

Comunica's Helideck fireman's and crew helmets

For over 10 years Comunica has designed and supplied helideck helmets with radio comms for Firemen and Support Crews eg:

datasheets\HELIDHIST

OMEGA/fire



OMEGA/fire was developed for HEMS London Hospital helipad crews and combined maximum ear defence with AIRBAND radio communications. It was approved for HEMS by the London Fire Authorities.

SIGMA/hlo



SIGMA/hlo was developed for, amongst others, Messrs Western Geophysical's survey ship helideck crews, again with AIRBAND radio communication.

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SIGMA/hlo is considered by Comunica to have the ideal configuration for helideck service, combining:

- Maximum protection against impact shock and penetration in case of flying debris, blade strikes etc, with a strong smooth shell WITHOUT “CATCHPOINTS”.
- A shell protecting the whole head from impacts and fire.
- Very high sound exclusion, with full ear defenders fitted.
- Clear on-body radio communication (Marine VHF, AIRBAND etc). Comunica’s **FREECOM** digital wireless intercom/radio comms can be fitted too, for the ultimate helideck crew communications.
- Strong chin-length visor face shield, protecting against flying debris, impacts and fire. The visor furls back close over the helmet for maximum freedom of action.
- An optional **CHIN** visor extension for even greater face protection.

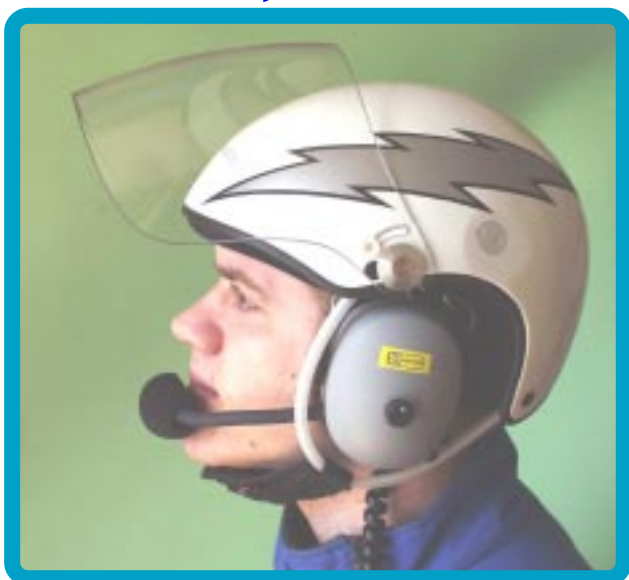


SIGMA in civil and MoD service (The visor will furl back right behind the head).

BETA+ and BETA-FLIP+ helmets are made primarily for open aircraft crews, but are effective in the support crew role. They:

- Provide full EN966 impact protection against flying debris, blade strikes etc, the **BETA+** having a completely smooth shell and the **BETA-FLIP+** only slight, low set, catchpoints.
- Provide very high performance ear defence.
- Provide clear on-body radio communication (Marine VHF, AIRBAND etc). Comunica's **FREECOM** digital wireless intercom/radio comms can be fitted too, for the ultimate helideck crew communications.
- Have strong chin-length visor face shields (CLEAR or TINTED), protecting against flying debris, impacts and fire.
The visor furls well back for freedom of action with it raised.
- The **BETA+** helmet ranges are very inexpensive to buy and "through-life".

BETA+ , worn over its separate comms headset



BETA-FLIP+ , with its integral comms headset



The **BETA-FLIP's** headset can "flip-out" or even furl back for clear ambient listening

OMEGA+ as BAES Eurofighter's ground support crew wireless intercom communication helmet

The BAES/RAF Eurofighter support crew task clearly has much in common with the offshore helideck requirement, but differs from it as:

- Full protection against aircraft crash and fire is not required, as the supported aircraft is stationary or at most taxiing and a fire fighting team is at hand.
- There is only weather, not rotor downwash, to be protected from.
- The ambient noise is however much higher.
- High energy impacts are unlikely, so that helmets need not be completely "CATCHPOINT" free.

Accordingly, **OMEGA+**, a helicopter aircrew style helmet is ideal, with:

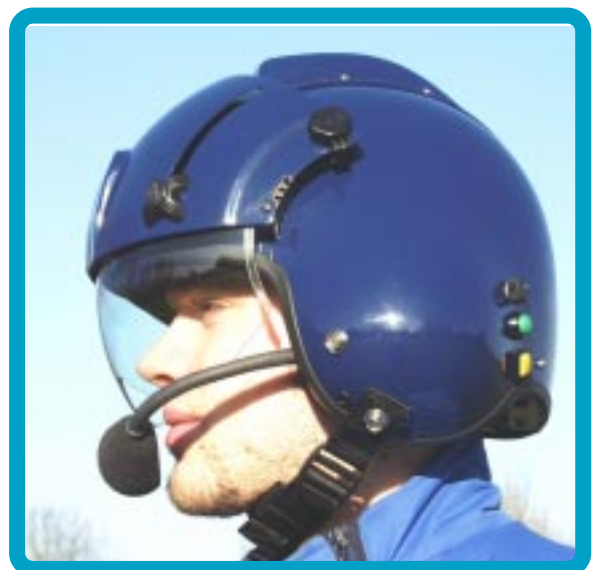
- Only cheek-length visor protection, leaving the face partly exposed.
- Some minor shell CATCHPOINTS such as the visor housing.
- Absolute maximum ear defence with Active Noise Reduction earphones.
- **FREECOM** digital wireless FULL DUPLEX intercom for the whole team and pilot. This is required for instant, interference free communication if a fault is seen or suspected.

