LVE5

Session 2008

BREVET DE TECHNICIEN SUPÉRIEUR

ANGLAIS

¤ GROUPE 14 ¤

Spécialités	*Durée*	*Coefficient*
Chimiste	***2 heures***	***1***
Techniques physiques pour l'industrie et le laboratoire	***2 heures***	***2***

DICTIONNAIRE BILINGUE AUTORISÉ.

L'USAGE DE LA CALCULATRICE EST INTERDIT.

Tout autre matériel est interdit.

Avant de composer, le candidat s'assurera que le sujet comporte bien 3 pages numérotées de 1/3 à 3/3.

I - COMPTE RENDU EN FRANÇAIS du 1er texte en 160 mots (± 10 %) *(10 points)*

La note tiendra compte de la qualité de l'expression en Français, de l'orthographe, et de la présentation (lisibilité).

II - ANSWER IN ENGLISH IN YOUR OWN WORDS *(10 points)*

La note tiendra compte de la correction et de la qualité de l'anglais.

a) Do you know other uses of composite materials? Explain in your own words how they can make our lives easier.
(100 words) *(4 points)*

b) Do you agree that pollution concern does not necessarily mean higher operating costs? Explain in your own words.
(120 words) *(6 points)*

Airbus A380 - shedding the kilos with innovative materials

Offering about a third more seating and far more floor space than its closest competitor, the A380 will deliver an unparalleled level of comfort, with wider seats and aisles, more space for passengers to stretch their legs and lower-deck amenities. The A380's sophisticated technology and economies of scale provide 15 to 20 percent lower seat/kilometer costs and 10 percent more range than today's largest aircraft.

Whether the Airbus mega jet will usher in a whole new style of travel for passengers at more affordable prices remains to be seen. One thing seems certain - despite its mammoth proportions and performance, the A380 will take to the skies as a featherweight.

A broad spectrum of new technologies ranging from processes and systems to engines were developed, tested and implemented in the A380's honour. An array of technological innovations was also the source of the significant weight savings in spite of the remarkable capaciousness of the new super jumbo. What's more, tests have revealed that aerodynamic properties are also dramatically improved. The boosted aerodynamics and lighter airframe scale back the demands made on the engines - the result being diminished fuel consumption, reduced emissions and lower operating costs.

The lightweight construction is notably credited to the use of high-strength carbon-fibre reinforced composites (CFRC). The A380 will be the first Airbus ever to feature a carbon-fibre composite center wing box. Compared even to state-of-the-art aluminium alloys, the polymer version weighs up to one and a half tons less. Plus, the fixed wing leading edge will be manufactured from thermoplastics.

An estimated 40 per cent of the aircraft's structure and components will thus be manufactured from the latest generation of carbon composites and advanced metallic materials which, besides being lighter than traditional materials, offer significant advantages in terms of operational reliability, maintainability and ease of repair.

Another new material that sets benchmarks in weight and strength is to be introduced into a passenger aircraft for the first time, following intensive testing. The upper fuselage shell of the A380 will be fashioned from GLARE, a laminate alternating layers of aluminium and glass-fibre reinforced adhesive. In addition to being some 10 percent less dense than aluminium - for a weight saving of around 800 kilograms - GLARE has proven superior in terms of fatigue as well as fire and damage resistance.

Test results have proven that an artificial crack subjected to thousands of flight cycles barely increases in size. The new material also resists corrosion exceptionally well thanks to the first glass-fibre layer which prevents any kind of penetration beyond the superficial aluminium coating. GLARE is manufactured in a hot bonded process but is repaired in the same way as ordinary aluminium.

Airbus claims that weight savings resulting from the innovations mean the A380 tips the scales at around 240 tonnes - a full 15 tonnes lighter than a similar sized aircraft using 747 technology.

Source: Airbus 05/02/2005
http://www11.k-online.de/cipp/md k/custom/pub/content,lang,2/oid,4285/ticket,g u e s t

Highly fuel efficient and environmentally friendly

The A380 will carry more passengers over longer distances, allowing for projected passenger growth worldwide and helping to ease an increasingly congested environment. It will achieve this without increasing the number of air traffic movements and without negatively impacting the environment, thanks to significantly reduced noise and emissions levels.

The A380 embodies 30 years of Airbus experience in applying intelligent innovation to its new products. The result is an airliner at the top of the scale in terms of efficiency, profitability and operational effectiveness.

By incorporating the latest advances in structures and materials, the A380 offers a direct operating cost per passenger that is 15 per cent lower than the competing large airliner. Reliability and maintainability will be further increased through the use of new technologies.

New-generation engines, combined with an advanced wing and landing gear design, will make the A380 significantly quieter than today's largest airliner – enabling the very large aircraft to meet strict local regulations at airports around the world.
Spotlight on environment: The A380 may be the biggest airliner yet built, but it also achieves environmental-friendliness. On take-off it will generate only half the noise of its closest competitor and, thanks partly to its greater use of composites than on any previous passenger aircraft, its economical rate of fuel burn means fewer emissions.

http//www.airbus.com/en/aircraftfamilies/a380/innovation.html