TEST REPORT EXTERNAL ALTERNATOR 20A, 70A AND 150A FOR 915IS AND 912IS ENGINES

Ref.: Test Report

Issue 1.0

Approval

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Reference Documents

No.	Document Ref.	Document Title	Issue	Date	Author
1	data sheet shunt	MPM_DMS Accessories.C02			Murata Power Solutions
2	data sheet ammeter	DCA5-20PC Series			Murata Power Solutions
3	PP2001	AIRCRAFT ALTERNATOR OWNER'S MANUAL		02/03/20	Hartzell Engine Technologies LLC
4	12-1001	R1224 REGULATOR INSTALLATION INSTRUCTIONS		09/11/18	Hartzell Engine Technologies LLC
5	Alternator_Test_Circuit_Hartzell_MMA _220629_1.0	Alternator Test Circuit Hartzell		06/29/22	Marvin Miklosa
6	Alternator_Test_Circuit_HCCargo_MMA _220629_1.0	Alternator Test Circuit HC Cargo		06/29/22	Marvin Miklosa
7	Alternator_Testcard_20A	Alternator Testcard 20A		05/17/22	Marvin Miklosa
8	Alternator_Testcard_70A	Alternator Testcard 70A		05/17/22	Marvin Miklosa
9	Alternator_Testcard_150A	Alternator Testcard 150A		05/17/22	Marvin Miklosa

Abbreviations

C

CAN..... controller area network

E

ECU..... engine control unit
EMU ..... engine monitoring unit

R

RSFS.....*RS Flight Systems GmbH*

W

W.....Watt - power

Ω

Ω .....Ohm - resistance

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1 INTRODUCTION

RSFS is launching a new product family of external alternators for Rotax 912iS and 915iS engines. There are three different versions for each type of engine. One rated at 20 A, one at 70 A and one at 150 A. The 70 A and 150 A alternators can be used either in 14 V or 28 V configuration. The 20 A alternator can only be used in 28 V configuration.

This test is issued to confirm the manufacturers power curve of the Hartzell ALT-FLX, Hartzell ES-7024-14 and HC Cargo HC110448 Alternators with Rotax 915iS and Rotax 912iS engines. Also, to test and to confirm suitability of the RSFS alternator mounting kits. For that matter the alternators are mounted with their corresponding mounting kits to either a Rotax 915iS and a Rotax 912iS engine on an engine test bench controlled by a hydrostatic dynamometer. For simulating the electrical power consumption, a remote controllable electronic load and a passive load are used. For tracking the power output, a shunt resistor is used to measure the sum current of the alternator electrical circuit and a multimeter is used to measure the excitation field current. Furthermore, engine data is acquired via the EMU directly from the ECU's CAN.

The test is conducted at Franz Aircraft Engines in Schechen / Germany.

2 TEST SETUP

2.1 HARDWARE SETUP 915IS

The alternators used in this test are:

- HC Cargo HC110448 (20 A)
- Hartzell ES-7024-14 (70 A)
- Hartzell ALT-FLX (150 A)

They each are mounted to a Rotax 915iS engine, via the corresponding RSFS mounting kit for Rotax 915iS engines. The mounting kit consists of a steel mounting bracket, two pulleys, all necessary screws and a belt. The steel bracket of the mounting kit is held by two M8 screws and one M10 screw which are screwed into threads on the gearbox housing as foreseen by Rotax to accommodate an external alternator. One pulley is mounted to the propeller shaft via the propeller screws, the other one is mounted on the shaft of the alternator. The alternator is driven by a belt. The transmission ratios of each kit are shown in Table 2-1. All transmission ratios are designed to enable the alternators to work inside their most efficient rpm envelopes and to not exceed their maximum rpm.

The complete assemblies can be seen in Figure 2-1, Figure 2-2 and Figure 2-3.

Table 2-1: Transmission Ratios 915iS

Alternator kit type	Gear box transmission ratio	Alternator transmission ratio
20 A 915iS (26005-931)	1:2.54	2.56:1
70 A 915iS (26005-921)	1:2.54	4.06:1
150 A 915iS (26001-880)	1:2.54	4.06:1

Figure 2-1: Hardware Setup 20 A 915iS

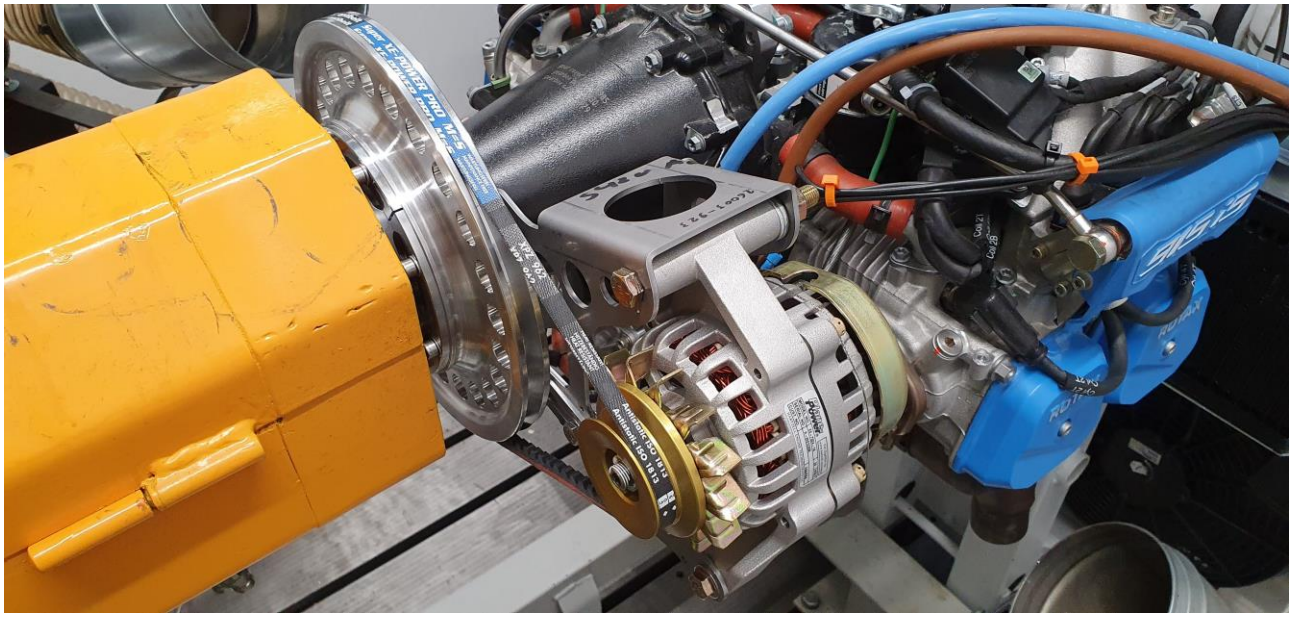

Figure 2-2: Hardware Setup 70 A 915iS

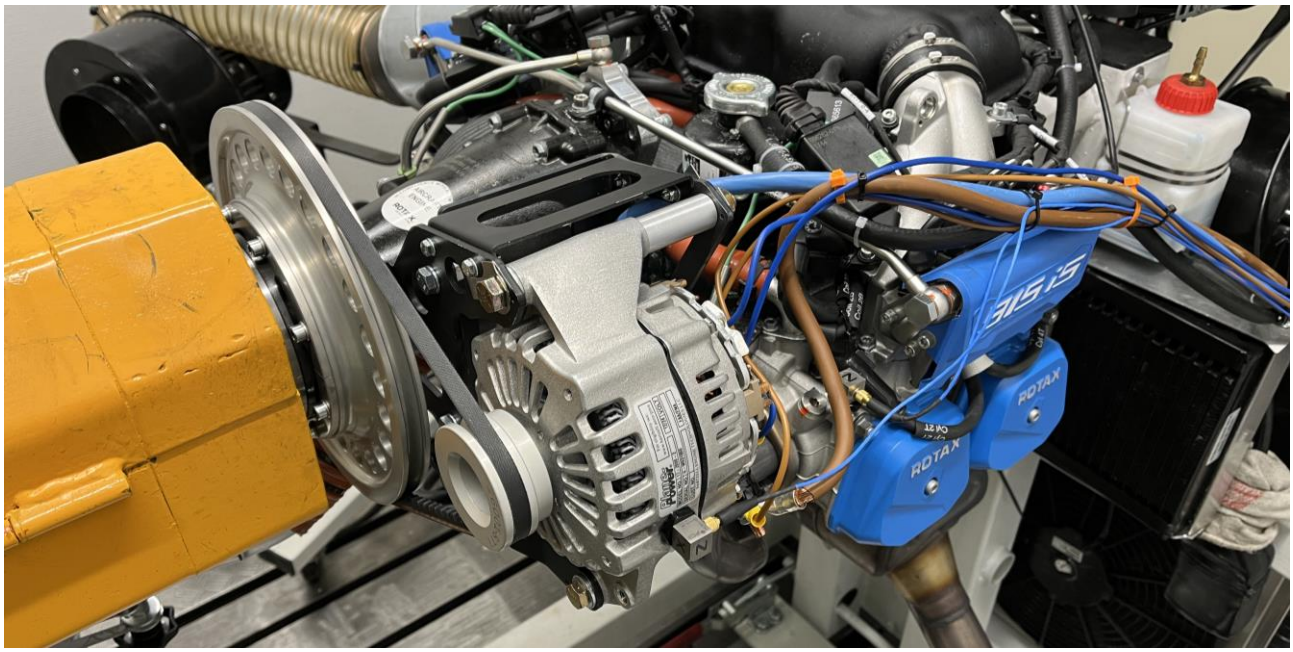

Figure 2-3: Hardware Setup 150 A 915iS

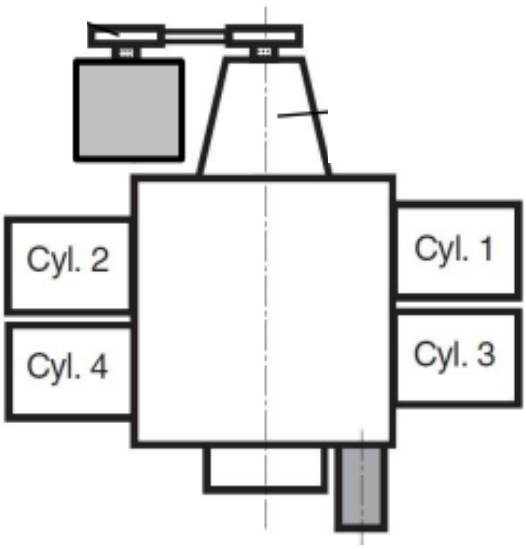

Figure 2-4: Schematic Installation Overview 915is

2.2 HARDWARE SETUP 912IS

The alternators used in this test are:

- HC Cargo HC110448 (20 A)
- Hartzell ES-7024-14 (70 A)
- Hartzell ALT-FLX (150 A)

They each are mounted to a Rotax 915iS engine, via the corresponding RSFS mounting kit for Rotax 912iS engines The mounting kit consists of a steel mounting bracket, two pulleys, all necessary screws and a belt. The steel bracket of the mounting kit is held by two M8 screws and one M10 screw which are screwed into threads on the gearbox housing as foreseen by Rotax to accommodate an external alternator. One pulley is mounted to the propeller shaft via the propeller screws, the other one is mounted on the shaft of the alternator. The alternator is driven by a belt. The transmission ratios of each kit are shown in Table 2-2.. All transmission ratios are designed to enable the alternators to work inside their most efficient rpm envelopes and to not exceed their maximum rpm.

The complete assemblies can be seen in Figure 2-5, Figure 2-6 and Figure 2-7.

Table 2-2: Transmission Ratios 912iS

Alternator kit type	Gear box transmission ratio	Alternator transmission ratio
20 A 912iS (26006-071)	1:2.43	2.56:1
70 A 912iS (26006-051)	1:2.43	4.06:1
150 A 912iS (26006-061)	1:2.43	4.06:1

