



STARTING UP

Has the ground power sector evolved much over the last 12 months? The Editor reviews the marketplace.

There were, at last count, rather more manufacturers of GPUs, ASUs and ACUs than any other type of GSE. Whilst the reasons for this might be difficult to pin down, it's great news for the fleet manager, who is faced with a useful breadth of choice. Moreover, because of their compact nature, ground power units are easily transported and shipped around, thus permitting overseas purchase without too many caveats. And, of course, such units can be attached to airbridges if an operation is keen to espouse a tidy ramp operation.

The biggest change in recent times has been that of the diesel-powered GPU giving way to electric. This move has also caused airports to look anew at the concept of "power by the hour" or similar, whereby handlers or airlines can be billed for GPU usage: this makes a lot sense and does away with the need for asset ownership, whilst automated billing cuts out the calculation task.

Offering a breadth of products

Estonia-based ElectroAir dates from 2006 and produces a range of ground power to suit a spectrum of applications.

The manufacturer cites long term operation, low repair incidence and simplification in terms of parts changing as benefits of the range. ElectroAir has also established a combination model that permits GPU, AC and DC outputs from one unit.

The hybrid diesel engine-driven GPU series APA is designed to reduce CO₂ emissions because of its unique technical characteristics and is equipped with an additional output of standard voltage (50/60 Hz). The diesel GPU is also capable of indoor service. This unit is especially suited to working with small aircraft and helicopters.

In terms of load bank and charge/discharge units, Electroair offers pit systems for both pop-up and hatch applications.

Utilising a minimum of equipment for complete power cover, including future contingency plans, is a philosophy to which this manufacturer adheres.

The most recent ElectroAir application was shown at InterAirport in 2019: the Mini Hatch EAPit system has a compact footprint and a reliable hatch open/close system that is counterweighted. Along with the standard size hatch and pop-up EAPit systems, the Mini EAPit has enlarged the company's underground product line. Delivery of 400 Hz and 50/60 Hz power, including compressed air, is possible from the one unit.

Green growth

In line with general market trends and the company's vision of supplying the aviation industry with the cleanest, most reliable and cost-efficient GSE systems available, ITW GSE continued its focus on green and environmental aspects in 2019, both at exhibitions and conferences, where the messaging was clear when marketing the 7400 eGPU. The choice paid off, says Vice President, Sales & Marketing, Poul Elvstrøm. "ITW GSE is still overwhelmed with the huge interest in the eGPU from airports, airlines and others wanting to switch from diesel to cleaner ground power equipment. That being so, our supply chain is fortunately ready to cover the market demand."

ITW GSE counts customers globally for its eGPU. United Airlines has invested in several units that are now deployed across the US. Other customers are airports, often ones which have signed up to the Airport Carbon Accreditation programme and have good reasons for changing the most polluting equipment into greener products. Yet other stakeholders are supporting green initiatives, like the State of California that recently set up an incentive programme named CORE (Clean Off-Road Equipment with Voucher Incentive Project). Together with the California Air Resources Board, it is funding a US\$44m programme to nudge companies in the State to move to zero-emissions equipment. The 7400 eGPU has been included in the programme.

Since the eGPU is a rather new product in the industry, ITW has initiated a customer survey to obtain feedback on the performance of the model. The survey is still underway, but so far it reveals that customers are very happy with the qualities of the eGPU. "You simply plug it in – and that's it" and "We do not even need a manual" are some of the spontaneous comments that have been logged.

Green benefits include the absence of emissions. In the United Arab Emirates, users have been taken by the fact that

customers can leave and board VIP aircraft without passing through a noisy environment and clouds of smoke. Other customers mention that the environmental benefits support the branding of their airport or airline. Further, the low maintenance requirements compared to a diesel GPU, which increases over a lifetime, is another great advantage.

In total, more than 2,500 units left ITW GSE's production lines in Europe last year. The majority were the 2400 converter, including the version with an integrated cable coil. Close to 300 PCA units were also shipped. A number of the units were supplied to the new Satellite 1 terminal that opens in Bangkok's Suvarnabhumi airport at the end of 2020. The four-tiered concourse building can accommodate up to 15m passengers annually and has 28 aircraft contact gates, eight of which will serve Code F A380 aircraft. For this project, 70 2400 Power Coils and 30 large 3400 PCA units have been commissioned lately and are ready for operational start.

