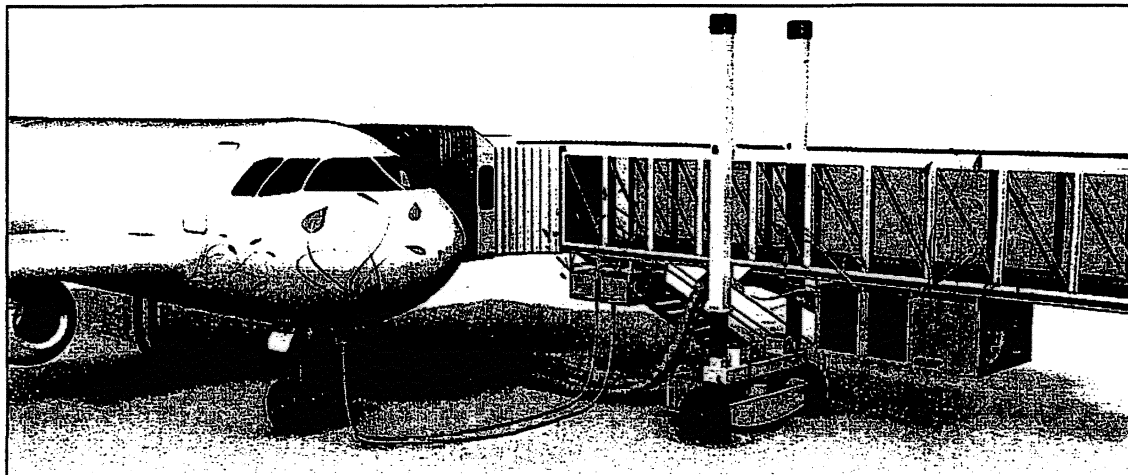


Fixed units have staying power

Diesel power units are being usurped by greener, quieter static converters

■ The Go Green on the Ground concept from AXA Power uses one PCA unit and one 400 Hz unit to assume the duties of the aircraft's onboard APU while on the ground.



AXA Power: 1182/85

The landscape for 400 Hz ground power has changed over recent years, as new and refurbished airports turn to static converters in preference to diesel ground power units (GPUs).

"This is because fixed systems are more environmentally friendly, make less noise and do not require diesel fuel," says Côme Georges-Picot, president of specialist 400 Hz power provider TDA Lefébure. "Therefore, any airport undertaking a major terminal refurbishment will invariably opt for these."

Putting in a fixed power system is not always simple, he concedes. Static converters are mostly attached to the underside of passenger boarding bridges (PBBs), with the cable retriever running along the side.

Another option is to provide a central power supply capable of supplying all aircraft positions, including PBBs and remote stands. However, this requires the rewiring of entire terminal buildings, which is not always that straightforward but could prove more efficient in the long run.

"The advantage of this latter system is that you provide redundancy, which means even if one static converter breaks down, power can still be provided to all the PBBs. In the case of a terminal with 20 aircraft positions, if five converters were supplied, they could cover all power requirements," explains Georges-Picot.

He stresses that this would be by far the cheapest option because, although the upfront costs of wiring, electrical panels and providing voltage drop compensation is higher, significantly fewer converters are needed, making the whole system more cost efficient.

"The overall philosophy at TDA Lefébure is to use a small number of high-end components and reduce the number of intermediate contacts in the electrical supply chain to ensure reliability," he adds. "The fewer the number of moving

parts – twisting cables or rotating contacts – the better, because this reduces the amount of wear and tear, thereby cutting out maintenance. That leaves just a few points needing to be lubricated and checked, but that's it as far as most maintenance is concerned. Things need to be simple, efficient and reliable."

An example is the new Skypit cable retriever, which forms part of the 400 Hz supply chain to the aircraft. Its development was prompted to find a way around a common problem, whereby a PBB operator may decide to retract the bridge once passenger loading has been completed, without checking whether the cable retriever has been detached. This means that often the cable is badly damaged or the socket is ripped from the aircraft.

To prevent this, TDA Lefébure installed a simple device that detects tension being applied to the cable. If this happens, the cable is automatically loosened, so that it won't be detached from the aircraft.

A breath of fresh air

AXA Power is probably best known for providing 400 Hz power supply systems to airport terminals. However, the company has also moved into the market to provide pre-conditioned air (PCA) for aircraft on the ramp.

Poul Elvstrøm, vice-president for international sales and marketing, says that by installing a 400 Hz power supply in addition to a PCA unit (called Go Green on the Ground), a typical A320 aircraft can cut CO₂ emissions by up to 85 per cent by not needing to run its auxiliary power unit while on the ground.

He nevertheless concedes that, even in airports where fixed installations are available, some airlines still prefer the option of providing their own ground power, as they are worried that the airport authority might abuse its monopoly position.

"In reality, airports with fixed installations don't tend to overcharge, so perhaps airlines don't have to be so cautious," notes Elvstrøm. "There will always be a need for some mobile ground power units at an airport to provide power for remote parking stands or for existing airports where it is not so it's easy to add in fixed infrastructure. But the trend is definitely towards airports providing more fixed equipment. In Europe, changes in legislation are driving this, while other regions, such as the Middle East, airports are also seeing both the financial and environmental case."

Elvstrøm claims that AXA Power's PCA unit is unique as it has a power factor of >0.97, which gives up to 20 per cent reduction on the required line current compared to similar PCA units with the same rating.

This leads to substantial savings of the cable section of the airport's electrical network, thereby reducing infrastructure requirements. At the same time, the unit can adjust capacity to the needs of the aircraft and keep energy consumption to a minimum, as all components of the PCA are individually controlled by variable frequency drives.

"Dismantling a bridge-mounted unit and cleaning it can take several days to complete. In contrast, ours is a modular design, which means a non-specialist employee capable of driving a forklift truck can easily remove one of four cooling modules and replace it with a new one. The dirty unit can therefore be cleaned away from the ramp in two to four hours. This fast turn-around time helps improve return on investment," explains Elvstrøm. **Barry Cross** ■

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