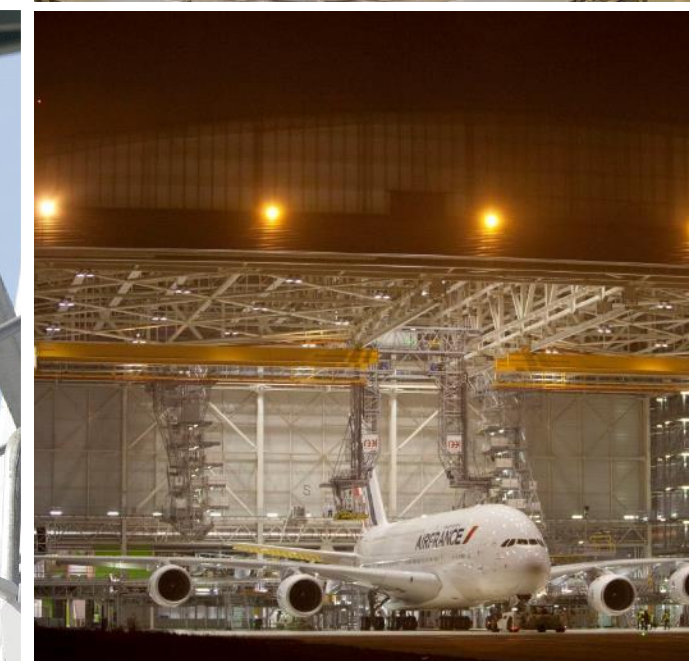
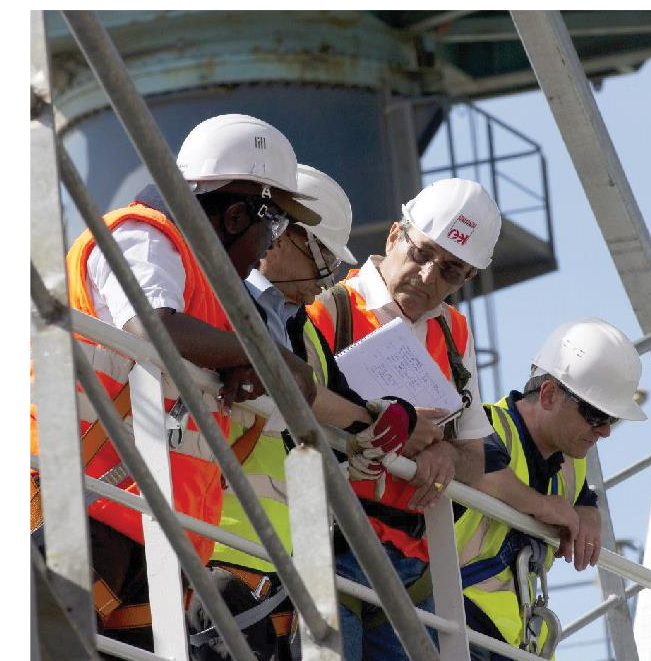
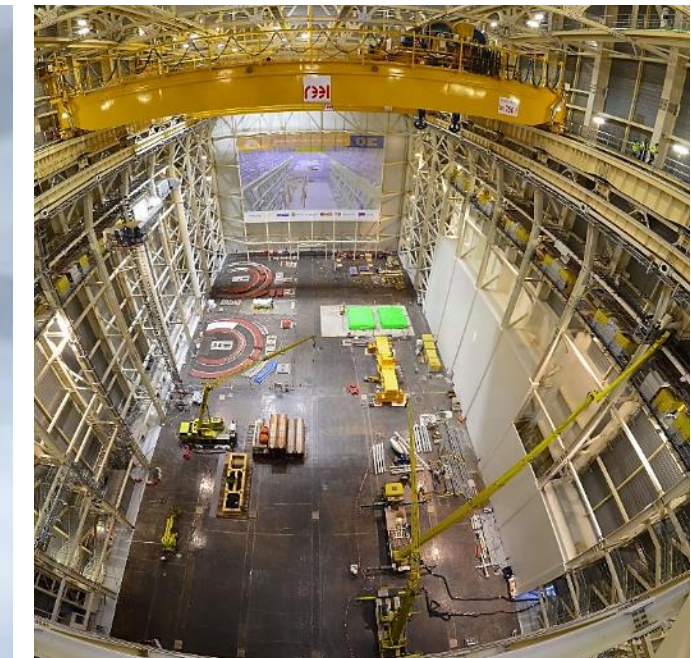


HANDLING
AND LIFTING
EQUIPMENT SYSTEMS

Hoisting Missions

“A safety Jump is possible”

www.reelinternational.com



A safety Jump
is Possible

INTRODUCTION



In 2016, we were here in Köln during the 10th EASA Symposium to announce that REEL had launched a project to develop a new helicopter hoist.



Since this date, all together with the hoist community, we have continued to work to build a new regulation : AS Helicopter Hoist

EASA have taken this basis to propose an ETSO for a Next Gen Hoist through the NPA-2021-10 in September.



REEL on his side has designed a New hoist in conformity with this regulation and propose to contribute to the Safety Jump with the