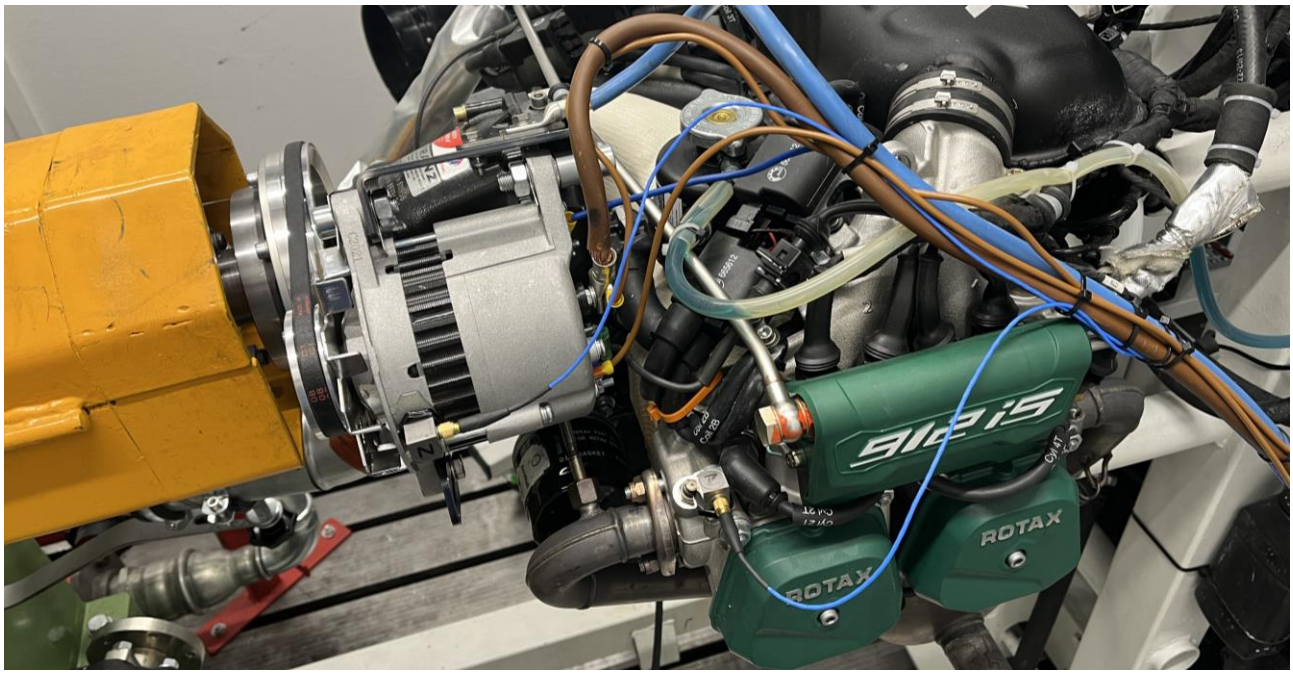

Figure 2-5: Hardware Setup 20 A 912iS

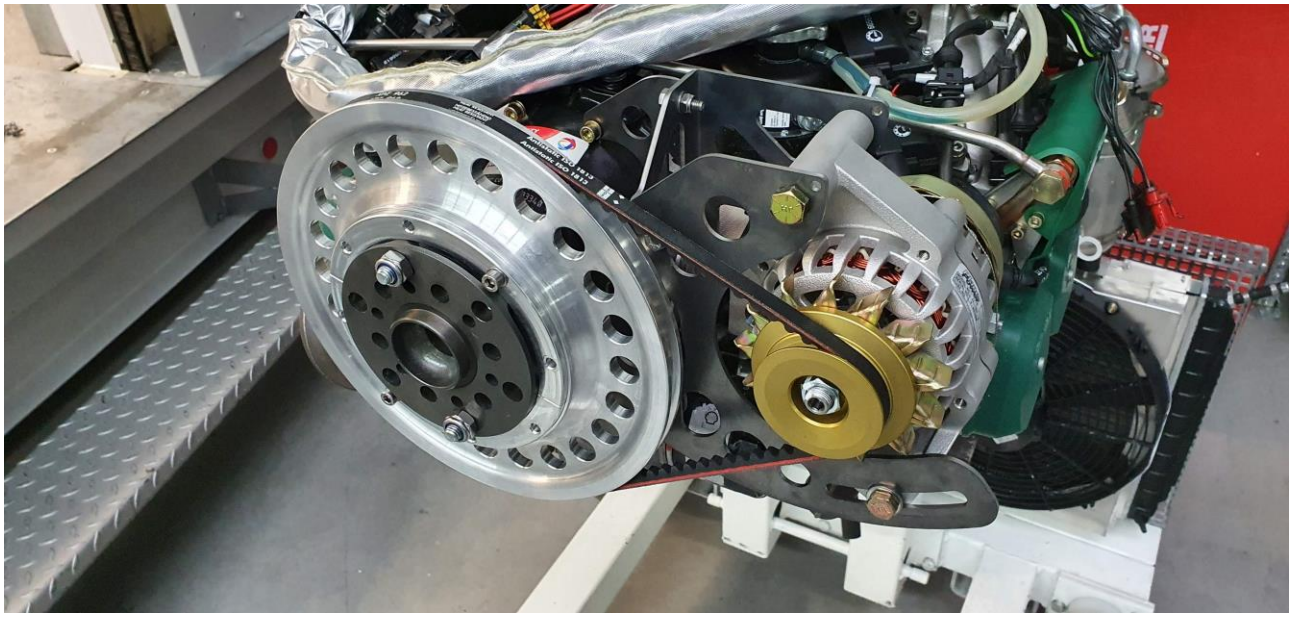

Figure 2-6: Hardware Setup 70 A 912iS

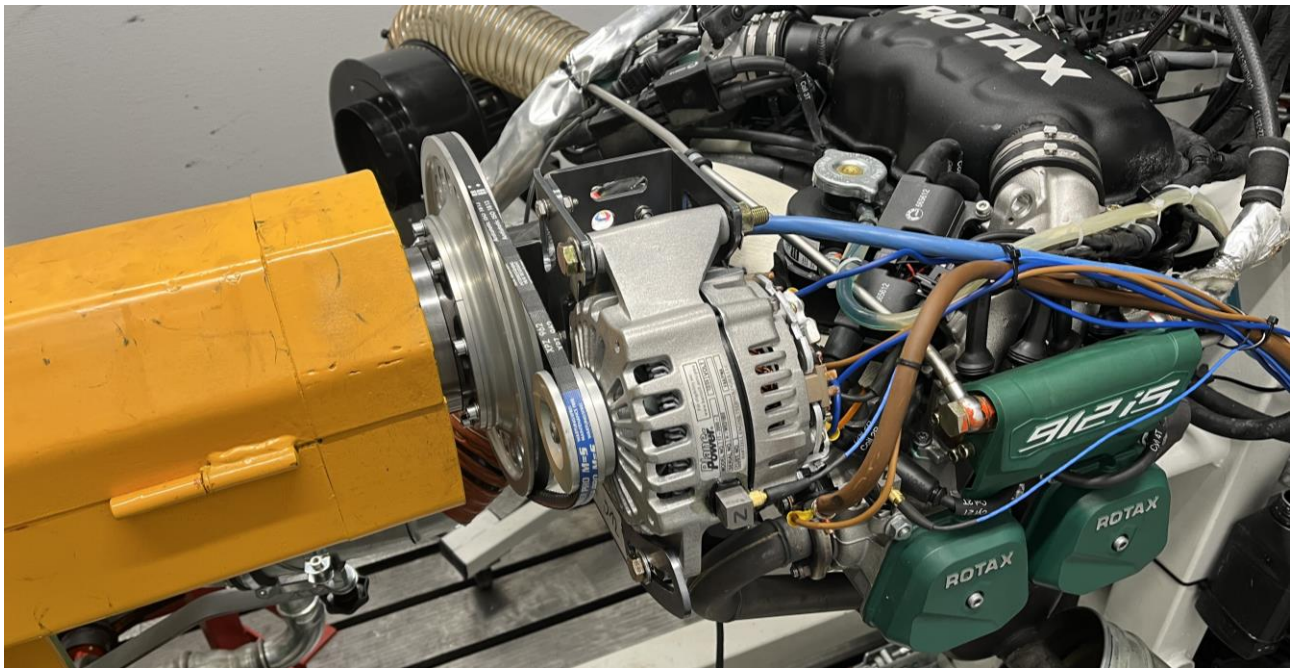

Figure 2-7: Hardware Setup 150 A 912iS

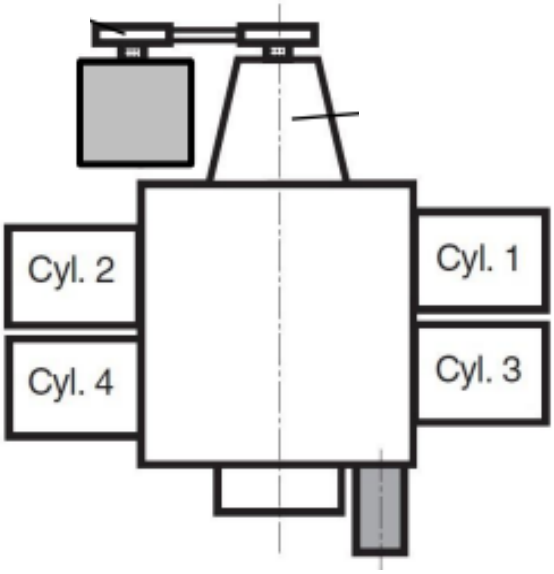

Figure 2-8: Schematic Installation Overview 915is

2.3 HARDWARE OVERVIEW

Table 2-3: Table of Hardware

Part Name	Part Number	Serial Number
Rotax 915iS Engine		9133121
Rotax 912iS Engine		4417049
HC Cargo Alternator	HC110448	1491
Hartzell Alternator	ES-7024-14	H-W012556
Hartzell Alternator	ALT-FLX	H-W031800
Hartzell Regulator	R1224	H-S112648
Mounting Kit ES-7024-14 915iS	26005-921	
Mounting Kit ES-7024-14 912iS	26006-051	
Mounting Kit ALT-FLX 915iS	26001-880	
Mounting Kit ALT-FLX 912iS	26006-061	
Mounting Kit HC110448 915iS	26005-931	
Mounting Kit HC110448 912iS	26006-071	

2.4 ELECTRICAL SETUP

A passive load consisting of five individually switchable and cooled 1 Ω resistors, as seen in Figure 2-9 is used to simulate different electrical loads. A remote controllable electronic load is used to regulate current in fine steps. A 50 mV Shunt resistor with a digital ammeter is implemented on the low side of the circuit to measure the total current. Also, a 28 V DC battery has to be used to smoothen out power peaks which is necessary to protect the regulator from damage. The Batteries are allways fully charged before measurements are taken. Due to the wiring setup the current consumption of the excitation field is already included in the displayed current of the shunt resistors display. An additional multimeter is used to determine the exitation field current.

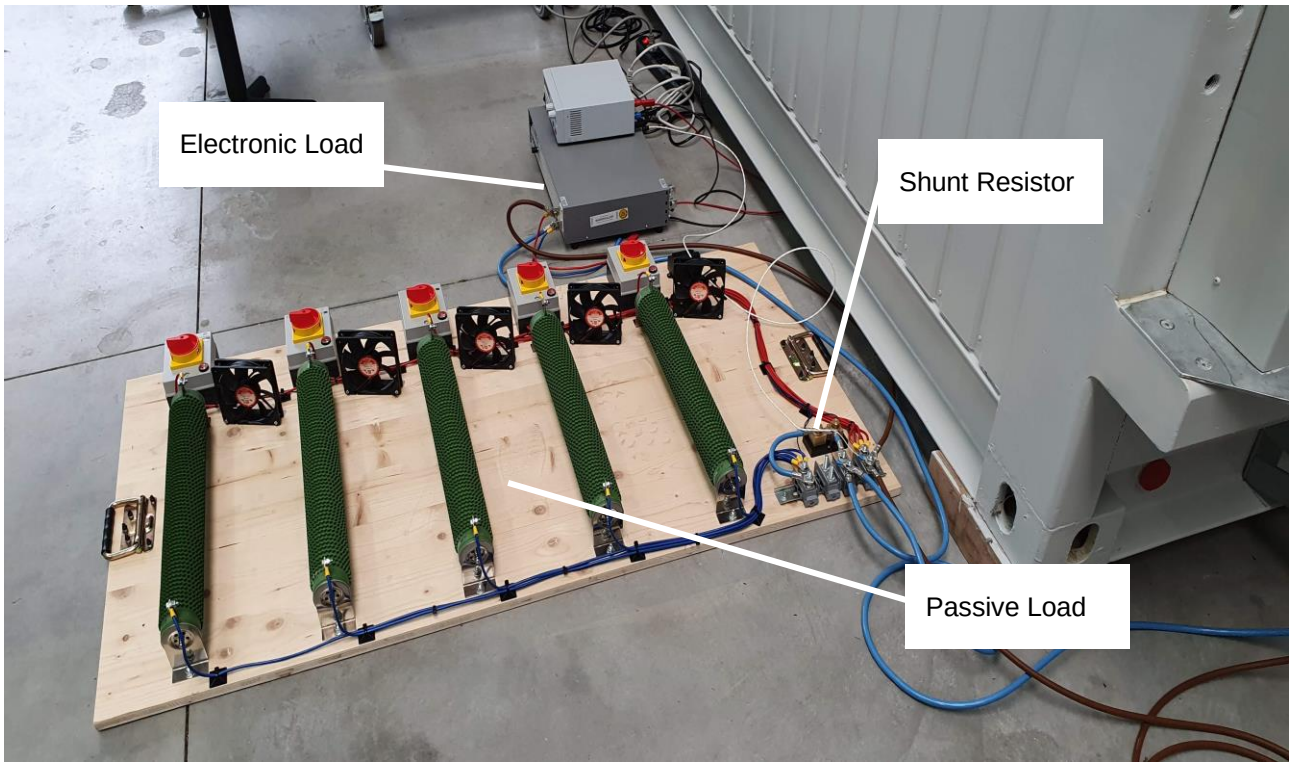

Figure 2-9: Electronic Measurement Setup

Both the Hartzell ES-7024-14 and the Hartzell ALT-FLX need an external regulator while the HC110448 is internally regulated. The wiring diagrams of the complete test setups can be seen in Figure 2-13 and Figure 2-14 in a configuration for both Hartzell alternators and in **Fehler! Verweisquelle konnte nicht gefunden werden.** in a configuration for the HC110448. Because of that matter the HC110448s field current cannot be recorded. The initial excitation field current will be recorded via a multimeter.

The connectors of all alternators can be seen in Figure 2-10 Figure 2-11 Figure 2-12.

