



New ambulance promises to be the industry's most advanced yet

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Iveco and Cartwright have teamed up to launch a new accident & emergency (A&E) ambulance, which is being made available for trials with NHS Ambulance Trusts and private ambulance operators across the UK and Ireland.

The body has been designed and developed within Cartwright's 38-acre manufacturing site in Altrincham, Cheshire, using materials proven in aerospace and motorsport environments, combined with cutting edge metallurgy and the company's 62 years of experience in vehicle body design. Cartwright says the body is unique in the marketplace for being easily transferable onto a second chassis, of any make, during a projected 15 year minimum service life.

The launch vehicle is based on an Iveco Daily 50C17 chassis, which is popular with blue light operators throughout Europe. Key features include its truck-style chassis frame which guarantees structural rigidity, fatigue resistance and long-term durability, combined with an impressive turning circle and a chassis offering maximum bodybuilding flexibility.

Wes Linton, Blue Light Development Engineer at Cartwright Group, says: "We've invested significant resources into advancing the construction techniques and materials used in ambulance body design."

Martin Flach, Product Director at Iveco, explains: "From an early stage we knew Cartwright was working on something very special and we were keen to support them. Selecting the Daily chassis for the launch highlights its suitability for ambulance operations; it's also a model many blue light fleets already operate."

The bodywork comprises a unique combination of high strength fibre-reinforced plastic (FRP) laminates, high density structural foam core, special plastics manufactured by VEKA and high strength aluminium extrusions. The FRP laminate offers 90 per cent of the tensile strength of carbon fibre but at a cost acceptable within price driven arenas. Body joints are fully bonded; avoiding the localised stress raisers of welded, bolted or rivet joints by spreading the joint surface over the full contact area.

The fully bonded assembly process extends inside the body, with the internal lockers manufactured from fully bonded VEKA pvc for exceptional strength to weight performance. Full

inner skins and lockers are made from the same VEKA pvc to ensure the whole interior is designed for ease of cleaning and infection control. Internal fittings and fixings such as defibrillator brackets, carry chair brackets and Oxygen cylinder brackets are mounted using bonded fixings.

Prior to today's launch, Cartwright says it undertook the largest prototype testing regime ever undertaken for an ambulance body in the UK. Rather than over-engineer one test body to survive all crash tests, it invested in multiple crash test bodies, each designed to provide the strength required to survive each directional crash test once. This allowed for substantial weight and material savings and ensures a finished product with zero internal panel reinforcing.

Key to the body's modular nature is Cartwright's decision to mount the lightweight body structure onto a reinforced substructure to provide a strong, rigid mounting point for battery lockers, step wells, steps and tail-lift. Unlike existing ambulance bodies in the UK, this allows fleets the option to remount the body onto a different chassis and wheelbase in the future – ensuring the base vehicle can be replaced after approximately seven or eight years in service, in line with current industry standards.

The cab of the Daily is mounted with a new aerodynamic kit developed by Cartwright, combining a cab air deflector with aerodynamic wings to push air over the light bar and around the body sides. This helps to maximise fuel efficiency during the periods of hard acceleration common with A&E ambulances, whilst adding minimal weight to the vehicle.

Linton adds: "Ambulance electrical systems are worked extremely hard with constant parasitic communications loads combined with regular high current requirements for the tail-lift. For this new body, we have developed what we are confident is the most advanced electrical system of its type in the blue-light sector."

This sees a DC-DC step-up charger providing 100A continuous charge current capacity to feed the split-charge system. The split-charge system is monitored and controlled using the actual battery bank state-of-charge, operating to charge the individual banks at predefined precedence and within adjustable thresholds to ensure the battery banks are kept at their maximum charge.

The electrical control system has been designed from the outset to utilise CAN signals where possible and integrate directly with telematics systems. Utilising twin CAN networks the Intellitec iPLC based control system has direct control over all aspects of base vehicle interfaces, battery management and charge control, systems control and event logging.

The demonstrator model is powered by a 3.0 litre FPT Industrial diesel engine which is capable of producing up to 170 hp between 3,000 and 3,500 rev/min, combined with a maximum output of 400 Nm of torque between 1,250 and 2,600 rev/min. This ensures sufficient power to meet the rapid response times demanded in the blue light sector.

Iveco

Iveco is a brand of CNH Industrial N.V., a World leader in Capital Goods listed on the New York Stock Exchange (NYSE: CNHI) and on the Mercato Telematico Azionario of the Borsa Italiana (MI: CNHI). Iveco designs, manufactures and markets a wide range of light, medium and heavy commercial vehicles, off-road trucks, city and intercity buses and coaches as well as special vehicles for applications such as firefighting, off-road missions, defence and civil protection. Iveco employs over 26,000 individuals globally. It manages production sites in 11 countries throughout Europe, Asia, Africa, Oceania and Latin America where it produces vehicles featuring the latest advanced technologies. 5,000 sales and service outlets in over 160 countries guarantee technical support wherever an Iveco vehicle is at work.

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Cartwright

As one of the UK's leading commercial vehicle body and trailer manufacturers, Cartwright has been operating for more than 60 years. Its 38 acre site based in South Manchester houses all four major divisions of the company; Manufacturing, Finance, Rentals & Fleet Services. Founded in 1952 'Manufacturing and More' has been the ethos that has driven the company to the forefront of UK manufacturing and bespoke bodybuilding.

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