Helisar™ “Class Alpha” Hoist

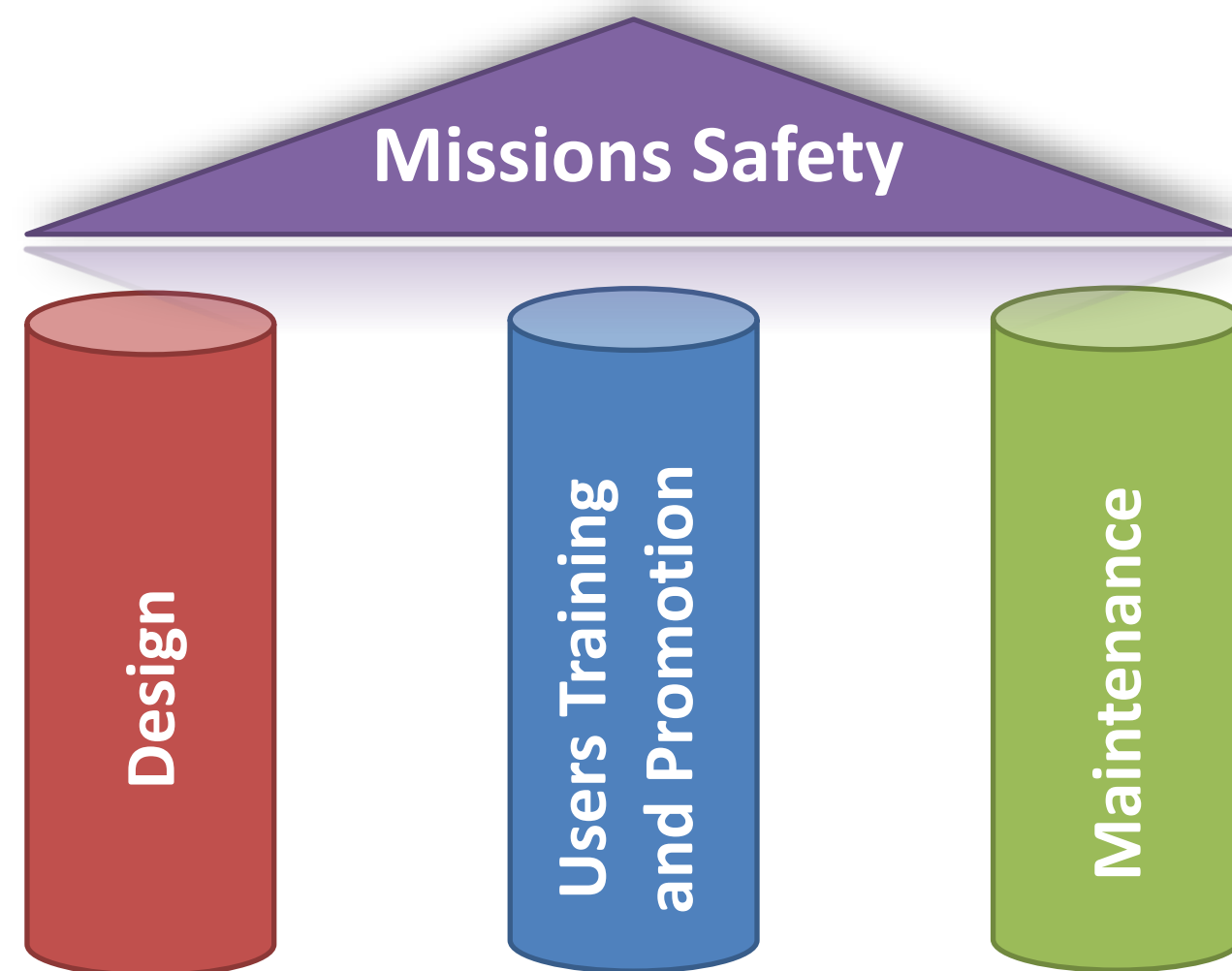


A safety Jump
is Possible

HOW TO **IMPROVE SAFETY**



It is usual to say that the safety of hoisting operations is based on three pillars :

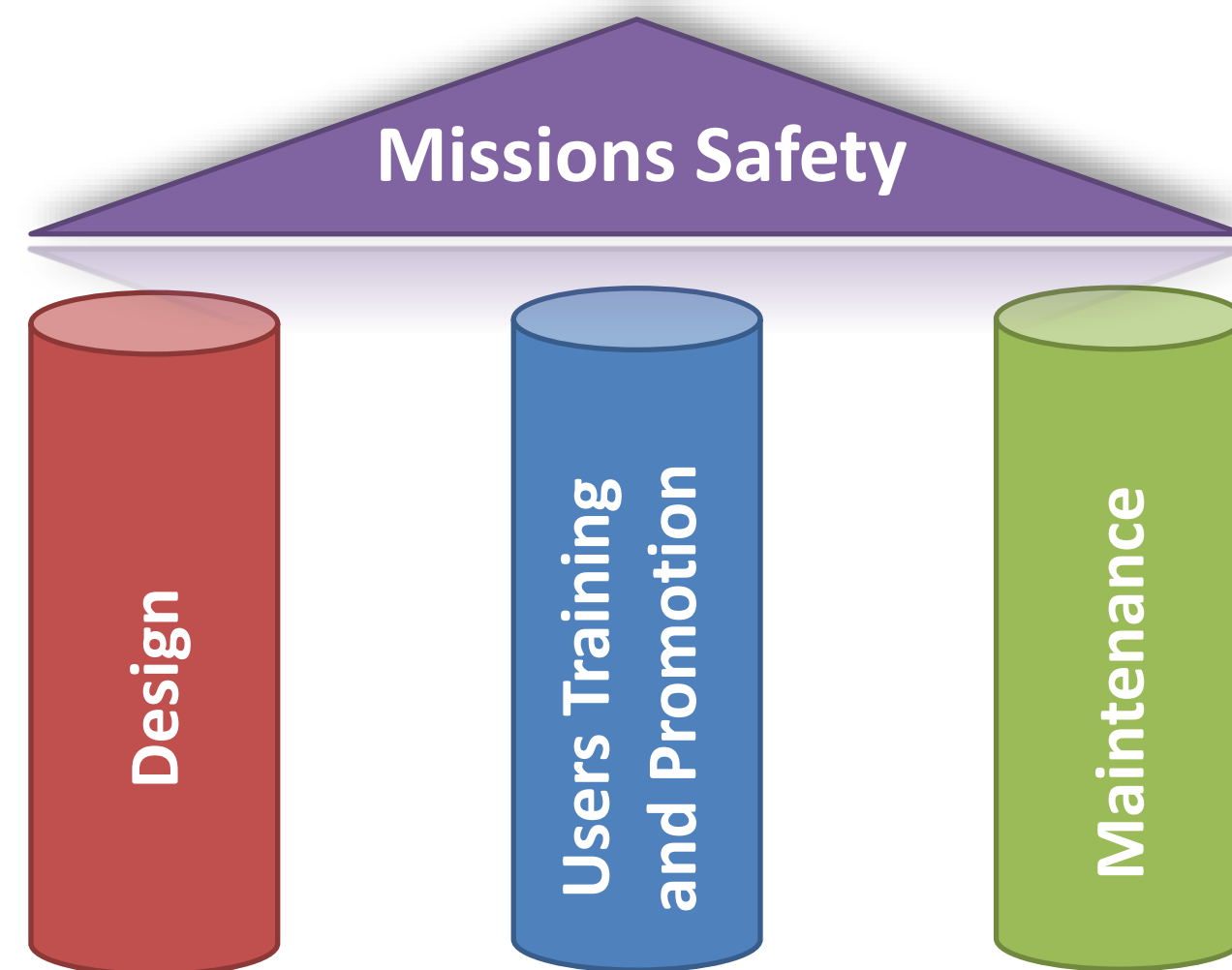


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HOW TO **IMPROVE SAFETY**



It is usual to say that the safety of hoisting operations is based on three pillars :



Design :

- Improve safety target (safety factors, redundancy,...)
- Select accurate design features by engineering analysis
- Choose architecture to answer to historical field problems
- integrate requested solutions coming from users