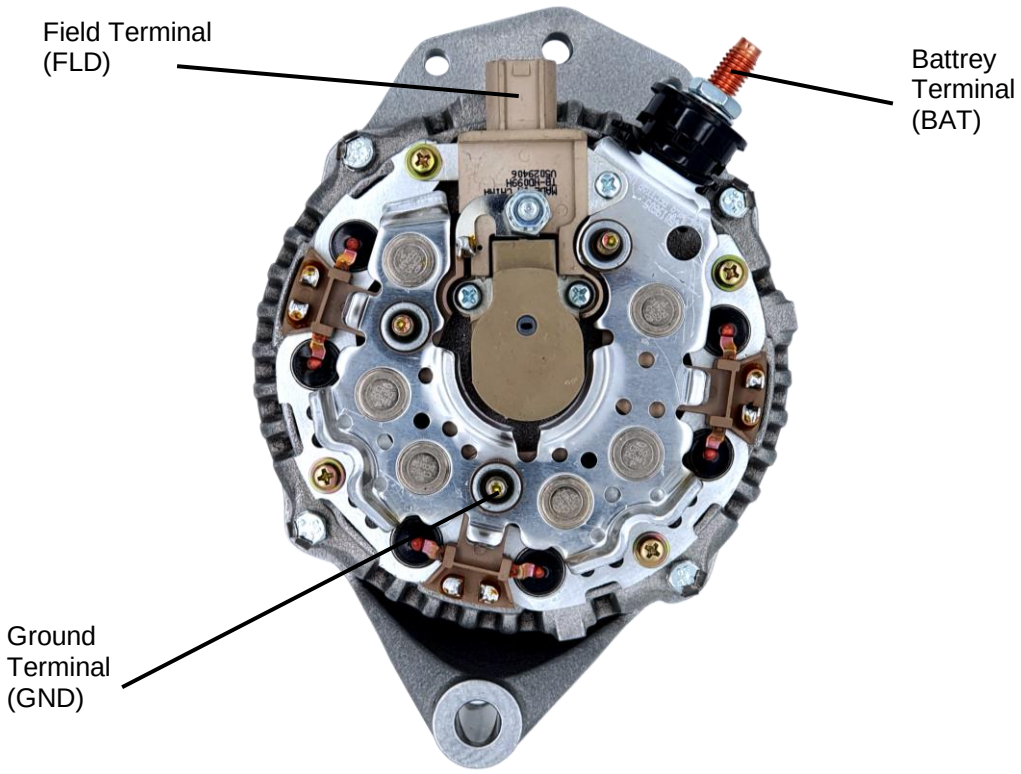

Figure 2-10: Connectors ALT-FLX

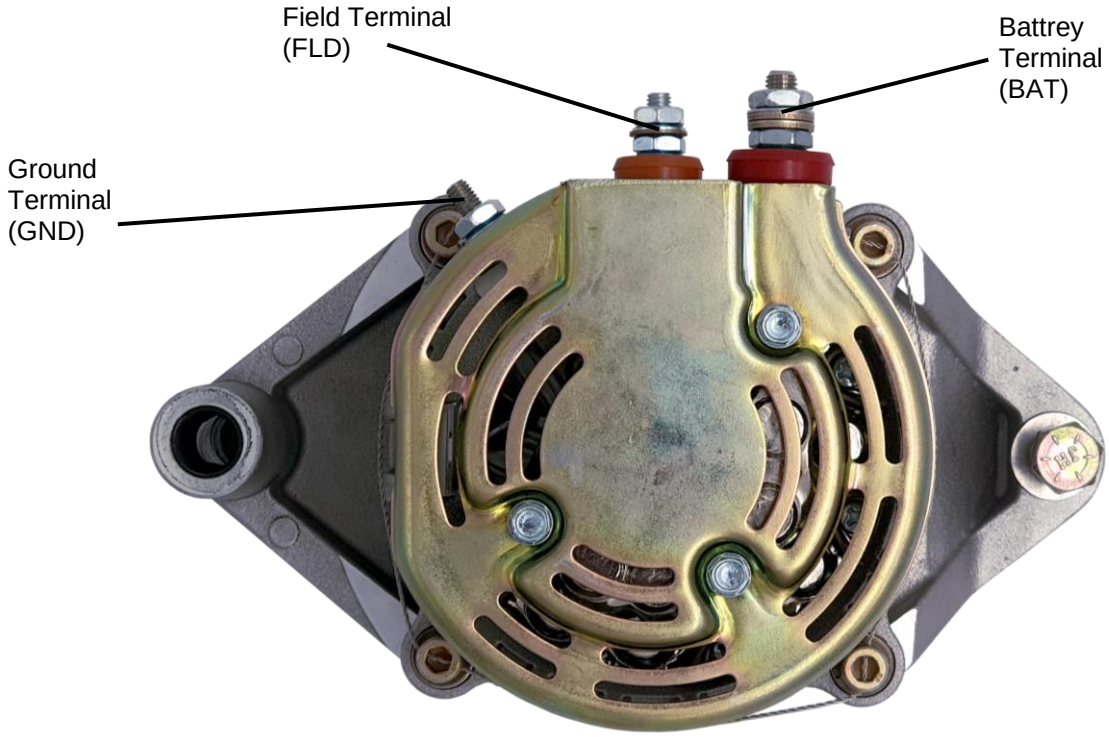

Figure 2-11: Connectors ES-7024-14

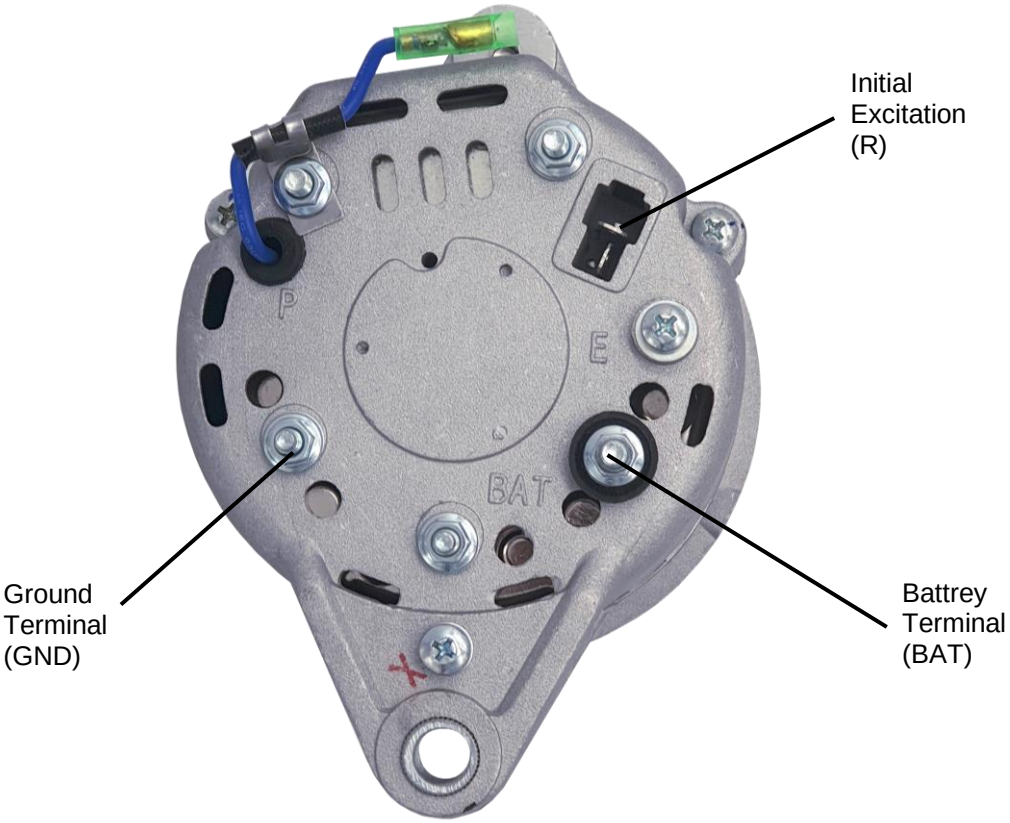

Figure 2-12: Connectors HC 110448

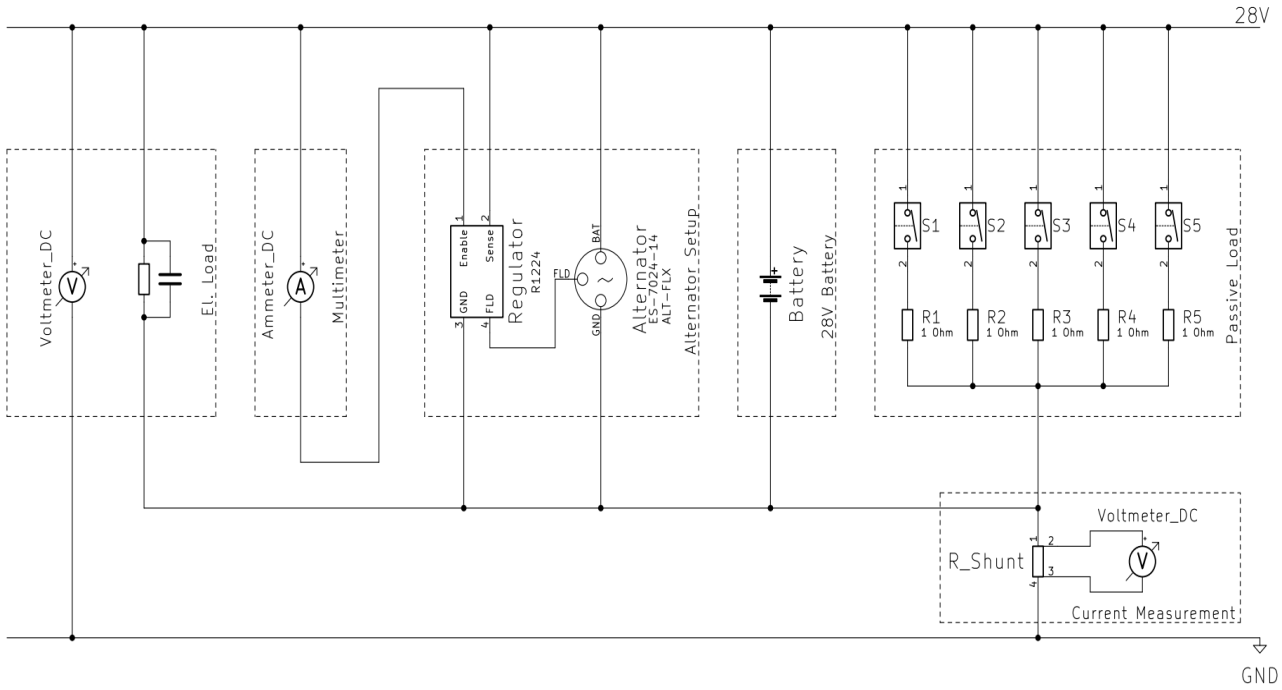

Figure 2-13: Test Circuit Hartzell

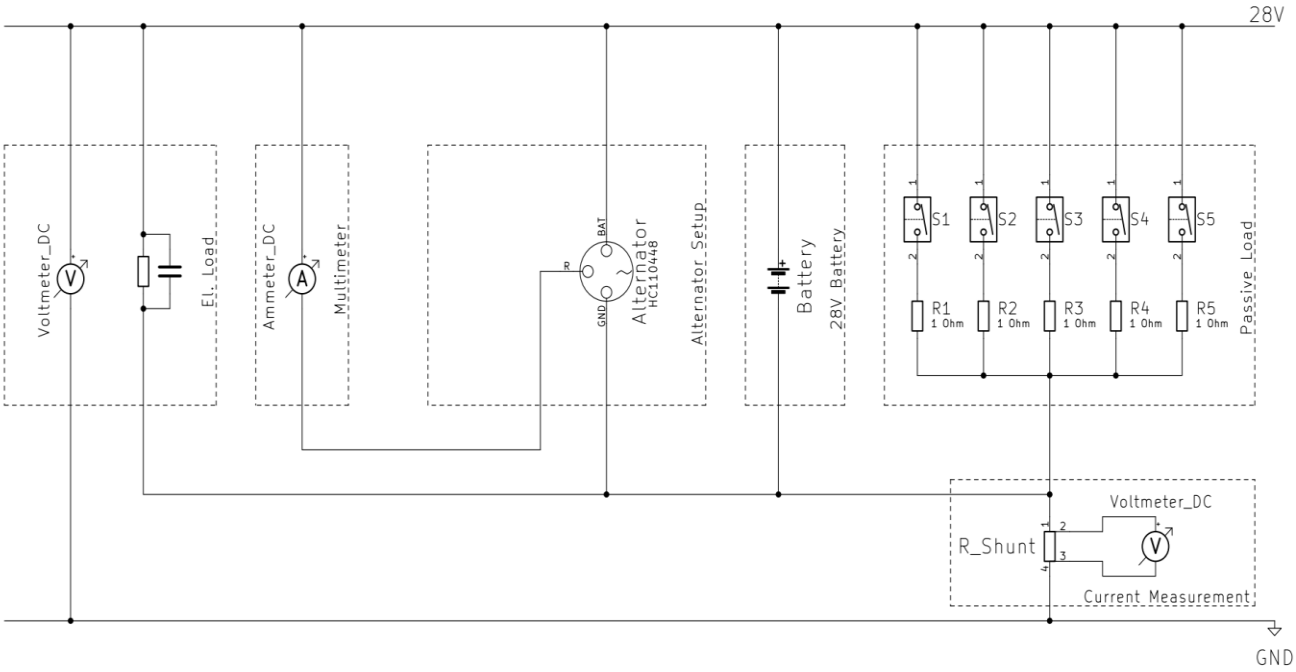

Figure 2-14: Test Circuit HC 110448

3 EXCITATION FIELD CONSUMPTION

The excitation field current is measured via multimeter as seen in **Fehler! Verweisquelle konnte nicht gefunden werden.**. The excitation field current is plotted over the systems complete current output for three different rpms except for the measurements seen in “3.2.2 **Excitation** Field 912iS 70 A **(28** V)”, where a less precise multimeter is used that is replaced by a more precise one in the other measurements. Also, only one measurement is taken at “**3.2.2**”. Some measurements are not taken yet and will be added if needed in another issue of this document. The missing data is marked in the following as such.

3.1 EXCITATION FIELD WITH 915IS ENGINE

3.1.1 EXCITATION FIELD 915IS 20 A (28 V)

Due to the internal regulation of the HC110448 alternator and the wiring setup of the test setup, the excitation field current cannot be recorded

3.1.2 EXCITATION FIELD 915IS 70 A (28 V)

No data available yet.

3.1.3 EXCITATION FIELD 915IS 70 A (14 V)

The following chart shows the excitation field current at three different rpm over the output current.

