



PILLER

Power Systems



Delivering a truly global
service offering

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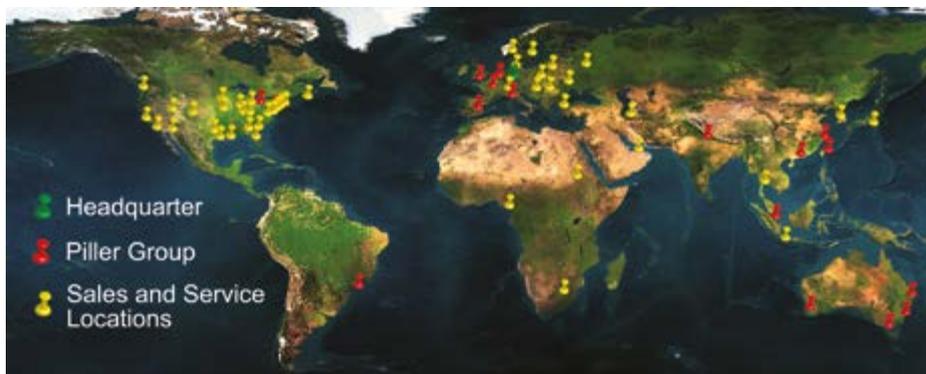
1. Introduction

To keep the best technology in peak condition throughout a service life in excess of 20 years requires the highest level of service support. Competence and responsiveness are the watch words of our service support teams. Piller believes that product and service belong together. For this purpose, Piller has a comprehensive world-wide network of qualified Service staff available 24 hours a day 365 days a year. The premium quality and technical maturity of every Piller product already guarantees a high degree of reliability and availability and this together with quality maintenance and support provided by our service technicians further reduces risk.



2. Piller Service Capabilities

Every year Piller maintains over 5000 rotary UPS units with ratings up to 3000kVA using our Global Service network of 280 technicians protecting businesses, including 400 major data center clients, in more than 40 countries, speaking 20 different languages.



The Global Service network is divided up into nine Piller subsidiary companies each responsible for their local market. Every Piller subsidiary has a team of field Service technicians who are responsible for providing the Commissioning of Piller equipment / systems, ongoing Maintenance and support services such as Battery replacements, Remote Monitoring and end user Operator Training.

We continue to grow our direct Service network by opening new Service centers in countries such as Singapore and more recently India & China. From all our Service centers we position Service technicians close to the installed base, sometimes these locations can be remote. Our most recent placement from the Singapore center is Hong Kong. In some parts of the world carefully selected Authorized Service Distributors provide Service support. Piller Service technicians play a key role in supporting the Authorized Service Distributor for Commissioning and provide the onsite supervisory support for the annual maintenance activity.

The Global Piller Service network offers over 2000 years of technical Piller Product experience from more than 280 Service technician and Product support employees. Each year we conduct over 260,000 hours of preventative maintenance work. Our Service technicians regularly undergo training at our facility in Osterode, Germany to maintain their knowledge of the product and to keep up to date with new technologies and systems with each technician receiving 86 hours of training on average per year. We only train our UPS technicians on the Piller UPS Products as we firmly believe that the only way to deliver competent service is to focus.

To support the Service teams in their daily activities there are teams of dedicated Product Support engineers. The main focus of the Product support engineers is the support of the field Service technician, Authorized Service Distributor and the client. The Product Support teams also have a direct link into the factory's R&D division.



A key part of ensuring that the product is supported is the availability of Spare Parts. All Piller subsidiary companies hold in country stock and in many cases where there is a large geographical area we strategically place local stores to support emergency situations. Clients who have a maintenance contract have priority access to the Spare Parts ensuring that in an emergency a repair can be affected without delay.

We understand that problems can occur at any time and that is when competent help is needed quickly. For this reason a 24 / 365 Call-Out service is in operation from each of our subsidiary companies. The Call-Out service is delivered by the Service teams with their 2000 plus years' experience dedicated to the Piller Product range. This ensures we are able to support any malfunction with trained technicians. Many of our customer comment on the professional support and care they receive from our Service technicians especially during frantic situations that can occur during problems at site.



Our Service teams are also able to provide system upgrades and modifications such as intelligent synchronization panels, battery monitoring systems or system configuration changes to meet the client's operational requirements / changing needs. This kind of work is fully planned and coordinated to ensure that at no time there is a risk to the critical load.

Complementing the normal maintenance activities and Call Out service is the remote connection software APOConnect and APOSafe. These software packages allow us to remotely monitor equipment even at unmanned and remote locations 24 / 365 at the Piller Service Support Center in Osterode. This system provides notification of potential problems before they become an issue allowing either our Service teams to respond or for us to notify the customer to take some avoiding action. These software packages are designed to complement the service we provide through our maintenance support agreements.

Piller is now investing in dedicated battery maintenance teams utilizing the latest maintenance hardware and software technologies simplifying the monitoring of the state of each individual battery block in a battery system. This investment enhances the maintenance provided and improves the reporting of the complete UPS system.



3. Global Reach

The following provides an overview of the lengths we go to in providing service to our clients.