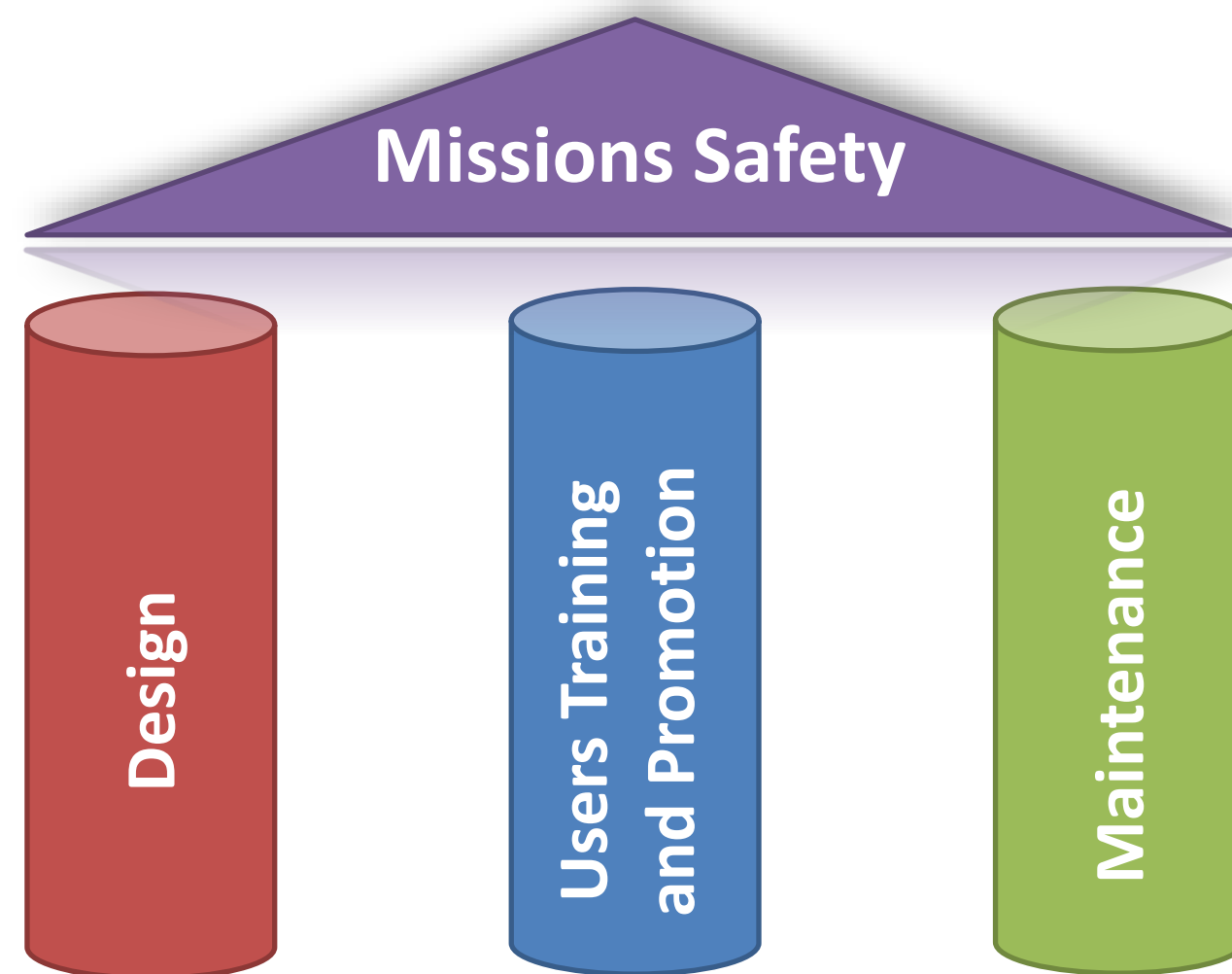


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HOW TO **IMPROVE SAFETY**



It is usual to say that the safety of hoisting operations is based on three pillars :



Users Training and Promotion :

- Operational crew training in normal and specific missions
- Anticipate situational awareness coming from the field
- Share and standardize best practices
- Share technical knowledge between hoist manufacturer and users' maintenance teams

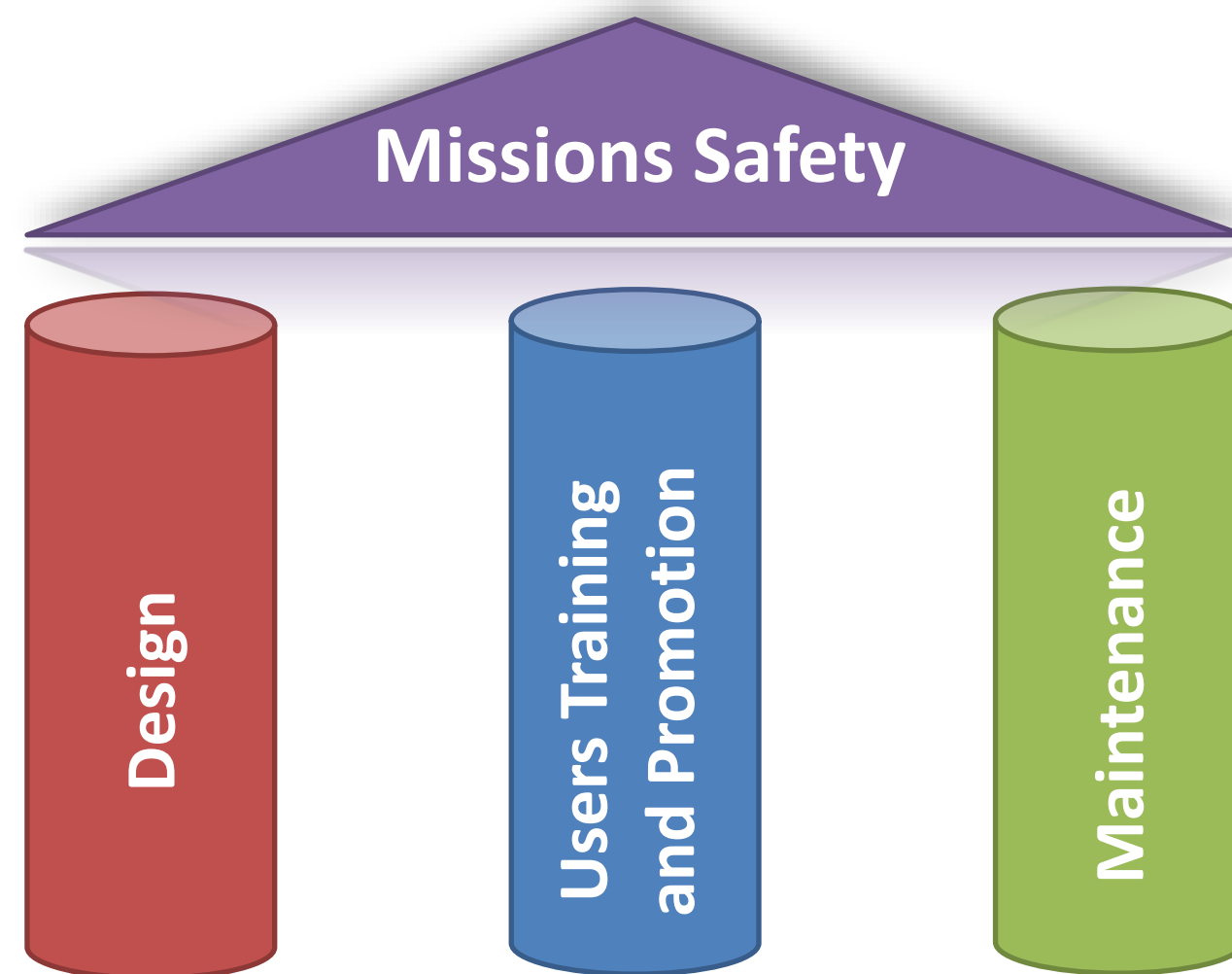


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HOW TO **IMPROVE SAFETY**



It is usual to say that the safety of hoisting operations is based on three pillars :



