

Electric Integration

Kyburz Switzerland AG, Relies on ABM Drives for High-Performance Technology in Postal Delivery and Electric Sports Cars

ABM Drives Inc.

Kyburz Switzerland AG—headquartered near Zurich—offers high-quality mobility and transport solutions used for postal delivery.

When it comes to drive technology, the provider relies on the support and turnkey solutions of ABM Drives Inc., from concept to series production.

Founded in 1991, Kyburz Switzerland AG has 150 employees and is known for urban delivery vehicles featuring automatic parking brakes and reverse gears that are beneficial in the wintry Swiss conditions.

The E-Mobile fleet of Kyburz DXPs combines the efficiency of a two-wheeler with the safety and stability of a three-wheel vehicle. DXP is driven by postal operators in various countries such as Germany, Finland or Austria, as well numerous cities such as Winterthur or Montreux. However, postal and logistics companies are not the only ones relying

on these environmentally friendly vehicles. Many popular luxury electric sport cars like the eRod use ABM Drives Inc. technologies.

“We offer a comprehensive service package,” says Daniel Weber, head of development at Kyburz. “We develop, produce vehicles and take care of the after-sale service. We also take them back after being used, process them or take care of their recycling.” Currently, over 23,000 of these electric vehicles are on the roads worldwide. Apart from the USA, the company is active in all markets worldwide.

Required: High-Performance and Efficient Drives

Postal workers need to deliver their shipments quickly and reliably. They require vehicles that are efficient and inexpensive to maintain. This places particularly high demands on



The maintenance-free AC drive is suitable for journeys with high load peaks and high continuous performance (courtesy ABM).



the drives. Postal workers must be able to manage steep streets with fully loaded vehicles and be able to accelerate at all times. Since these vehicles are used daily, both acceleration and range play a major role and require motor performance and efficiency.

ABM Drives Inc. develops and manufactures systems for stationary and mobile applications in areas like conveyors, hoists or forklifts. In addition to modular system solutions, ABM Drives Inc. also integrates application-specific drive solutions.

“Even before the turn of the millennium, we started to transfer our know-how from battery-powered applications to e-Mobility. Even back then, we were able to implement the first customer-specific projects,” said Jürgen Schliermann, head of mobile drive technology development at ABM. “We

recognized new trends early on—this is important—especially in a future-oriented industry such as electric mobility. We take this into account thanks to our comprehensive development and production capabilities.”

High Acceleration from Standstill

“We were looking for a reliable partner for our ever-increasing production and for the high user demands,” explained Kyburz’s Weber. “We were familiar with the high level of expertise of ABM and the good reputation of the supplier.”

The emission-free eRod provides maximum driving pleasure both on and off-road (courtesy Kyburz).



ABM supplied the AC end shield motors for the DXP series delivery vehicles. Weighing only around 48.5 lbs., these three-phase asynchronous motors are quiet, environmentally friendly and optimized for the stressful stop-and-go operation. They reliably perform with their high acceleration capacity even from the standstill position.

"The weight-optimized AC end shield motors are also robust and durable. Their special design without housing makes them suitable for applications with high load peaks and high dynamics," said Schliermann.

Heat generation is also a major issue with high torques and low speeds which ABM managed with the specialized motors.

It was also important for Kyburz to have a drive which requires little or no maintenance. In addition, the motor draws energy from maintenance-free lithium iron phosphate batteries. External drive controllers assume the power supply and speed/torque control. Thanks to the optimized interaction with the controller, the system is very well regulated, ensuring a high level of power density. "We can deliver a light, efficient and compact drive that optimally accelerates, provides a good driving dynamic and therefore also achieves a long range," added Schliermann.

Emotions Instead of Emissions

As mentioned earlier, ABM drives are also installed in the eRod—a roadworthy electric sports car. The electric drive ensures that the 1,300-lb. vehicle has the thrust needed to achieve a top speed of 75 mph and a range of around 110 miles.

"We already developed our ring rib motor and only had to adapt it to the electrical properties," said Schliermann. In contrast to the end shield motors, the compact and 95-pound AC drive has a housing. There is also the ring-shaped design of the ribs. Both protect the motor against dirt and ensure a good heat dissipation. It is installed on the differential axle transversely to the driving direction.

"Thanks to this installation position we have adapted the ribs of the drive in such a way that ensures optimal air cooling," said Schliermann. This solution is suitable for journeys with high load peaks and high continuous performance." In other words, perfect for a vehicle that is not only emission-free but also with quick acceleration even from a standstill position. Voltage supply and speed/torque control are both performed by an external control. The ring cooling fin motor is also optionally available with higher protection class (IP6K9K). In addition to a cost-effective solution, the performance values were particularly decisive for Kyburz.

Benefits Across the Board

"With ABM drive solutions we have achieved optimal performance across all our applications," Weber said. "This also includes higher temperature resistance, allowing vehicle operation at performance limits for longer periods." Kyburz is very satisfied with both drive solutions because the ABM drives are suitable for short, dynamic stretches as well as for the continuous operation in postal services.

"We always get quick, competent support. Should modifications be required, we always quickly find the suitable solution," Weber said.

For its part, ABM opted for a sustainable delivery vehicle of DXP series for its energy efficiency and zero emission. "We use the vehicles for journeys between our two plants in Markredwitz in Upper Franconia. Our employees are also excited," Schliermann added. **PTE**

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The optimized cooling is further supported by installing the drive transversally to the driving direction (courtesy of ABM).

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