3.1.1 Furthest North

Today the Piller Service team looks after equipment world-wide in some of the most challenging locations. The most northerly location is at Alert, the closest town to the North Pole in the Arctic circle with an annual mean temperature of -18.1 deg C. Alert is located 12 km (7.5 mi) west of Cape Sheridan, the north-eastern tip of Ellesmere Island, on the shore of the ice-covered Lincoln Sea. Alert lies just 817 km (508 mi) from the North Pole; the nearest Canadian city is Iqaluit, the capital of the territory of Nunavut, 2,092 km (1,300 mi) away. Our Service team in Canada have been looking after the Piller UNIBLOCK™ Hybrid Rotary UPS at this location for over 23 years.



Fig. 1: Piller Service engineer Jonathan Turner on his first trip to Alert.



Fig. 2: Facility housing the Piller UNIBLOCK™ Hybrid Rotary UPS.

To make the trip our Canadian Piller Service technician attends the CFS Airbase in Trenton, Ontario on day one and is issued survival gear & provided training (a requirement to board the flight in case of airplane problems/forced landing).

First is a flight to Thule, Greenland – approximately 9 to 10 hours flying time for an overnight stop. The next morning the Service technician takes a flight to Alert which is approximately 3 to 4 hours of flying time. Stay time in Alert is normally 7 days due to flights (6 days more than the maintenance requires), hopefully a two day return providing weather conditions allow.

3.1.2 Highest Location

The highest location of Piller equipment in the world is in the Chilean Andes 5000 meters above sea level. The site is located at the Chajnantor Plateau in the north of Chile near the Tropic of Capricorn with extreme climatic variations ranging from +40°C in the day to -20°C at night. There are four UNIBLOCK™ UBT 1670 with POWERBRIDGE™ at 20kV. The four units are built in 8 containers. Working at this site is a challenge, because the amount of oxygen is 50% less than the amount in normal altitude.



Fig. 3 Facility housing the 4 x UNIBLOCK™ UBT 1670.

Intensive health checks prior to traveling and at site are mandatory to get the permission to enter. Furthermore it is necessary to stay at least two full days and nights at an altitude of minimum 2500 meters for acclimatization before entering the site in order to prevent the risk of altitude sickness.

Usually our Service engineers stay in San Pedro de Atacama in the Atacama Desert. The temperature difference is very high. In the morning our engineers start travelling in the desert at more than 30°C. After 2 hours travelling by a 4x4 car they enter the site at 0°C. In the evening they have to drive back to San Pedro. During the commissioning of the units in 2012 we had heavy rainfalls in the Atacama Desert – the first rainfall in 25 years! The thunderstorm destroyed the road and power lines to site making the journey almost impossible.

3.1.3 Hidden Location

Piller has several installations on the Island of Papua New Guinea. PNG is an island nation in the tropics, just south of the equator, with the nearest Service center in Australia. The country's geography is diverse and, in places, extremely rugged. A spine of mountains, the New Guinea Highlands, runs the length of the island of New Guinea, forming a populous highlands region mostly covered with tropical rainforest. But in PNG the environment is not the biggest challenge. In PNG personal security is more of an issue.

At the national level, after being ruled by three external powers since 1884, Papua New Guinea established its sovereignty in 1975 following 70 years of Australian administration. So this is a relatively young country and has suffered some political unrest. However, the real threat comes from an anti-colonial sentiment among the indigenous peoples. This is a deeply tribal country with more than 800 languages being spoken. Outsiders, and particularly western looking outsiders are not trusted by the indigenous peoples.

As a result, travel to and from work sites is done in locked cars with all windows shut. Travel is usually from one walled-gated compound to another walled gated compound. Westerners have to be constantly aware of what is happening in their surroundings – and violence is quite common when people have failed to pay attention.



Fig. 4: Port Moresby, Papua New Guinea.

Piller currently has four UNIBLOCK™ units with a total capacity of over 2.2 MVA installed in a Bank data center in Port Moresby. In addition to supporting the banks data centers, some of the UNIBLOCK™s capacity is used to service the security compound where 1000 armed men are housed and based.

Supporting our customers in the above environment is challenging and this is the reason why our competitors turn away business in this region. However Piller has demonstrated its flexibility and strong Service support, even in the most arduous environments, and this underpins the reason why our clients choose Piller.

3.1.4 Long-term Location

One of the longest operating data centers' is in the UK belonging to a Bank that had 6 UNIBLOCK™ units commissioned during 1985. The 6 UNIBLOCK™ units were installed in 2 groups of 3 UPS units in parallel with the possibility to bring up to 6 units in parallel operation. The system was designed as an N+1 solution with a battery backup time of 10 minutes under full load condition.

There are no special measures for the Piller Service team in gaining access to the site other than the typical entry requirements that a modern data center demands.



Throughout the last 29 years the attendance of the Piller Service team from the UK has been for the preventative maintenance visits at the site. The preventative maintenance provided by the Piller UK Service team has ensured the run time of the parallel system for over 1.5 million hours. This is a typical life span / experience of a Piller installation where the equipment is commissioned and maintained over many years of operation by the highly trained and competent local Piller Service team.

4. Summary

We are able to offer a truly Global Service with a high level of competence to all clients no matter where their site is located. We go to great length to ensure our Global Service is delivered locally and are committed to extend that local cover as markets grow throughout the world. Our commitment to our clients is to deliver the highest level of Service and continue to develop and enhance our Service offering.

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