Maintenance :

- Identify concept to facilitate maintenance.
- Simplify maintenance tasks to minimize human factors
- Integrate maintenance activity into the initial design
- Select solutions with a minimum of maintenance



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OUR **VISION TO REACH MISSION SAFETY**

Reel has endeavored to apply these precepts
to the three pillars in its new hoist based on :

Design

Users Training
and Promotion

Maintenance

Missions Safety

- Transcription of REEL's 75 years lifting design expertise for safety into an airborne context.
- Exchange with operators to understand operational constraints and expectations in both civilian and military environments.
- Discussion with authorities and participation to the regulation definition, in order to integrate solutions for safety into the design.
- Facilitate hoist integration by exchanging with Helicopter manufacturer to improve performances.



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OUR
PRODUCT

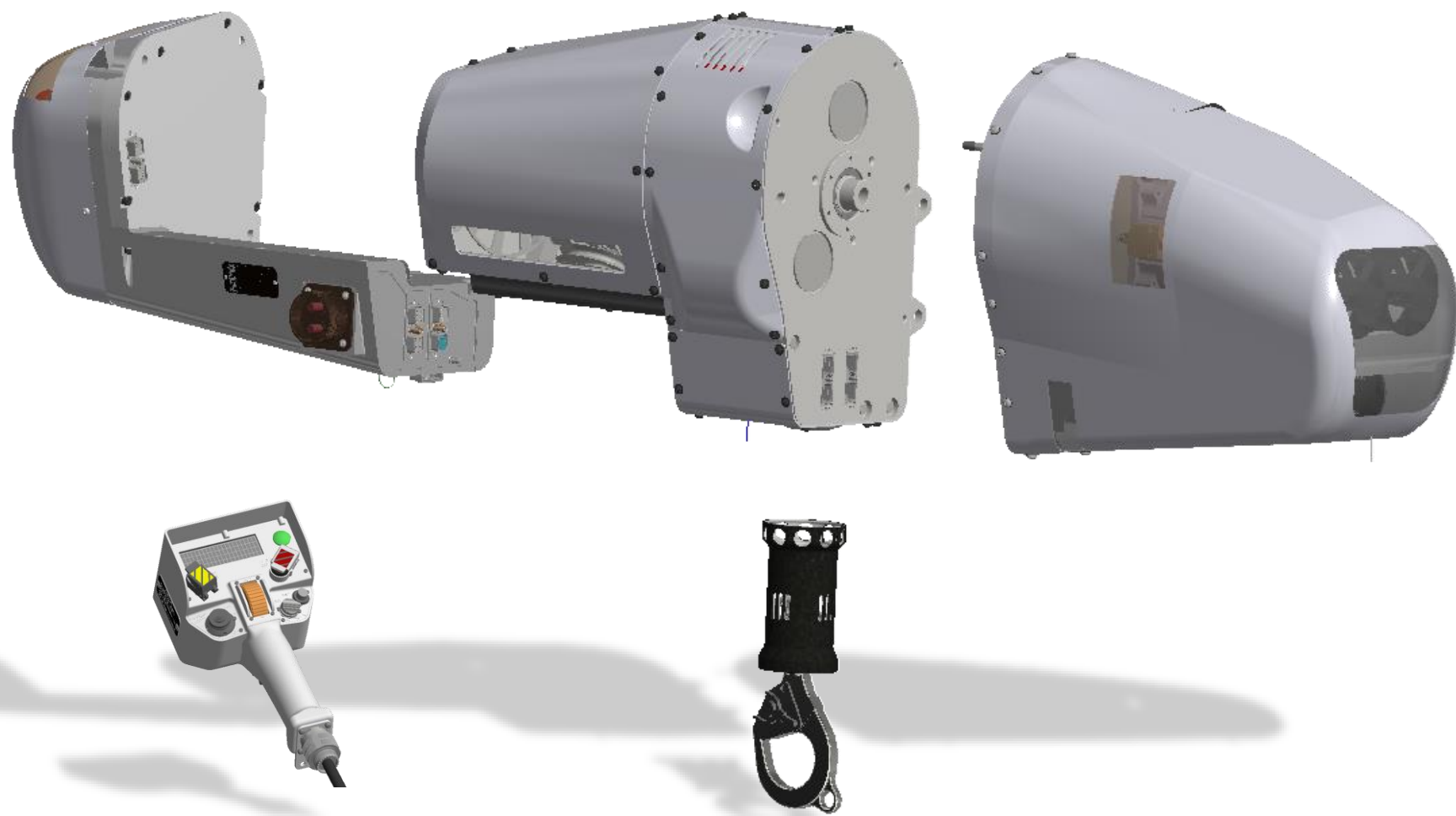


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THE
FULL MODULAR CONCEPT



Several modules easy to disconnect and to exchange.



Electronic Module
Power input 28VDC or
115 VAC with 4,2kW

Lifting Module
Steel cable or Fiber
rope Cable length
from 20m to 100m



Motor Module
Variable speed
from 0 to 2,5 m/s

Hook Module
Various Hook type
with options (floating,
handwheel, ...)

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THE FULL MODULAR CONCEPT



Advantages :

Standardization : communalize modules and their evolutions to your entire fleet.



Versatility : Adapt the hoist and its weight to your mission (Cable length, floating hook, ...)



Availability : Overhaul Maintenance Operation adapted to each module and easy replacement to continue to operate



Costs : Spare parts stock and logistic expense reduction.