For interest, the prototype Eurofighter support team **OMEGA+** is outlined below:

OMEGA+/baes digital wireless intercom helmet



Mask mic which can be worn for communication in extreme noise, eg 125dBA+



(Evaluation prototype shown)



***Portable wireless intercom
"MOTHER UNIT" for up to
10 crewmen with helmets***

Review of Helideck Helmet specification

As advised by BHAB (Alex Knight), The helideck crew duty requires a helmet to:

- Protect the wearer against shock and penetrative impacts (these may include flying debris, possible blade strikes and being thrown against structures).
- Protect the wearer against the high noise environment of a close aircraft at full power (ca 110 dBA measured beside Coastguard's -IJ locally).
- Protect the wearer against fire (eg a crashed aircraft with leaking fuel).
- Protect the wearer (face especially) against the rotor downwash, spray and small flying debris present during normal operations. This demands a chin-length visor.
- Allow the wearer to communicate clearly by on-body radio or wireless intercom.

The crews' "PPE" requirements are covered broadly by the basic European Directive, but their needs are not all covered by any single "EN" specification.

EN397 Industrial Safety Helmets, is barely applicable, its impact protection aimed at falling tools etc and its construction requirements precluding suitable shell designs.

EN443 Helmets for Firefighters, provides good guidance with regard to the required fire protection but specifies only helmet TOP impacts again and forbids the required ear defence and leaves detail visor design out.

EN966 Airborne Sports Helmets, matches the helideck impact, environment and noise protection requirements closely.

It aims to assure protection of wearers in and near aircraft in all weathers and slip-streams of 100kts+ and noise levels of 110dBA+.

- It specifies protection against shock and penetrative impacts inflicted over the whole upper head at energies well above **EN397** and similar or above **EN433**.
- It specifies that the helmet shell MUST HAVE NO "CATCHPOINTS", to minimise brainstem damage (trauma strokes) and neck fracture risk.
- It specifies tough weather resistant construction.
- It calls for the required ear defence and clear communication performance.
- It specifies safe, easily released, retention means (chinstrap/fastener).
- It specifies comfort, sizing and a wide field of vision, especially upward.

Comunica designs and manufactures **OMEGA+**, **BETA+** and **DELTA+** (our Marine helmet) to **EN966**.

BAES, the UK Coastguard, and Fishery Officers etc have approved our EN966 helmets for their aircraft support and boat duties in the absence of appropriate "ENs".

By adding relevant elements of the Fire Protection requirements given in **EN443** to **EN966** a composite specification ideal for the Helideck crew duties can be compiled.

Neither specification covers the required Helideck face protection visor in detail. We feel it is a key component of the helmet. It must cover the whole face and not reduce the field of vision.

Selection of the **EN443** requirements to make **EN966** based Helideck helmets provide the crews' required fire safety protection needs careful consideration. Some factors to consider are:

- Provision of helmet optional neck protection (eg against burning fuel?) (**EN443** paras 3.17 and 4.8)
- Possible wearing of Breathing Apparatus (**EN443**, para 4.9).
- Whether contact with 440VAC power cables need be allowed for (**EN443** para 5.8).

The key area of visor design and specification needs careful consideration too.

With a draft **EN966/EN443** composite specification prepared, an economic programme can be drawn up for:

- Preparing provisional sample helmets for evaluation in real helideck duty (these may omit some of the final specification features, including fire protection testing), with purchase and through-life cost estimates.
- Helideck evaluation (comfort, reliability, communication clarity etc).
- Specification review and revision.
- Production design and testing to EN966 and elements of EN443.
- Schedule for production.

Comunica's experience to date suggests that a helmet and visor combination similar to the **SIGMA** design already in helideck service and illustrated on pages 1 and 2 may be the ideal for the full helideck duties.

SIGMA is currently made under **ISO9000** conditions but not regulated to an **EN**. Developed for **EN966/EN443** specification production it would provide an economic solution to meet the full helideck requirements.

(Comunica's **OMEGA+** helicopter crew helmet has recently been similarly developed for full **EN966** production from the original unregulated **OMEGA**. The resulting helmet is in service with, amongst others, Police and Medical Emergency helicopter crews.

High-tech design and manufacture make the **OMEGA+** an extremely reliable helmet costing less than 1/2 the price of other comparable helmets).

Comunica will be very pleased to join any research and development study aiming to provide the ideal helideck helmet.

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