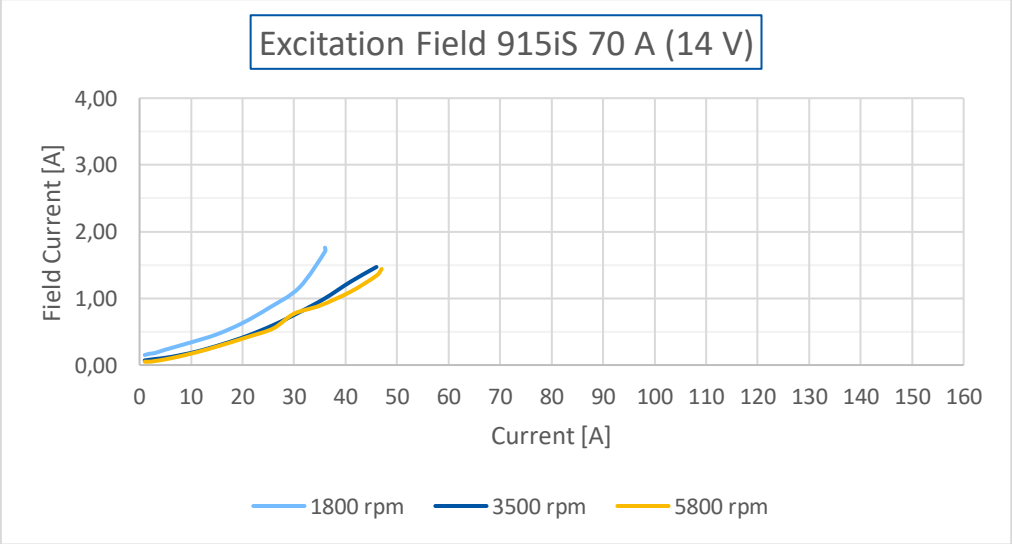

Figure 3-1 : Excitation Field 915iS 70 A (14 V)

3.1.4 EXCITATION FIELD 915IS 150 A (28 V)

No data available yet.

3.1.5 EXCITATION FIELD 915IS 150 A (14 V)

The following chart shows the excitation field current at three different rpm over the output.

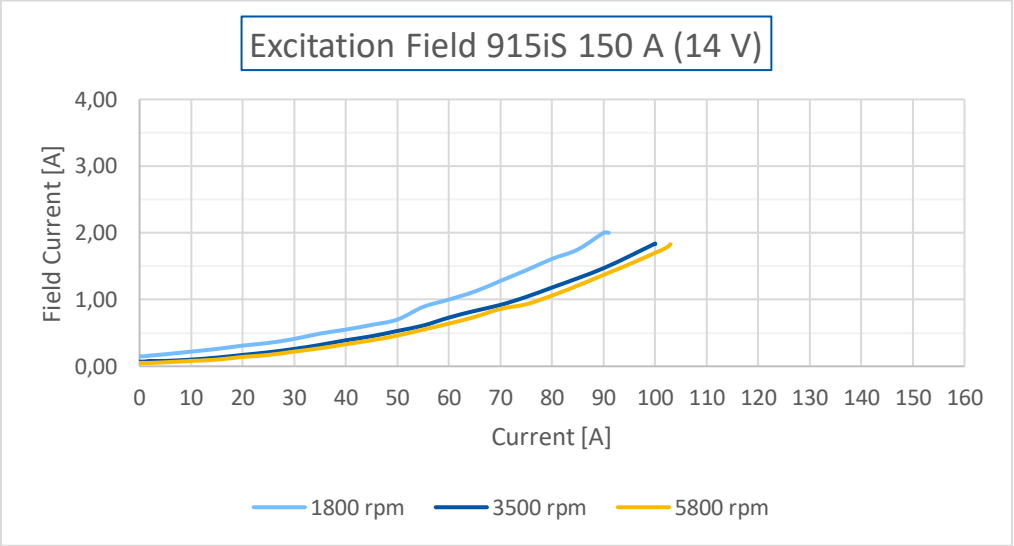

Figure 3-2 : Excitation Field 915iS 150 A (14 V)

3.2 EXCITATION FIELD WITH 912IS ENGINE

3.2.1 EXCITATION FIELD 912IS 20 A (28 V)

Due to the internal regulation of the HC110448 alternator and the wiring setup of the test setup, the excitation field current cannot be recorded.

3.2.2 EXCITATION FIELD 912IS 70 A (28 V)

To determine the power consumption of the alternator excitation field, a current measurement via multimeter is executed at a constant engine speed of 3,500 rpm. **Fehler! Verweisquelle konnte nicht gefunden werden.** s hows total current over field current. The blue line shows the measured current at 3,500 rpm engine speed over total current. The orange curve shows the calculated idealized curve for maximum magnetic saturation. An error of up to about 5 % can be estimated for the idealized curve.

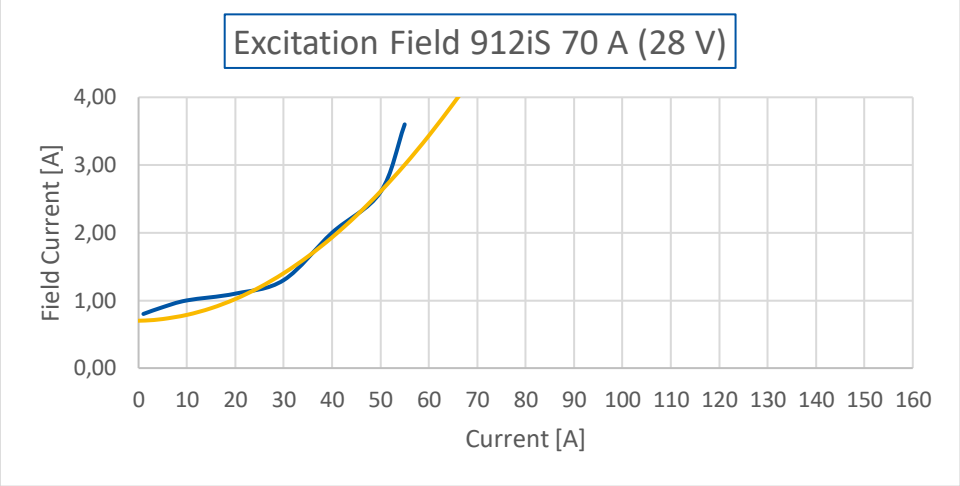

Figure 3-3 : Excitation Field 912iS 70 A (28 V)

3.2.3 EXCITATION FIELD 912IS 70 A (14 V)

The following chart shows the excitation field current at three different rpm over the output.

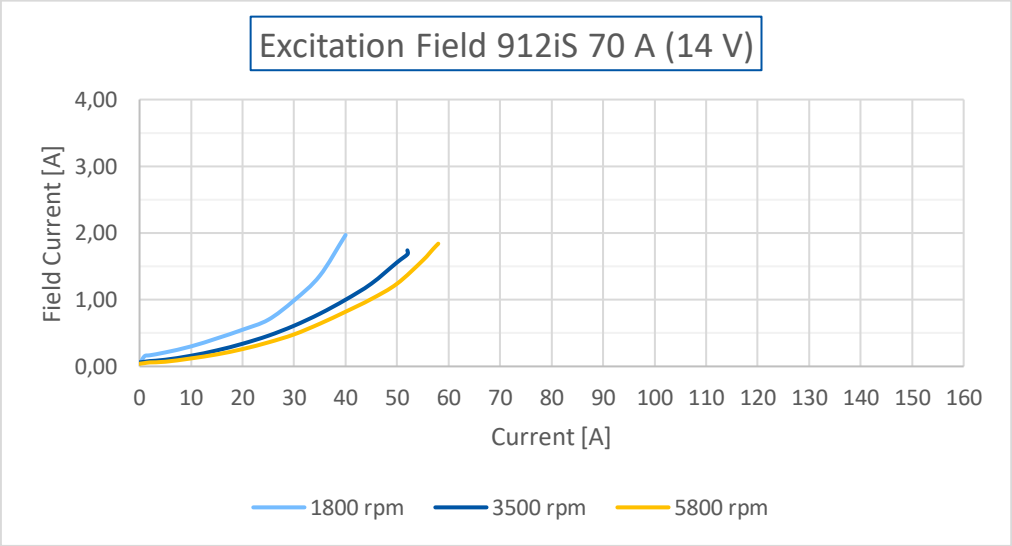

Figure 3-4 : Excitation Field 912iS 70 A (14 V)

3.2.4 EXCITATION FIELD 912IS 150 A (28 V)

The following chart shows the excitation field current at three different rpm over the output.

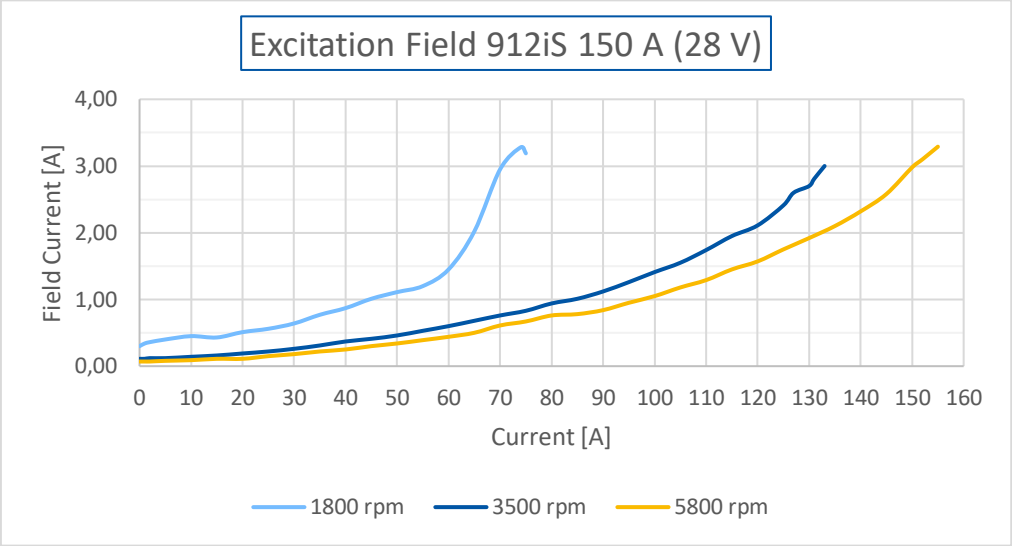

Figure 3-5 : Excitation Field 912iS 150 A (28 V)

3.2.5 EXCITATION FIELD 912IS 150 A (14 V)

The following chart shows the excitation field current at three different rpm over the output.

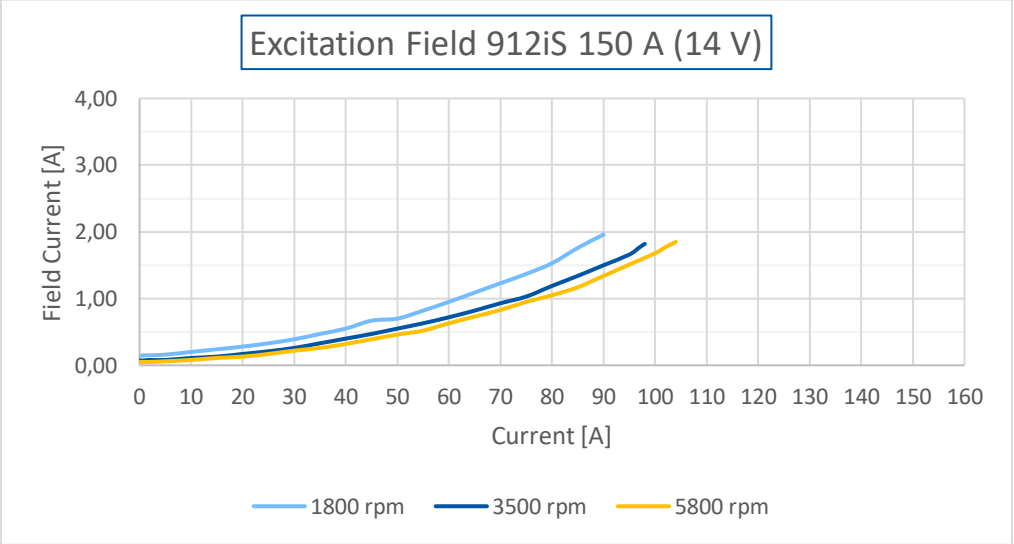

Figure 3-6 : Excitation Field 912iS 150 A (14 V)

4 PERFORMANCE CURVES

4.1 PERFORMANCE CURVES WITH 915IS ENGINE

4.1.1 PERFORMANCE CURVES 915IS 20 A (28 V)

4.1.1.1 1,800 ENGINE RPM

Engine speed 1800 rpm corresponds to 1,814 rpm alternator speed.

Peak power is 415 W marked in chart as red dot.

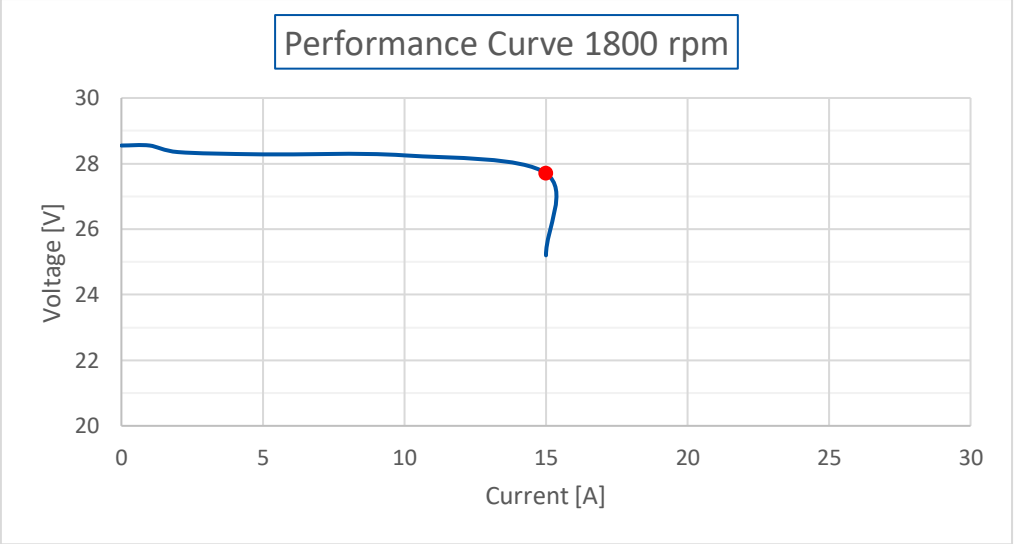

Figure 4-1 : Performance Curve 915iS 20 A (28 V) 1800 rp

4.1.1.2 2,200 ENGINE RPM

Engine speed 2,200 rpm corresponds to 2,217 rpm alternator speed.