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THE LIFTING WITH SEPARATE STORAGE SYSTEM

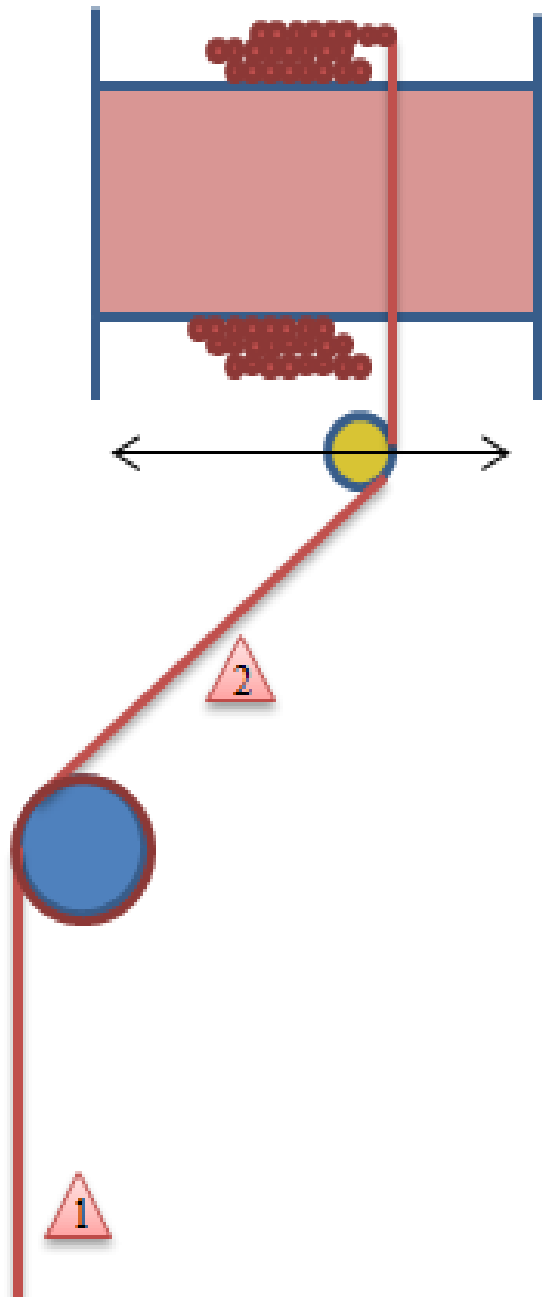
The design consist in :

having an operation separate in two
independent drum systems for:

LIFTING & STORAGE

Why ?

- Designed according to the expertise of REEL critical lifting systems for many years.
- Adapted to the constraints of helicopter environments (Vibration, lifting angle, shocks, ...)



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THE LIFTING WITH SEPARATE STORAGE SYSTEM



Advantages :

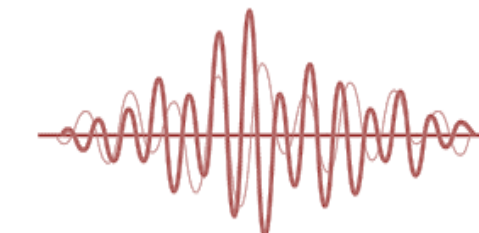
Safety : The lifting system is designed with a construction that provides a total control of the speed and avoid miswrapping risks during reel in and reel out.



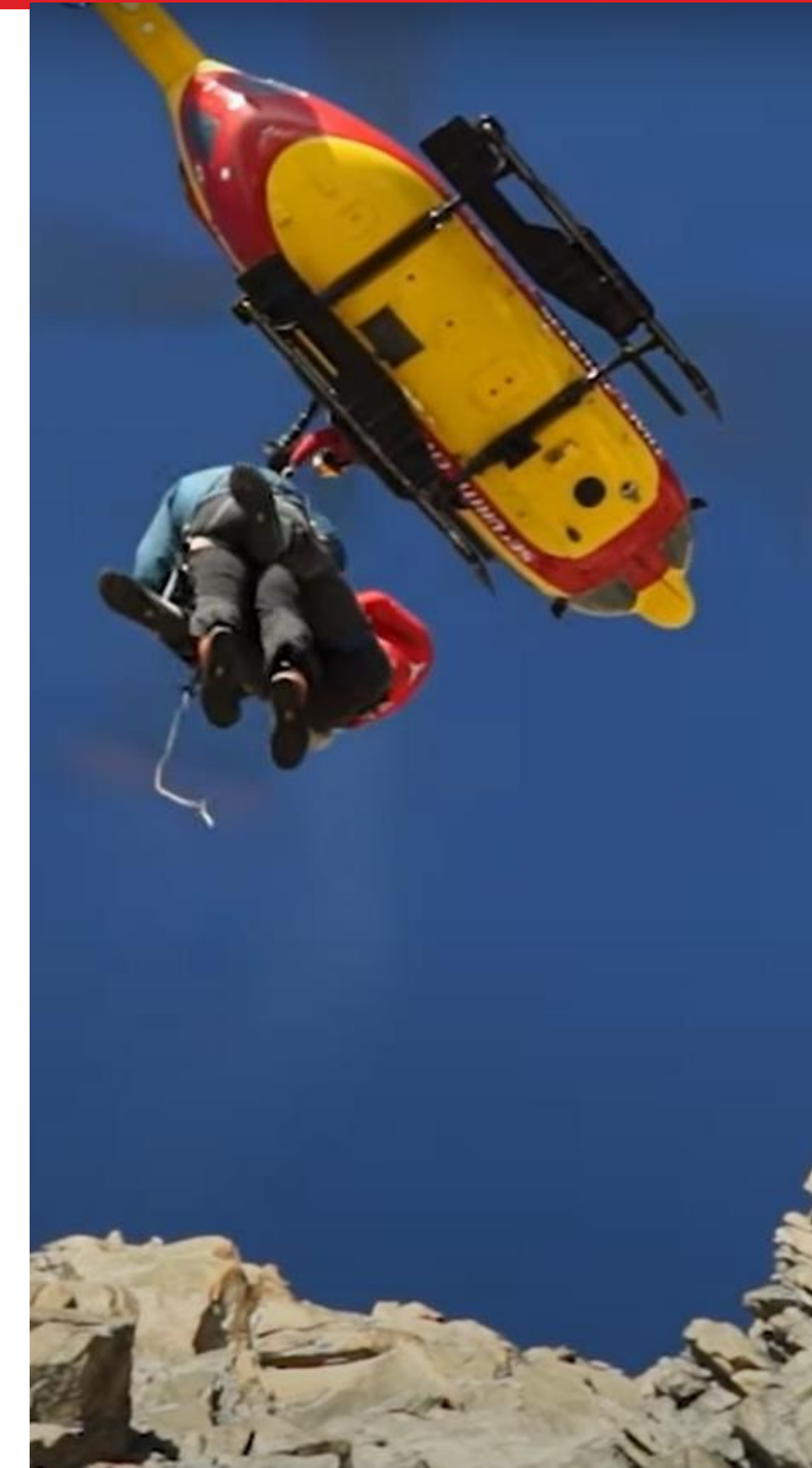
Accuracy : The winding of the cable during reel-in and reel-out is done on a single layer onto the lifting drum and allow a single output point.



Lifetime : Due to capstan technology, cable and mechanical parts are less stressed during operation.



Costs : No cable conditioning operation necessary in the maintenance program.