(Other GPUs from ITW GSE are already installed at the current terminal, where the units have proven to be reliable and have required little maintenance, thereby ensuring maximum uptime).

US innovation

For Twist Aero, it has been more about 2020 than 2019, for this year will see three new product releases. The company's 180 kW Solid State Unit will feature MIL-STD-704F compliance and 180 kW Continuous Power at 58°C, PF1.0. It includes a dual blower cooling system, gas shock assisted main panels and is 100% US made.

Following suit with its very successful mobile PCA product lines, Twist Aero will also be introducing a diesel-driven 90 kW GPU unit. Some of the unique design aspects of the unit include fast transient response during on and off modes and a CANBUS integration between the solid state controller and generator ECM.

Finally, a 90 kW solid state option is now available on the Twist Aero 90 kW units: customers have the choice of full magnetics or an active front end design.

A French perspective

France-based Guinault remains the only specialist with APU-OFF solutions: the company has been focusing for decades on the three types of power generated by the APU, and builds GPU, ACU and ASU units.

Guinault's strategy has not altered for the last 15 years: it looks to offer the right solution to help airlines, handlers and MRO to operate APU-OFF. Thanks to its



Busy times ahead for Twist Aero, which is to launch three new products this year

in-house technology (power electronics, digital technology, generators, refrigeration technology and compressors), Guinault has been able to come up with the most suitable solution to reach its chosen target. Guinault expresses no preference, as long as it can ensure an APU-OFF operation at the lowest operational cost.

This philosophy is not only about the energy source, it's also about the control system, the monitoring possibilities, data collection and analysis. In this way the

embedded digital technology becomes key.

Needless to say, there are many parameters which will influence the decision over one or the other solution. By offering all possible solutions for APU-OFF, Guinault can thus be considered an independent partner, capable of providing the tools to proceed to the assessment of the different available solutions in a particular situation. Fuel costs, CO₂ emissions, power costs, maintenance costs, end of life costs and logistics approach can all be evaluated in an independent way. ▶

THE NEWEST NICHE SUPPLIER

Fast charging is a natural corollary of the incidence of battery power on the ramp.

According to Dynell, developing and realising common ideas together with customers is a key goal.

The electric trend, states the manufacturer, seems to be unstoppable, especially for airport ground support equipment, which illustrates the latest developments and the first successful projects.

Together with a well-known bus manufacturer in Europe, Dynell has been able to implement its DHC 150 (Dynell Hyper Charger 150 kW) DC charging system, according to the former's battery requirements, which is also applicable to other electrical equipment up to 1000V and 300 kW around the airport. Several airports around Europe have already showed their interest and tests will be carried out over the next few months with a view to implementing DHC fast charging systems.

Besides the DHC, an intelligent load sharing management software prepares airports to balance their future power requirement. Dynell's charging solutions thus support airports and ground handlers in their next step towards a CO₂-free future.

Guinault does not believe in a solely electric approach, but in a reasonable mix of solutions, thereby ensuring the lowest financial and environmental cost.

Finally, the manufacturer steers away from a fixed infrastructure solution, but rather relies on a mixture of fixed and mobile systems.

Electric from Austria

Hitzinger Airport Technologies, the long-established Austrian provider, is well known for the production of tailored power supplies.

The manufacturer provides a full range of products needed for an up-to-date operation as well as future ground handling challenges. Although diesel power still rules the roost, Hitzinger is firmly behind mobile, fixed or bridge-mounted ground power concepts to support clients attaining their climate goals.

Hitzinger's D POWER (a diesel-driven GPU) product line has been updated, with a new motor concept that now ensures an even more attractive total cost of ownership; along with this comes the lowest emissions coupled with Hitzinger's well-known standards. The company guarantees



The benefits of a cleaner ramp have spurred interest in ITW's electric GPU solution

the highest efficiency coupled with low energy and fuel consumption, simplified maintenance for high reliability and an extended product life.

Faced with an increasing demand for electrification in ground handling, Hitzinger has introduced the S POWER 90M-B-C. This mobile, towable 50/400 Hz converter with cable coil is a true zero emissions green solution for the ramp. Up

to 40 metres of cabling, a highly efficient stack design and a 30 kilometres an hour towing speed are just some of the features included in the design.

Hitzinger's IoT system, available for both product types, allows data recording and predictive maintenance support, as well as the implementation of a billing system based on the fuel and energy consumption of the unit. **ghi**

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