Peak power is 495 W marked in chart as red dot.

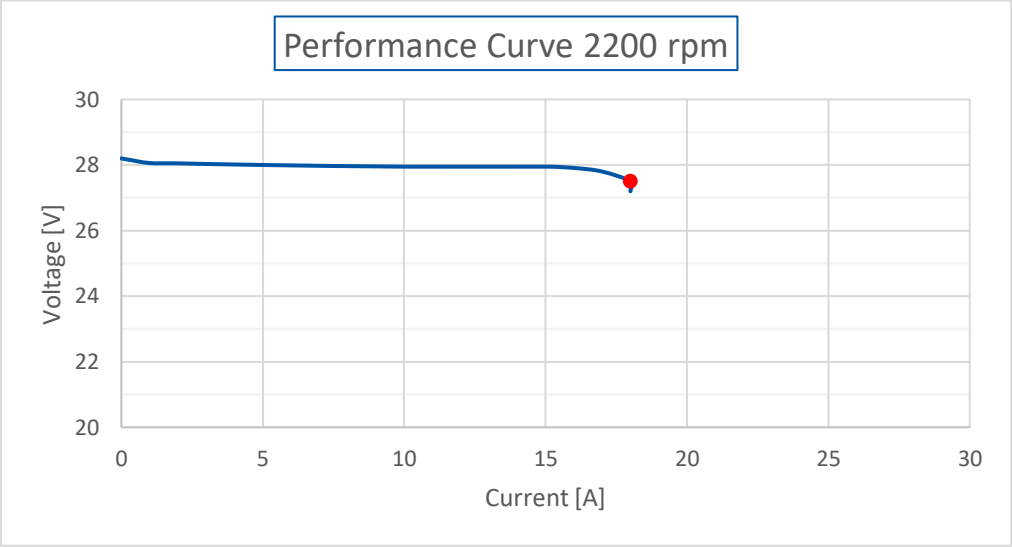

Figure 4-2 : Performance Curve 915iS 20 A (28 V) 2200 rpm

4.1.1.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 2,520 rpm alternator speed.

Peak power is 522 W marked in chart as red dot.

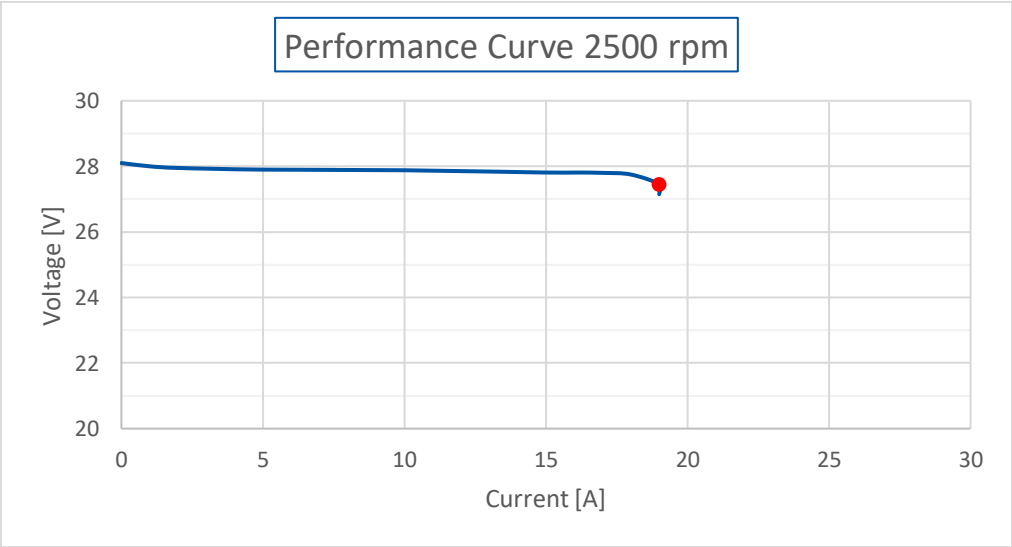

Figure 4-3 : Performance Curve 915iS 20 A (28 V) 2500 rpm

4.1.1.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 3,024 rpm alternator speed.

Peak power is 573 W marked in chart as red dot.

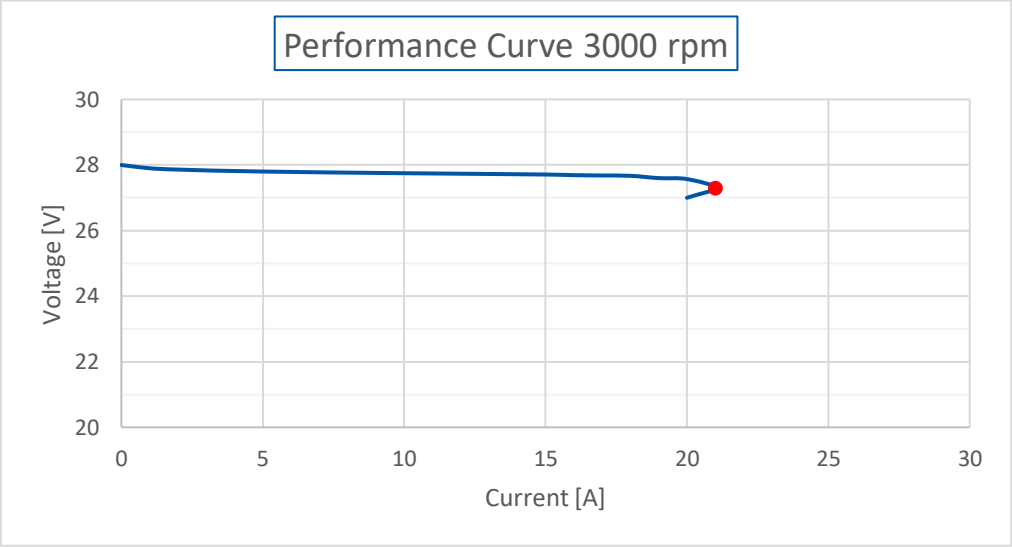

Figure 4-4 : Performance Curve 915iS 20 A (28 V) 3000 rpm

4.1.1.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 3,528 rpm alternator speed.

Peak power is 600 W marked in chart as red dot.

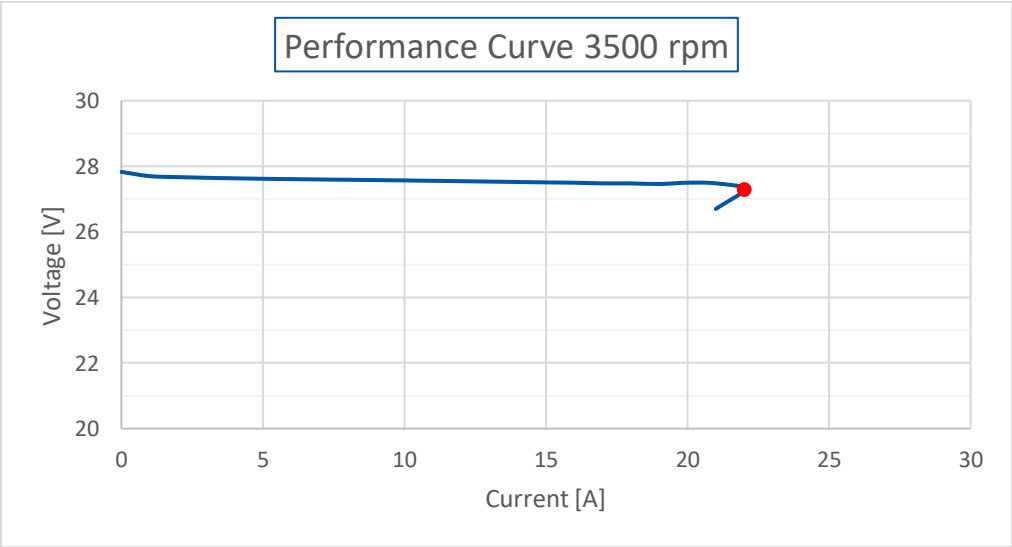

Figure 4-5 : Performance Curve 915iS 20 A (28 V) 3500 rpm

4.1.1.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 4,031 rpm alternator speed.

Peak power is 600 W marked in chart as red dot.

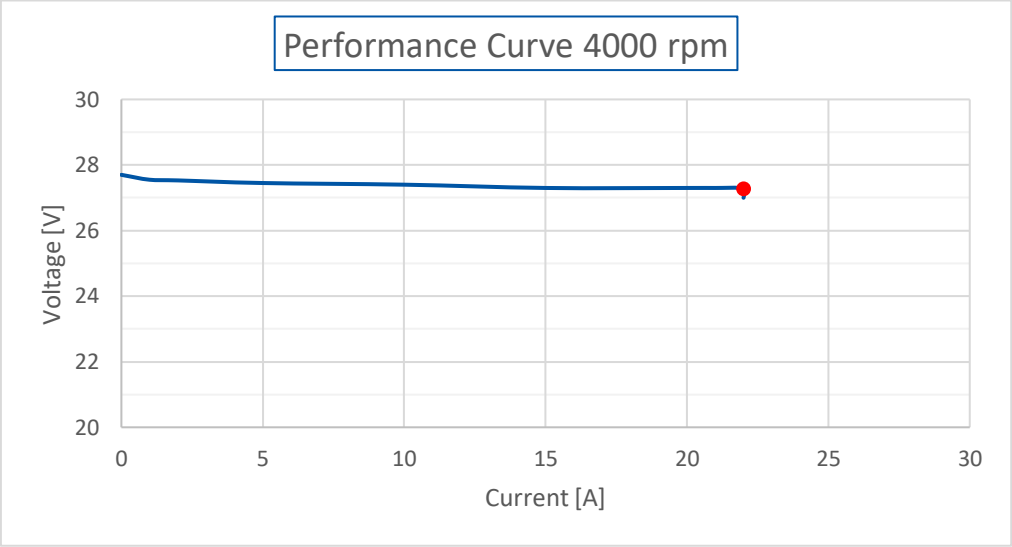

Figure 4-6 : Performance Curve 915iS 20 A (28 V) 4000 rpm

4.1.1.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 4,535 rpm alternator speed.

Peak power is 600 W marked in chart as red dot.

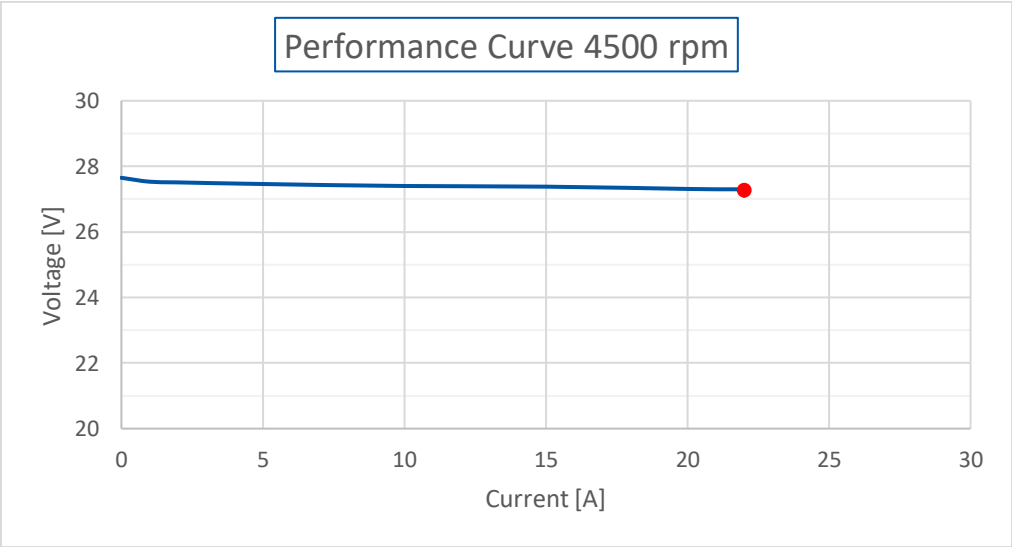

Figure 4-7 : Performance Curve 915iS 20 A (28 V) 4500 rpm

4.1.1.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 5,039 rpm alternator speed.

Peak power is 628 W marked in chart as red dot.

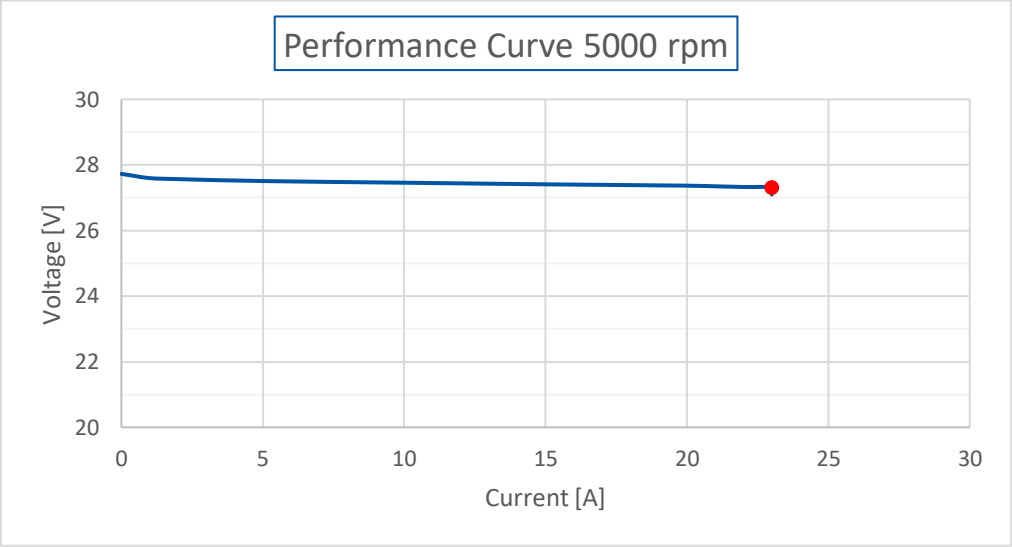

Figure 4-8 : Performance Curve 915iS 20 A (28 V) 5000 rpm

4.1.1.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 5,241 rpm alternator speed.