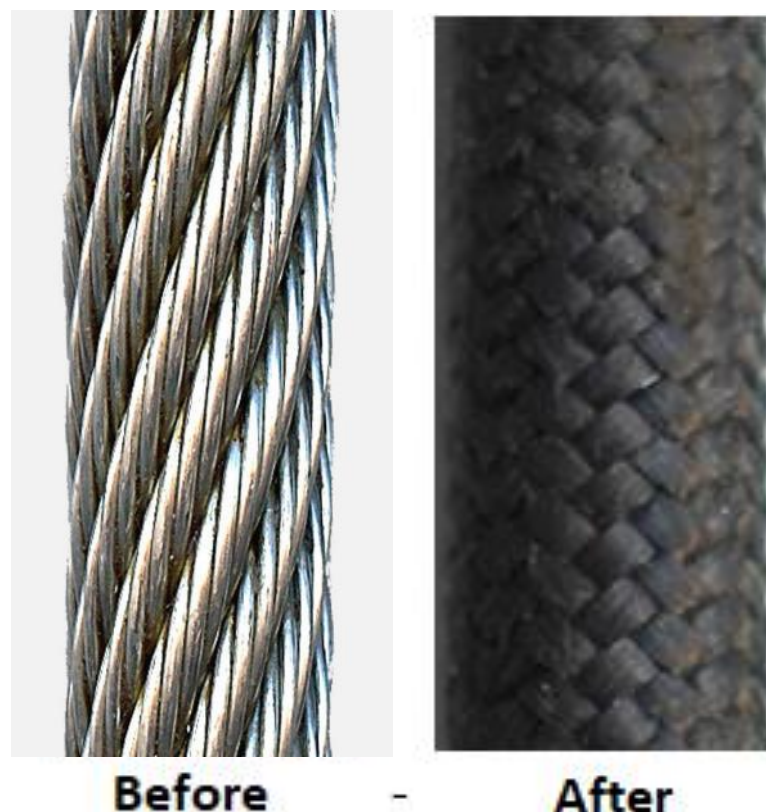
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THE HYBRID LIFTING CABLE

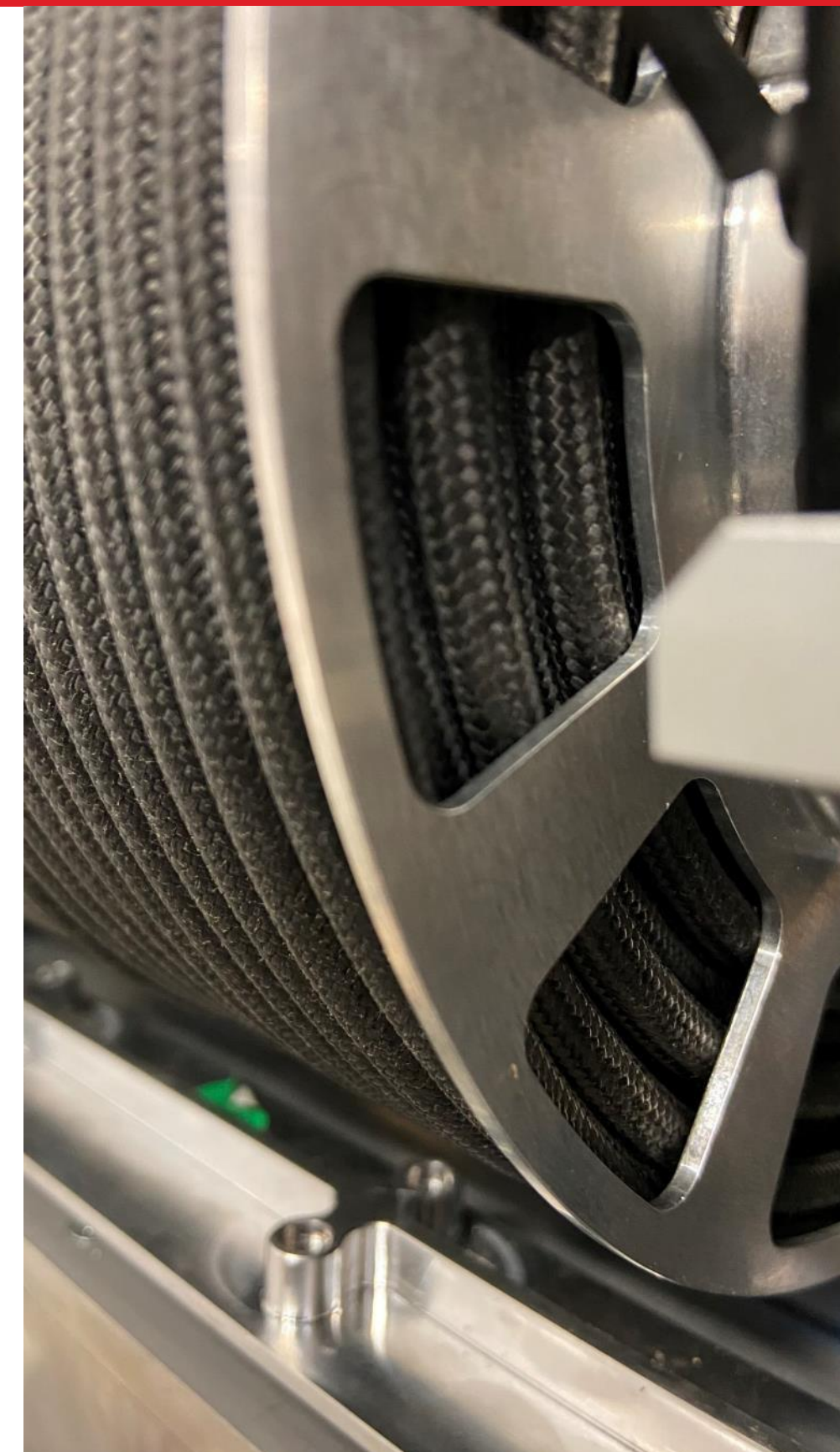
The innovation consist in :

having a fiber protective jacket on a full anti-twisting steel cable according to a special process.



Benefits are numerous :

- A new construction with fully antirotating capabilities to be safer.
- A higher number of wires and strands within an equivalent diameter to support more load.
- A very high Bending capability to handle easily the cable.
- A protective feature for the hoist operator hands against broken wire.
- A shock protection of the lifting cable against sharp edges.
- An Abrasion resistance during operation.



