THE APEX SERIES

AP_X80 vs XUB-80

The upgrade, by the numbers



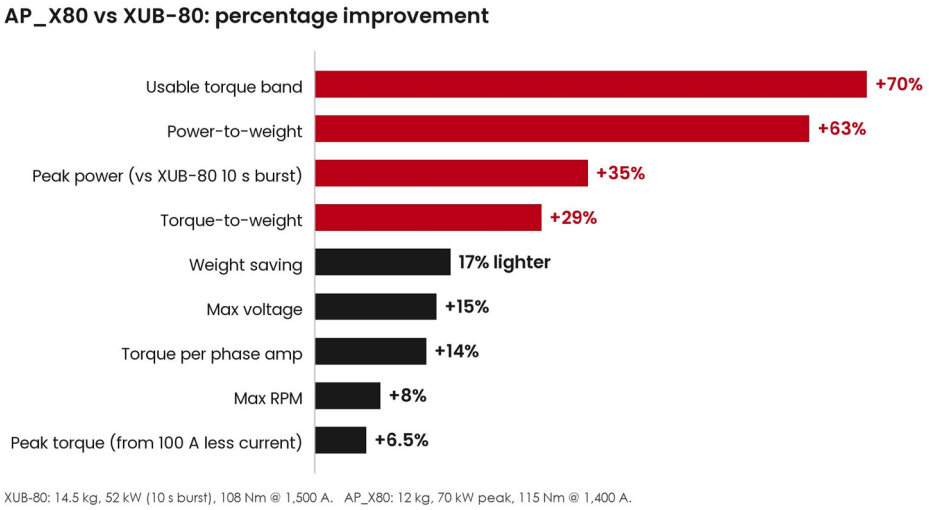
17%
lighter
12 kg vs 14.5 kg

+35%
more power
70 kW peak vs 52 kW burst

+63%
power-to-weight
5.8 vs 3.6 kW/kg

+29%
torque-to-weight
9.6 vs 7.4 Nm/kg

01 By the numbers



XUB-80: 14.5 kg, 52 kW (10 s burst), 108 Nm @ 1,500 A. AP_X80: 12 kg, 70 kW peak, 115 Nm @ 1,400 A.

Specification	XUB-80	AP_X80	Improvement
Released	2023	2026	**N/A**
Weight	14.5 kg (32.0 lb)	12 kg (26.5 lb)	**17% lighter**
Peak power	52 kW (69.7 hp) 10 s burst	70 kW (93.9 hp) peak	**+35%**
Power-to-weight	3.59 kW/kg (4.81 hp/kg)	5.83 kW/kg (7.82 hp/kg)	**+63%**
Max torque	108 Nm (79.7 lb-ft) @ 1,500 A phase	115 Nm (84.8 lb-ft) @ 1,400 A phase	**+6.5%, from 100 A less**
Torque-to-weight	7.45 Nm/kg	9.58 Nm/kg	**+29%**
Usable torque band	Baseline	70% wider	**+70%**
Torque per phase amp	0.072 Nm/A	0.082 Nm/A	**+14%**
Maximum RPM	12,000	13,000	**+8%**
Working voltage	48–104 V	80–120 VDC	**+15% at the top end**

Power compares the AP_X80 peak rating with the XUB-80 10 s burst rating. Torque is maximum torque at the stated phase current.

02 Design and features, head to head

Feature	XUB-80	AP_X80	Change
Stator winding	Concentrated (tooth-wound)	Distributed winding	**Upgrade**
Rotor	Flat IPM, 1 mm air gap	EBMX VV rotor: double-V interior permanent magnet (IPM)	**Upgrade**
Magnet grade	U42H	50UH	**Higher grade**
Pole configuration	10 poles / 12 slots	4 pole pairs (8 poles)	**New layout**
Thermal design	Previous generation, FEA-optimised	FEA-optimised for best-in-class thermal conductivity	**Upgrade**
Stator housing	Generation 1: extruded, with an anodised surface for better heat dissipation	Generation 2: extruded, with an anodised surface for better heat dissipation	**Upgrade**
Side covers	Previous generation	High-performance powder coating	**Upgrade**
Sealing	Lab-tested IP65	IP65, tested under real-world quenching conditions, with an IP-rated pressure release valve	**Upgrade**
Phase wires	Single insulated, stranded wire joined (not direct-out)	High-performance, direct-out for lower losses, double insulated with anti-abrasion coating	**Upgrade**
Terminals	No terminal covers	Custom high-temperature lug terminal covers	**Upgrade**
Thermal probe	Single KTY84	KTY84 (two installed, one for redundancy)	**Upgrade**
Position sensor	NJDC 605 encoder	EBMX in-house ABI encoder	**In-house**
Motor KV	85–90	85	**N/A**
Temperature rating	180°C	180°C	**N/A**
Warranty	2 years	2 years	**N/A**

03 What changed inside

STATOR

Distributed winding

Replaces the XUB-80's concentrated winding. Every amp put to work: more torque, a silky-smooth, linear power band and cooler running.

ROTOR

New VV rotor

The AP_X80 moves beyond the XUB-80's flat IPM rotor with two buried V-shaped 50UH magnet layers per pole, giving a 70% wider usable torque band.

THERMAL

Cool by design

FEA-optimised for best-in-class thermal conductivity. The distributed-winding stator runs cooler and the anodised housing sheds heat faster.

SEALING

IP65, put to the test

An all-new encoder cap and better sealing all round. True IP65, tested under real-world quenching conditions, plus an IP-rated pressure release valve.

WIRING AND SENSING

Built for performance and reliability

Direct-out, double-insulated phase wires cut losses. Custom high-temperature lug covers, twin KTY84 probes for backup and an EBMX in-house ABI encoder.

CONTROL

Maximum power, maximum control

Next-generation throttle control that puts rider feel first.

04 From XUB-80 to AP_X80



GENERATION 1 | RELEASED 2023

XUB-80

14.5 kg | 52 kW burst | 108 Nm

DEVELOPMENT

17% lighter
+35% power
+70% usable torque band



GENERATION 2 | RELEASED 2026

AP_X80

12 kg | 70 kW peak | 115 Nm