Peak power is 688 W marked in chart as red dot.

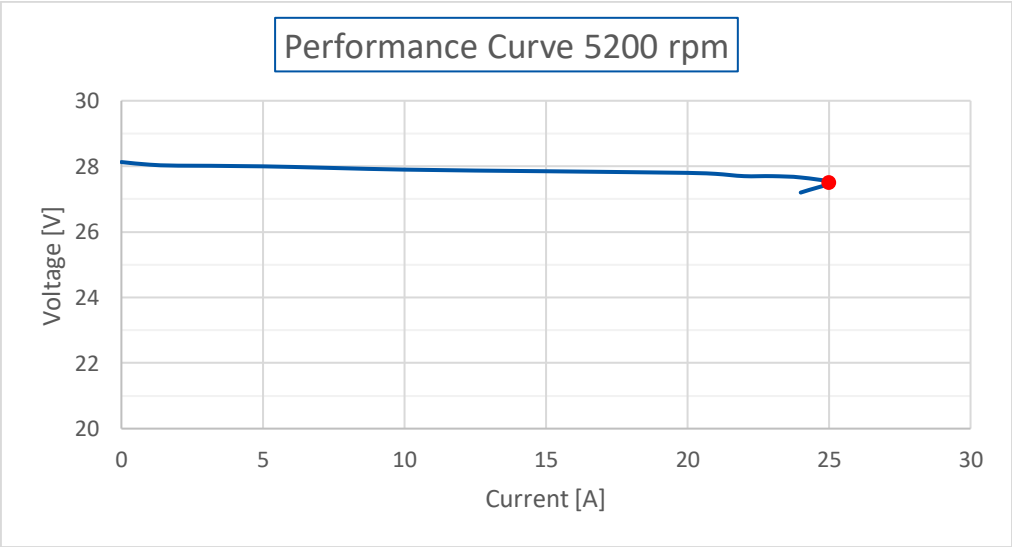

Figure 4-9 : Performance Curve 915iS 20 A (28 V) 5200 rpm

4.1.1.10 5,400 ENGINE RPM

Engine speed 5,400 rpm corresponds to 5,443 rpm alternator speed.

Peak power is 688 W marked in chart as red dot.

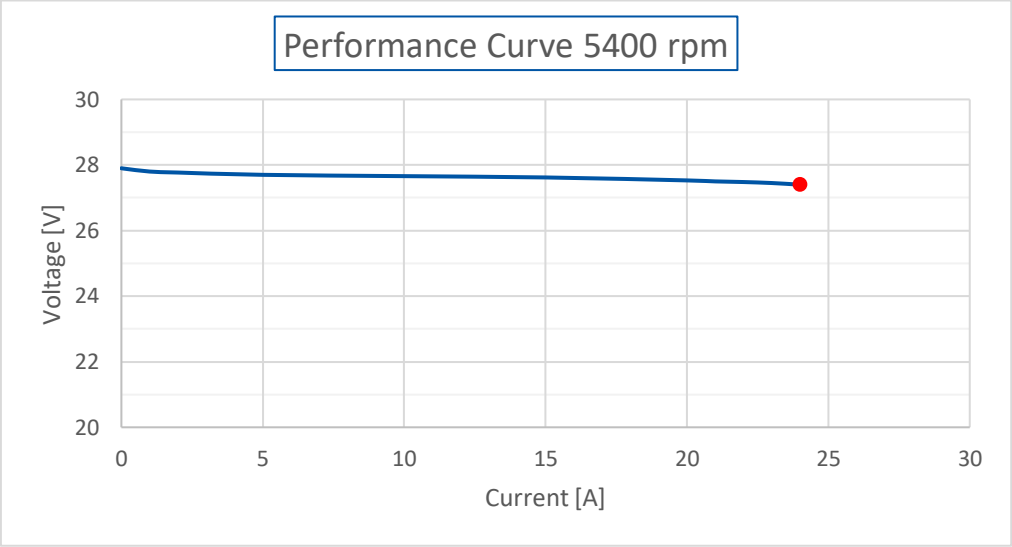

Figure 4-10 : Performance Curve 915iS 20 A (28 V) 5400 rpm

4.1.1.11 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds to 5,644 rpm alternator speed.

Peak power is 656 W marked in chart as red dot.

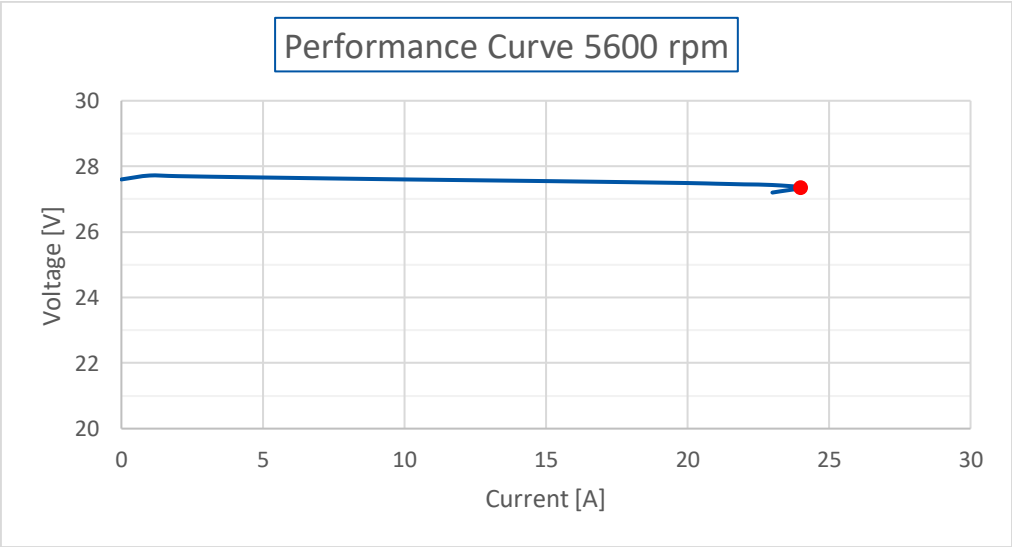

Figure 4-11 : Performance Curve 915iS 20 A (28 V) 5600 rpm

4.1.1.12 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 5,846 rpm alternator speed.

Peak power is 650 W marked in chart as red dot.

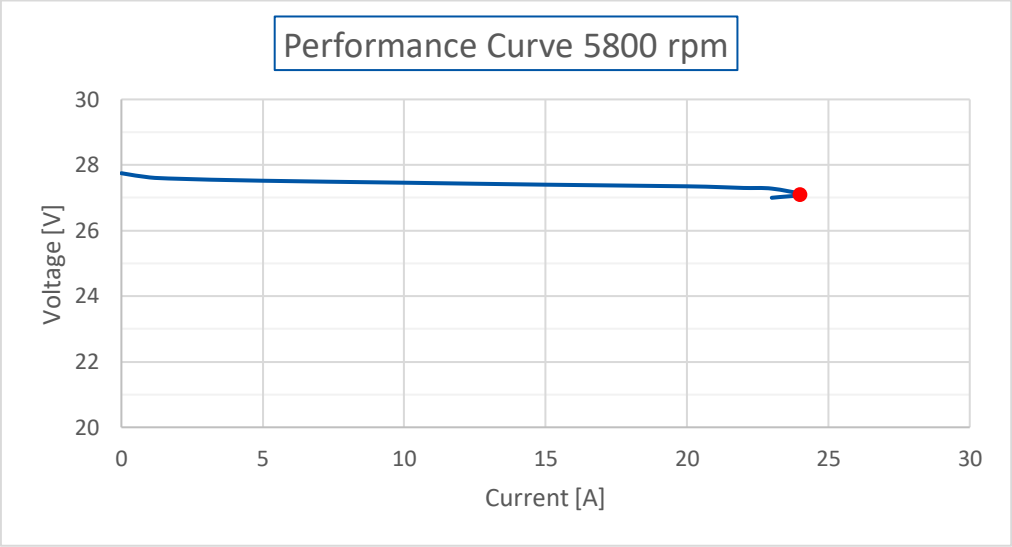

Figure 4-12 : Performance Curve 915iS 20 A (28 V) 5800 rpm

4.1.2 PERFORMANCE CURVES 915IS 70 A (28 V)

4.1.2.1 1,800 ENGINE RPM

Engine speed 1800 rpm corresponds to 2,877 rpm alternator speed.

Peak power is 672 W marked in chart as red dot.

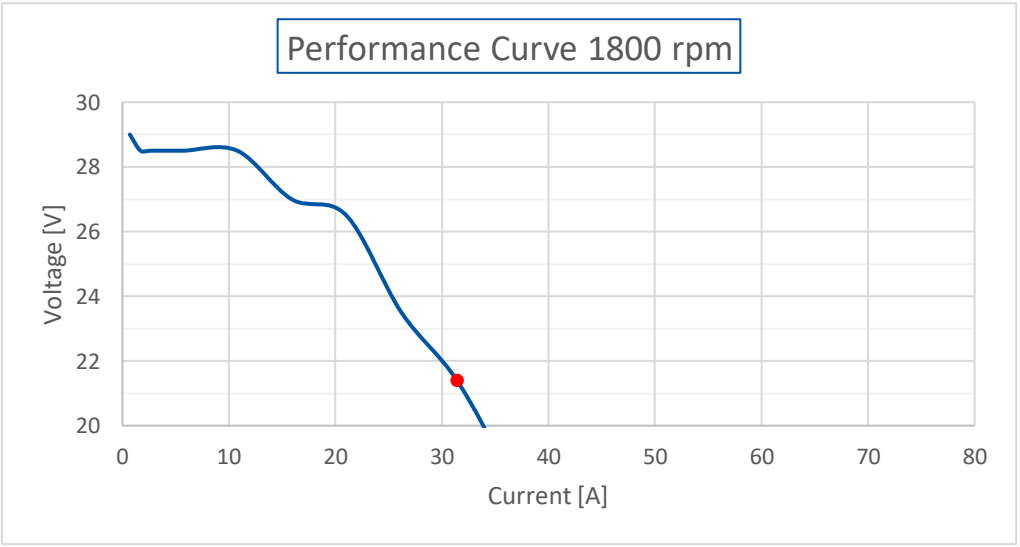

Figure 4-13 : Performance Curve 915iS 70 A (28 V) 1800 rpm

4.1.2.2 2,000 ENGINE RPM

Engine speed 2,000 rpm corresponds to 3,197 rpm alternator speed.

Peak power is 858 W marked in chart as red dot.

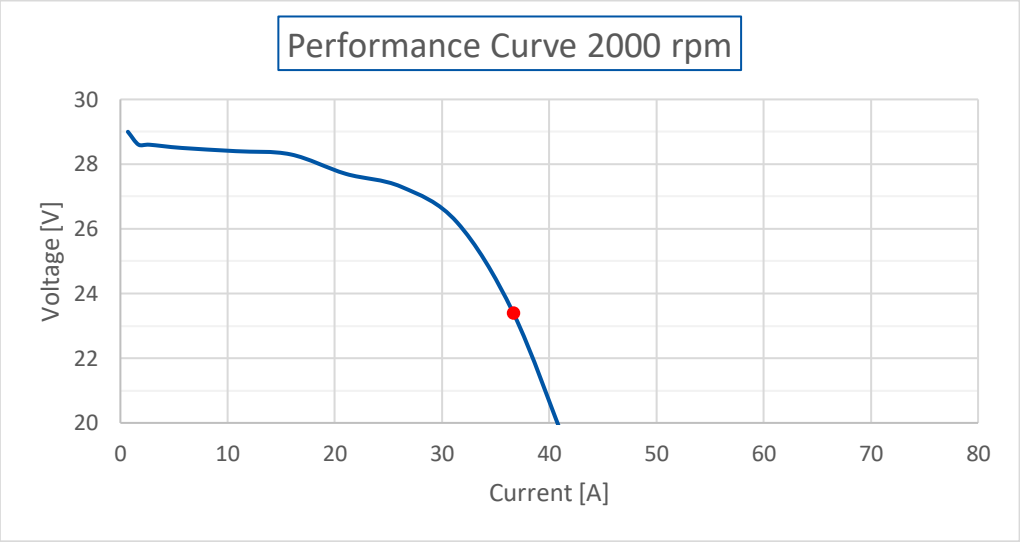

Figure 4-14 : Performance Curve 915iS 70 A (28 V) 2000 rpm

4.1.2.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 3,996 rpm alternator speed.

Peak power is 1,134 W marked in chart as red dot.

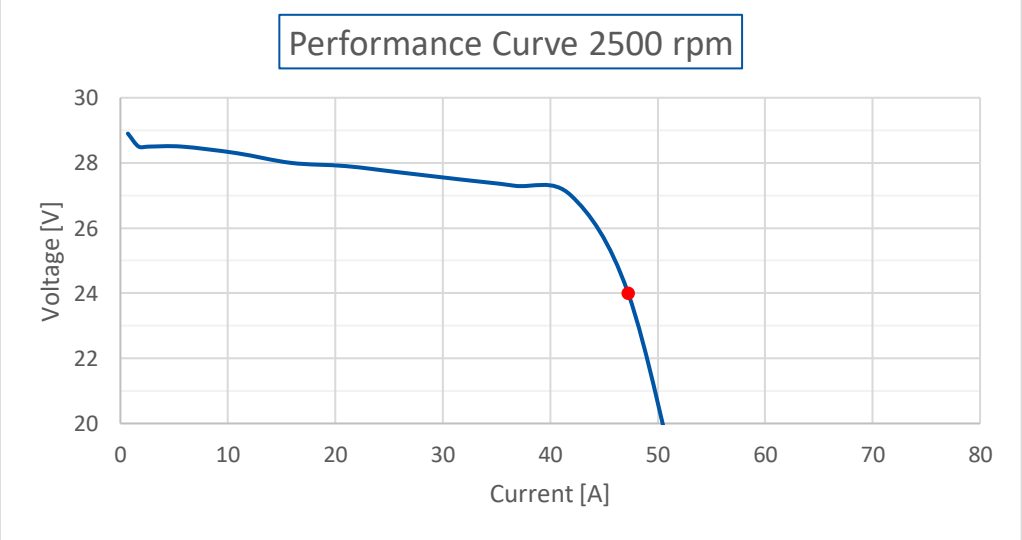

Figure 4-15 : Performance Curve 915iS 70 A (28 V) 2500 rpm

4.1.2.4 3000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 4,795 rpm alternator speed.