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THE HYBRID LIFTING CABLE

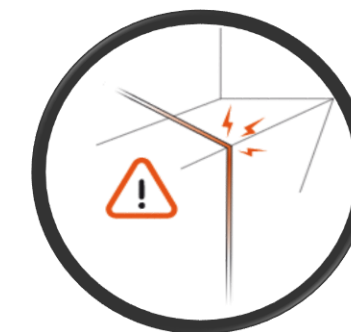


Advantages :

Safety : A higher safety factor to
secure operational missions



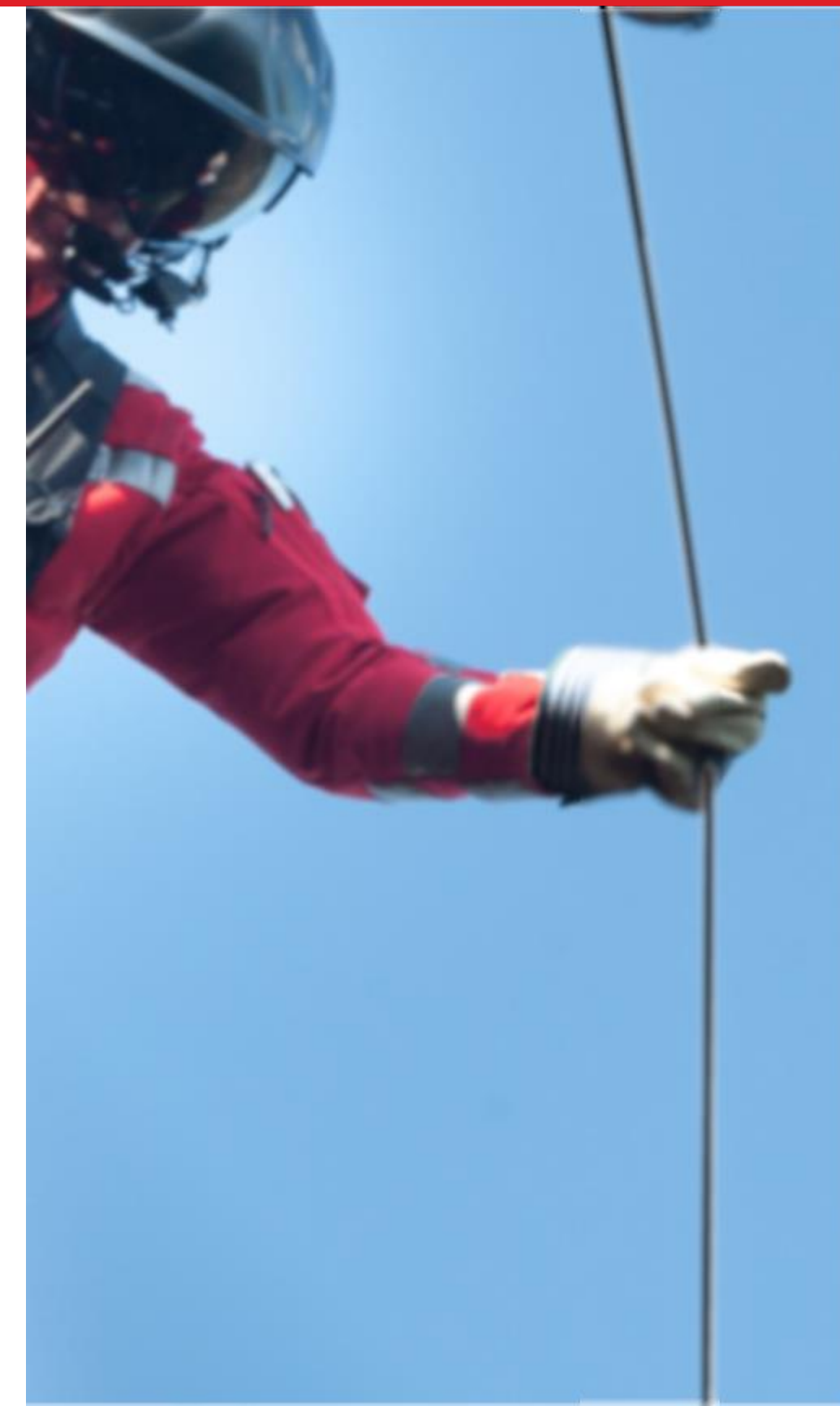
Robustness : The fiber jacket is protecting the cable against abrasion and
inappropriate event during operation (shock, entanglement, impact, ...)



Lifetime : Due to its specific construction, the cable is
less subject to fatigue and has a higher Service Life Limit.



Costs : according to its robustness and its increased
lifetime the cable has to be replaced less frequently.



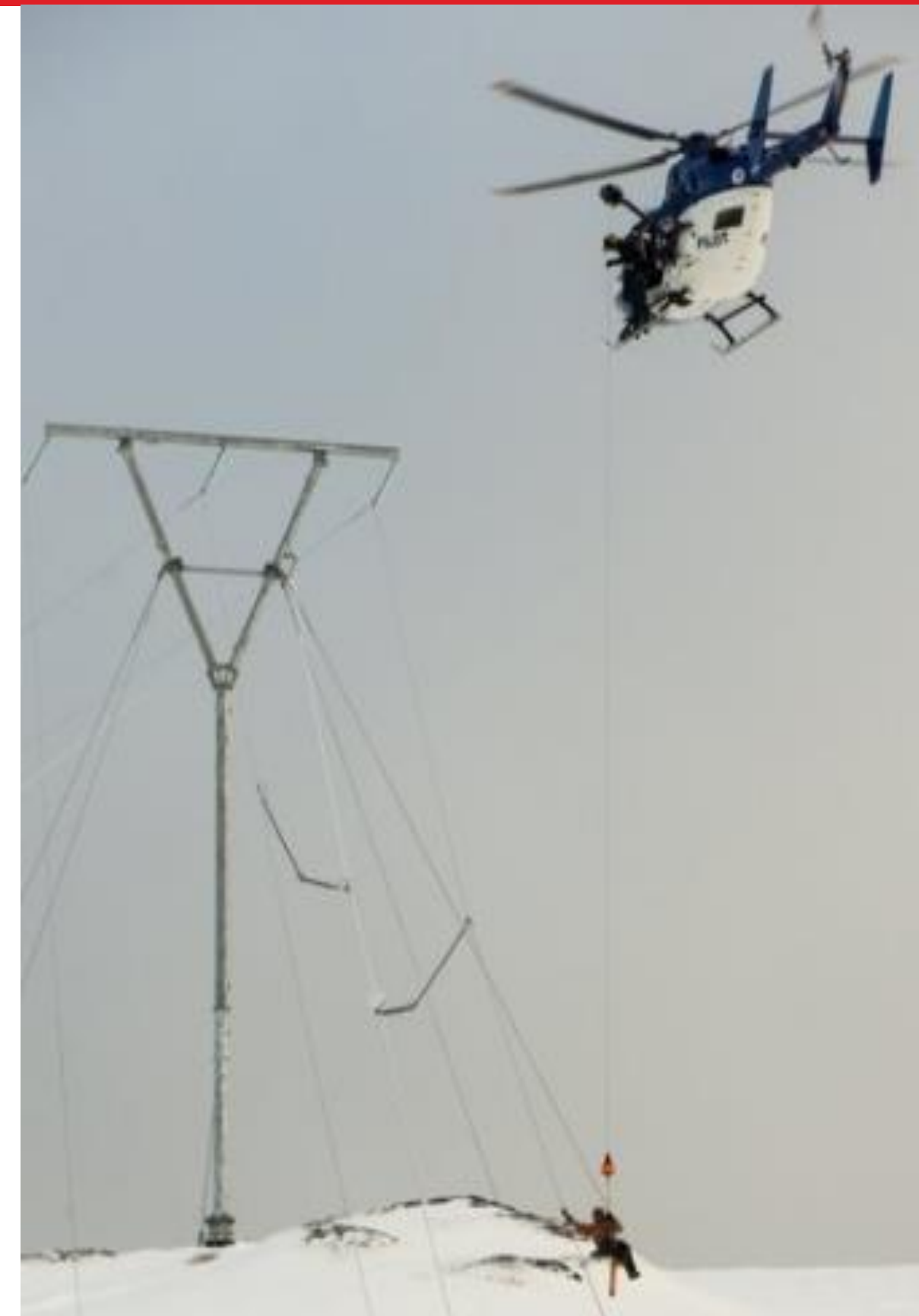
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THE OVERLOAD PROTECTION SYSTEM

