

Innovative Power System Development for UAVs

Development of Unmanned Aerial Vehicles (UAV) is growing on an exponential scale, As the performance envelope is pushed further, this creates additional demands on the power system.

UAV designers are looking to solar energy to provide more endurance: battery or fuel powered UAVs typically only fly for a few hours; adding solar power and increased battery storage can enable UAVs to fly day and night, potentially extending a flight mission duration to months. The enhanced endurance creates new possibilities for applications, such as aerial photography, communications, and reconnaissance.

UAV Power systems need to be specified and designed for reliability, low mass, optimal efficiency, and high power yield, thereby extending missions to maximise return on investment.

Silver Power Systems are experts in UAV power systems architecture and can provide a proven power system for electric UAVs.

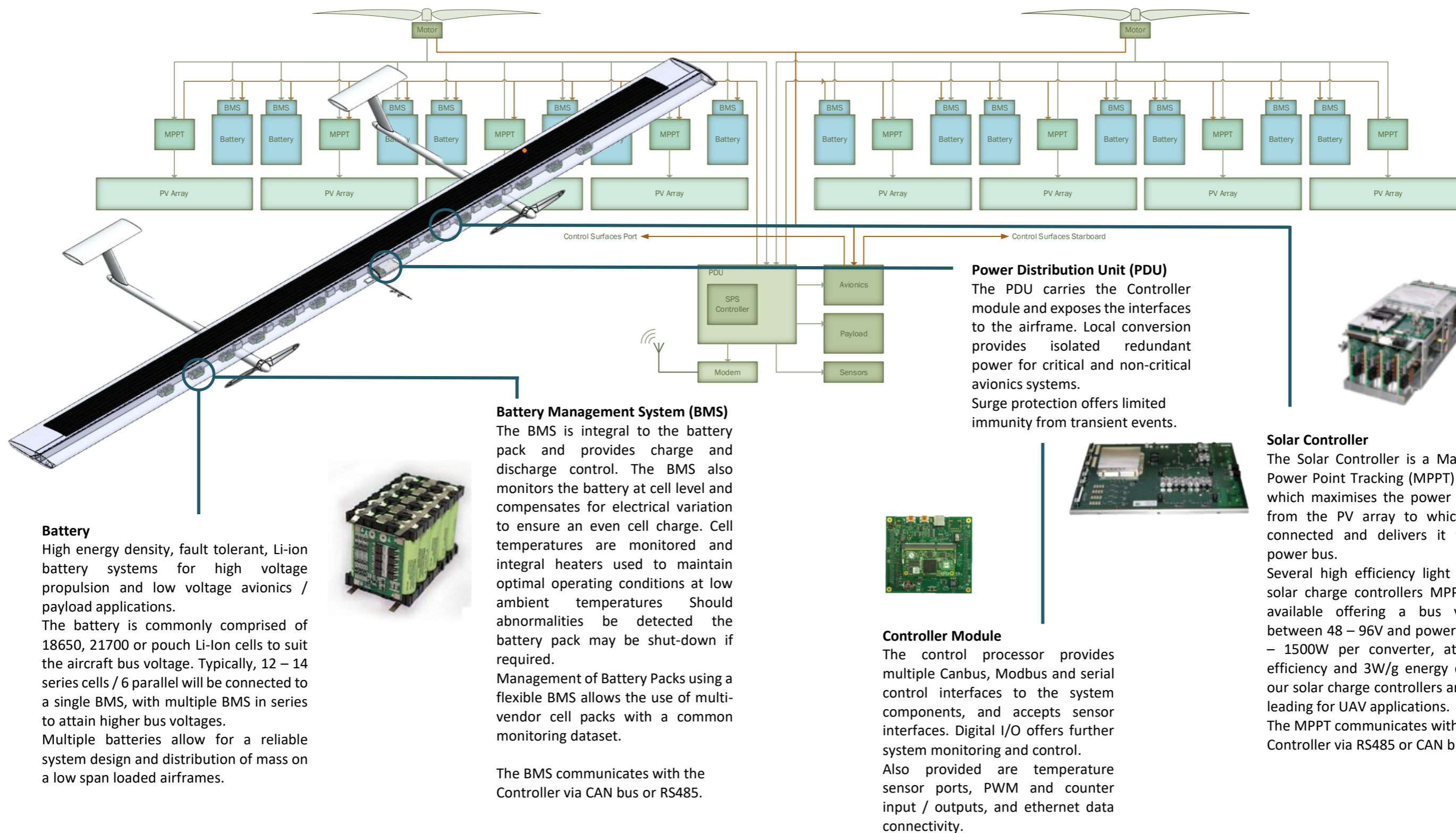
Silver Power Systems streamline the UAV development process, which for the aircraft designers eliminates the expertise required for UAV power system design, allowing them to focus on core design activities

Silver Power Systems' extensive experience includes the design of power solutions for High-Altitude Long Endurance (HALE) UAVs. Typical projects include the design and build of a complete energy generation, storage and power management systems hardware and software for a state of the art multi engine, solar powered, UAV, designed for 90,000 ft altitude operation and 90-day missions.

Our complete systems include: generation of power from renewable sources, high energy density battery management, power distribution, data gathering, and air to ground communications

The SPS Flight Engineer Ground Control Station (GCS) software provides ground based real-time remote power system management and data analysis. Power system data can be scrutinised enabling in-flight optimisation and allowing mission critical technical decisions to be confidently made.

The Silver Power Systems hardware suite comprises custom and third-party units which can be configured to form a modular power system that can be adapted to suit different airframes or mission profiles. Hardware is designed and ruggedized to ensure reliable operation in the harshest of environments, with system architecture offering n+1 redundancy wherever possible and allows for implementation of a distributed system to minimise point loading in a lightweight airframe construction.





Flight Engineer Ground Control Station

The Silver Power Systems Flight Engineer Ground Control Station (GCS) provides extensive control, telemetry and data logging via proprietary autopilot and narrow band modem interfaces. Displays are customisable to reflect aircraft configuration as are the controls for pilot and flight engineer operations.

GCS application is portable, as such can be operated on any Linux server or cloud platform.

The GCS provides extensive control telemetry and data logging with filtering and bandwidth optimisation., together with the power systems it provides the following functions:

- Continuous real time power and energy data monitoring
- Configurable alarms for abnormal or fault conditions
- Supervision of the power systems of multiple air-frames to provide full fleet management
- Fully autonomous operation with fault avoidance
- Ability to provide power system status to flight engineer and autopilot for mission profile optimisation
- Load shedding for energy optimisation
- Conditioned and controllable power outputs for critical, non-critical power systems and payload power systems
- Remote control of onboard systems e.g. navigation lights, payloads, environmental control systems
- The ability to reconfigure, operating set points and control algorithms for performance optimisation
- Ability to enable, disable or reset system elements
- Ability to reconfigure or make safe the power system for ground handling