Peak power is 1,420 W marked in chart as red dot.

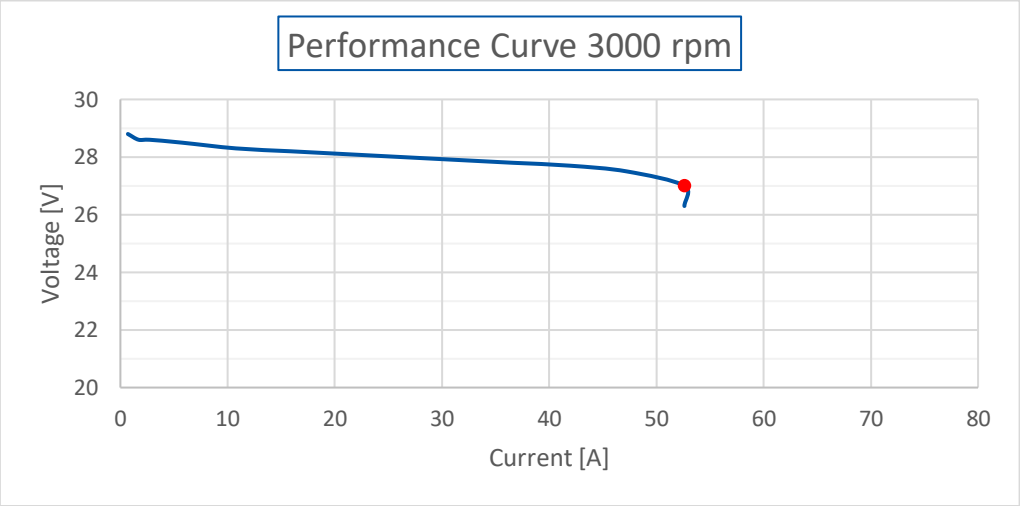

Figure 4-16 : Performance Curve 915iS 70 A (28 V) 3000 rpm

4.1.2.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 5,594 rpm alternator speed.

Peak power is 1,508 W marked in chart as red dot.

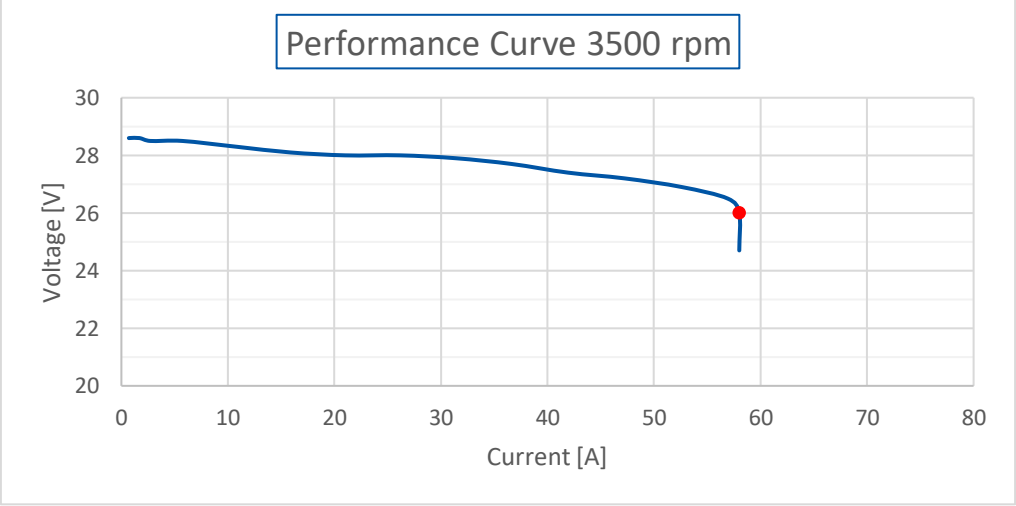

Figure 4-17 : Performance Curve 915iS 70 A (28 V) 3500 rpm

4.1.2.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 6,394 rpm alternator speed.

Peak power is 1,562 W marked in chart as red dot.

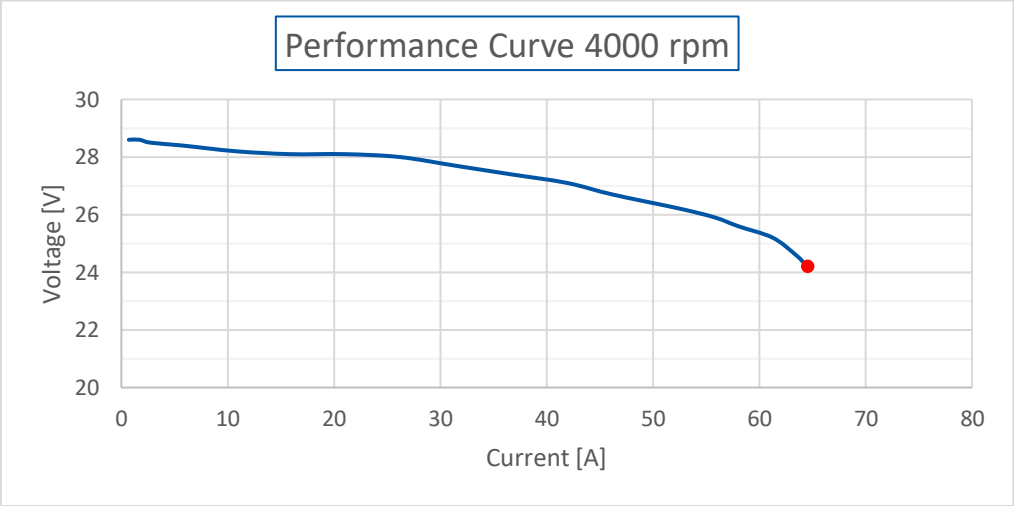

Figure 4-18 : Performance Curve 915iS 70 A (28 V) 4000 rpm

4.1.2.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 7,193 rpm alternator speed.

Peak power is 1,612 W marked in chart as red dot.

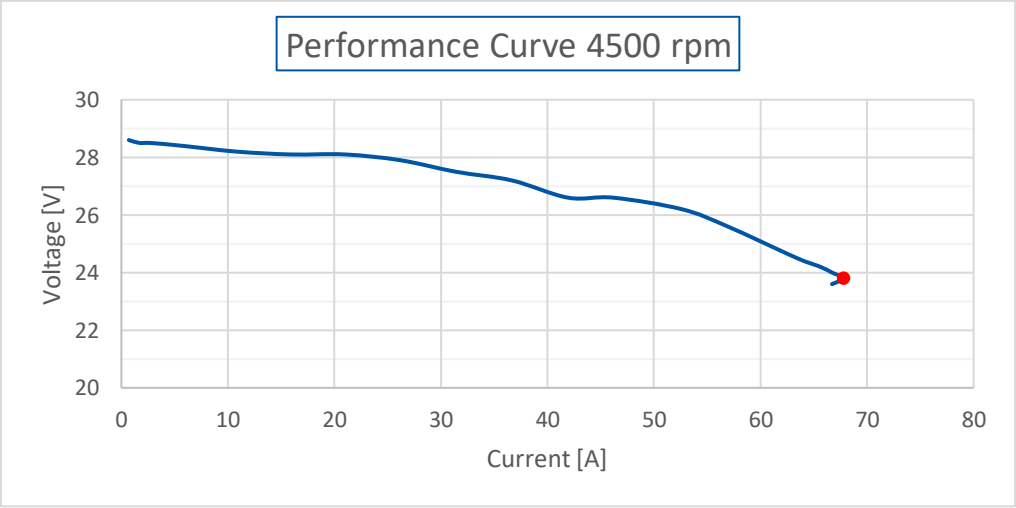

Figure 4-19 : Performance Curve 915iS 70 A (28 V) 4500 rpm

4.1.2.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 7,992 rpm alternator speed.

Peak power is 1,688 W marked in chart as red dot.

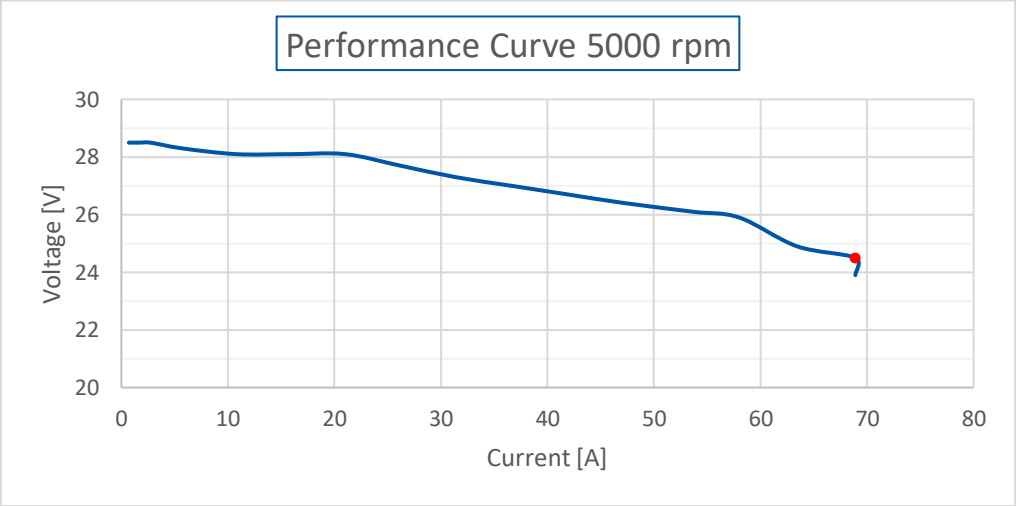

Figure 4-20 : Performance Curve 915iS 70 A (28 V) 5000 rpm

4.1.2.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 8,312 rpm alternator speed.

Peak power is 1,709 W marked in chart as red dot.

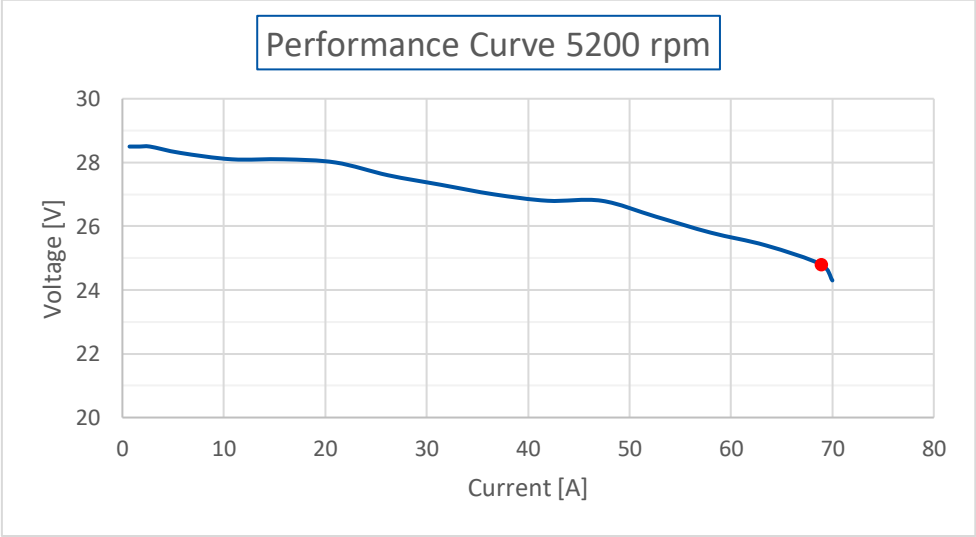

Figure 4-21 : Performance Curve 915iS 70 A (28 V) 5200 rpm

4.1.2.10 5,400 ENGINE RPM

Engine speed 5,400 rpm corresponds to 8,631 rpm alternator speed.

Peak power is 1,714 W marked in chart as red dot.

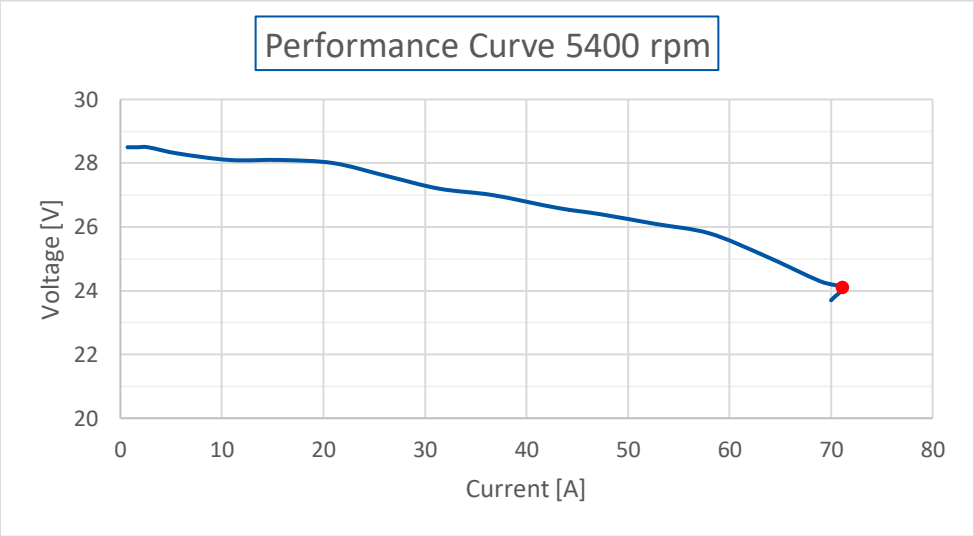

Figure 4-22 : Performance Curve 915iS 70 A (28 V) 5400 rpm

4.1.2.11 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds to 8,951 rpm alternator speed.