The overload function is ensured by a patented overload protection system.

- The overload system is separated into 2 independent mechanisms : Detection and Protection
- No slipping are involved into the detection mechanism.
- The system ensures a quick response when overload occurred with an easy and soft return to normal operation.



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THE OVERLOAD PROTECTION SYSTEM



Advantages :

Safety : Developed according to the regulation with highest safety factor to protect the helicopter and the crew.



Accuracy : Detection limit independent from environmental conditions.



Maintainability : Mechanical system with no frequent verification activities



Reliability : Simple system with limited numbers of parts.



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THE REAL TIME DATA ACQUISITION SYSTEM



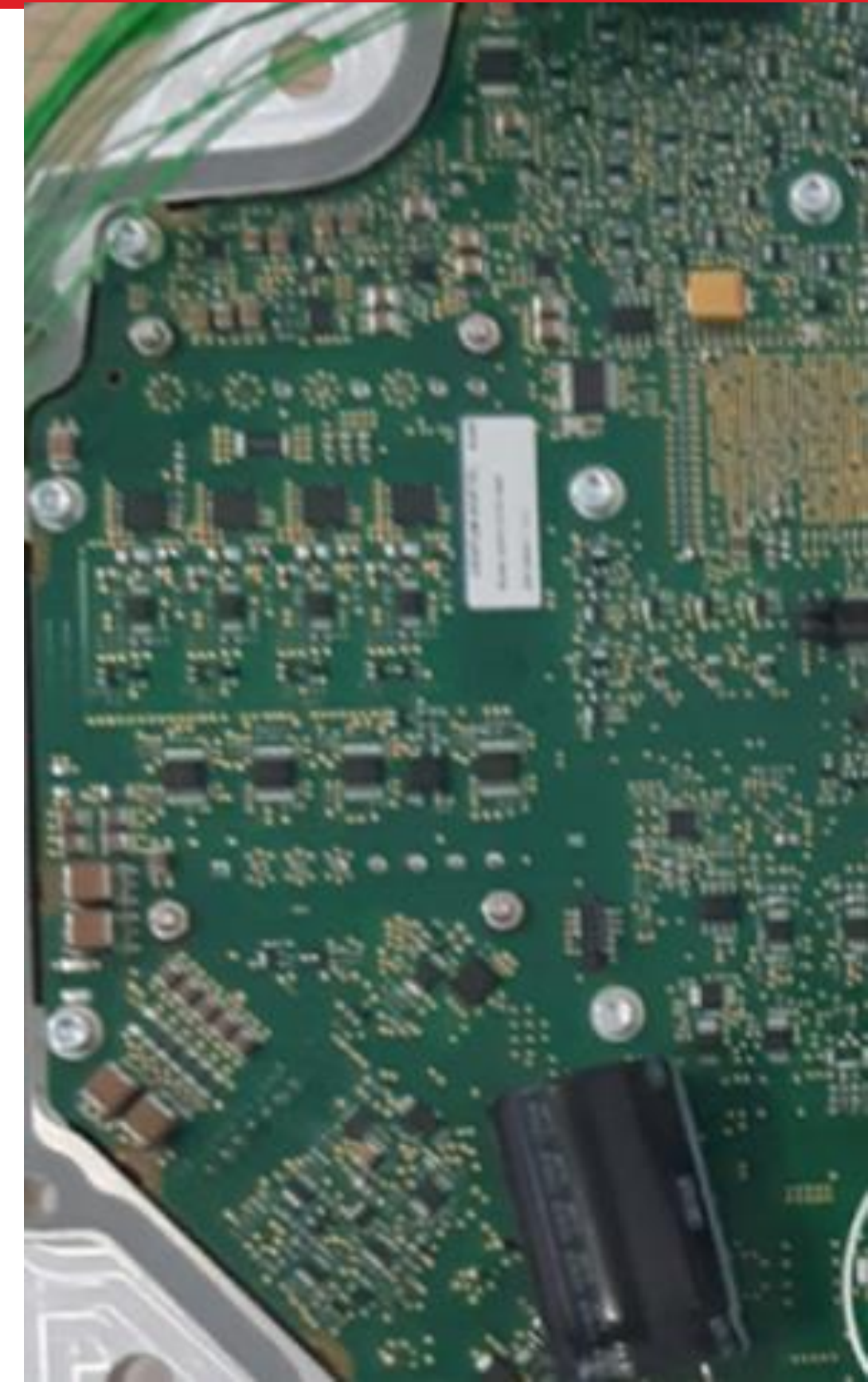
The system consist in :

Continuously records :

- Contextual data (temperatures, payload, cable length,...);
- Usage data (e.g overload, angle exceedance , mode transitions, OPC);
- Failures information (overtempt, hardware failures,...);
- Configuration data (P/N and S/N of all modules).

Real Time data exchange of these information :

- To the Helicopter data management for pilots
- To the Pendant screen for the hoist operator :



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THE REAL TIME DATA ACQUISITION SYSTEM

Advantages :

Awareness : Data are shared in real-time between all crew members in cockpit and in cabin



Availability : During mission you have access to parameters to take the appropriate decision



TROUBLESHOOTING

Maintainability : It enables to collect information for default analysis or predictive maintenance.



Safety : At power on pendant requires acknowledgment of the hoist OPC counter information.



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CONCLUSION



*To ask more information
and to organize a
demonstration in one of
our facility in Lyon or in
Istres.*

*Find us at
Hall K-H8 A-134*



*To discuss how to
integrate our hoist
to your helicopters.*





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