Peak power is 1,692 W marked in chart as red dot.

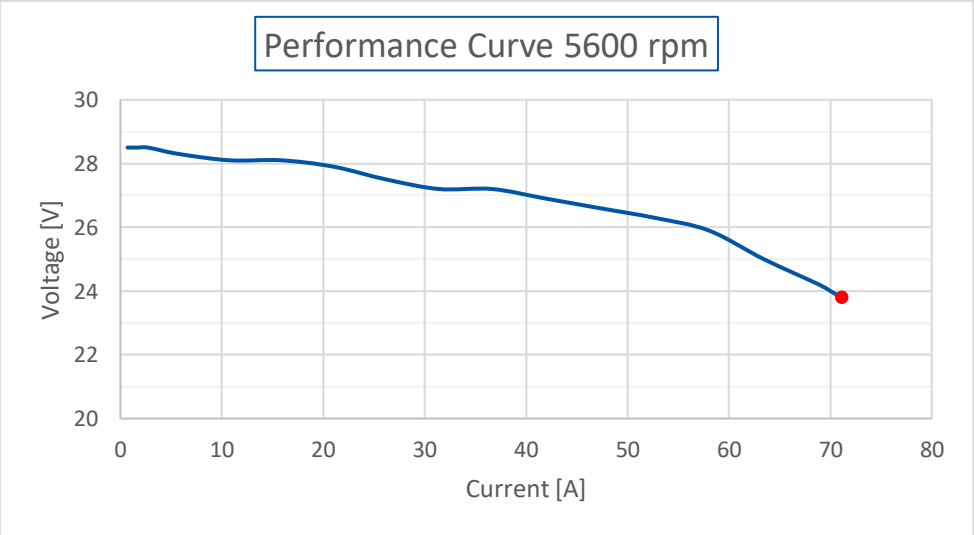

Figure 4-23 : Performance Curve 915iS 70 A (28 V) 5600 rpm

4.1.2.12 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 9,270 rpm alternator speed.

Peak power is not reached because to hot exhaust gas temperatures do not allow further testing.

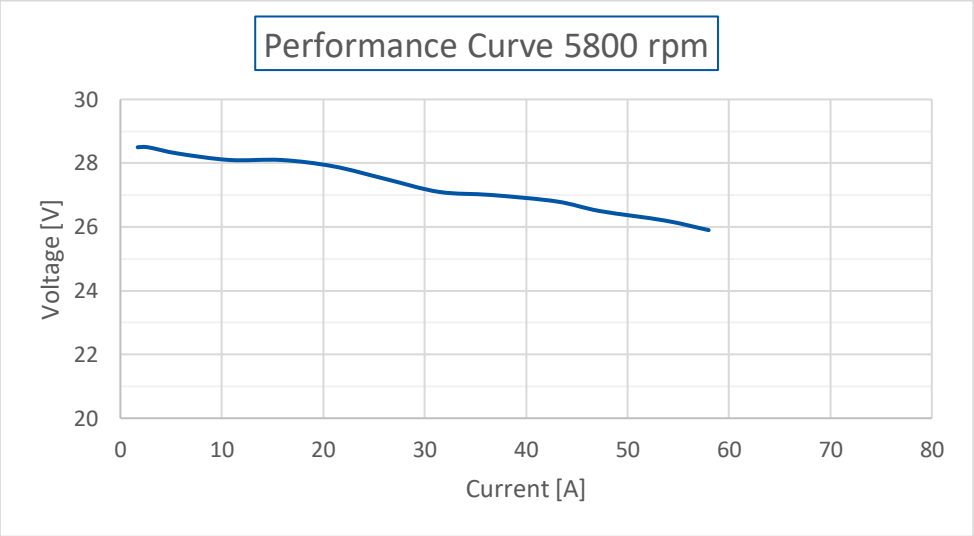

Figure 4-24 : Performance Curve 915iS 70 A (28 V) 5800 rpm

4.1.3 PERFORMANCE CURVES 915IS 70 A (14 V)

4.1.3.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds to 3,007 rpm alternator speed.

Peak power is 586 W marked in chart as red dot.

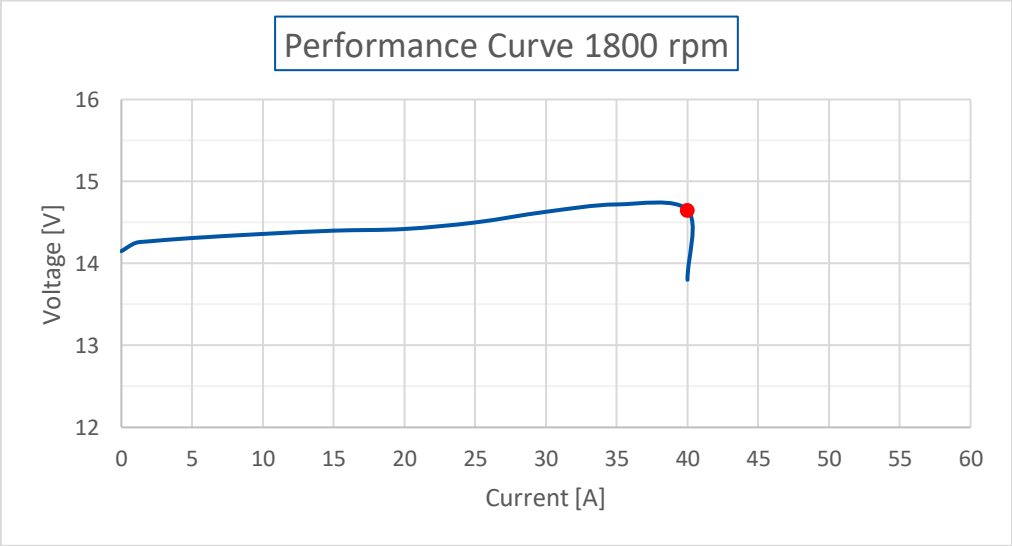

Figure 4-25 : Performance Curve 915iS 70 A (14 V) 1800 rpm

4.1.3.2 2,200 ENGINE RPM

Engine speed 2,200 rpm corresponds to 3,676 rpm alternator speed.

Peak power is 649 W marked in chart as red dot.

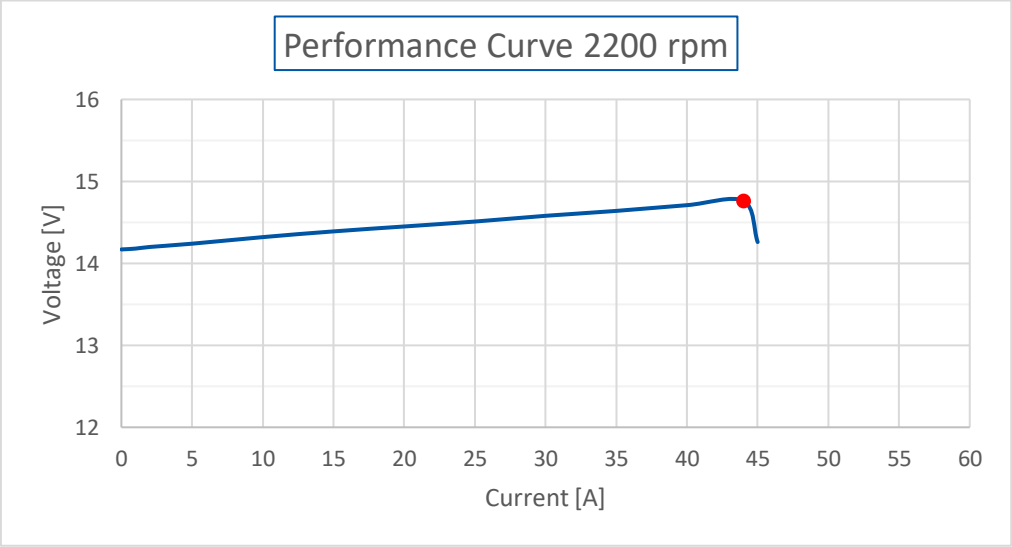

Figure 4-26 : Performance Curve 915iS 70 A (14 V) 2200 rpm

4.1.3.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 4,177 rpm alternator speed.

Peak power is 686 W marked in chart as red dot.

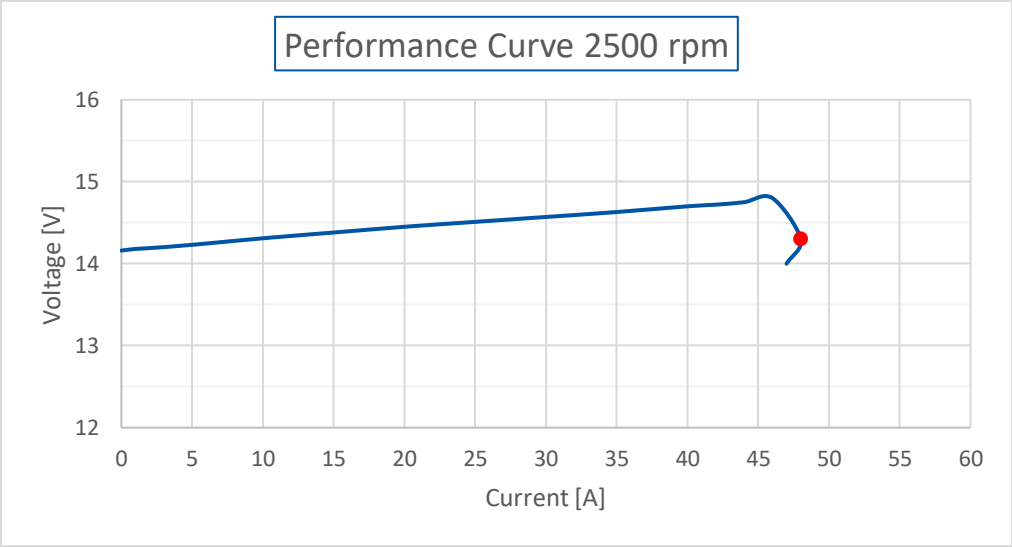

Figure 4-27 : Performance Curve 915iS 70 A (14 V) 2500 rpm

4.1.3.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 5,012 rpm alternator speed.

Peak power is 748 W marked in chart as red dot.

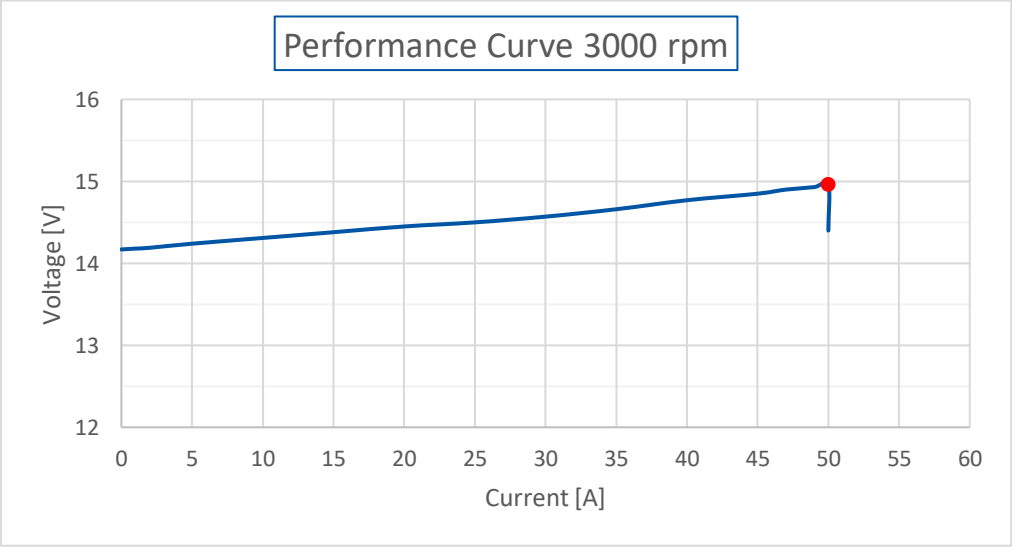

Figure 4-28 : Performance Curve 915iS 70 A (14 V) 3000 rpm

4.1.3.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 5,848 rpm alternator speed.

Peak power is 785 W marked in chart as red dot.

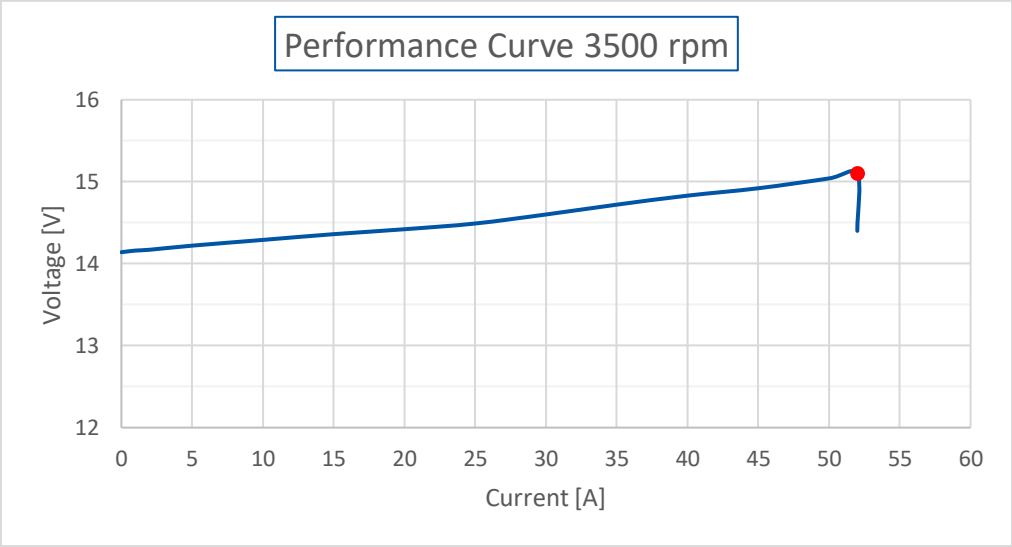

Figure 4-29 : Performance Curve 915iS 70 A (14 V) 3500 rpm

4.1.3.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 6,683 rpm alternator speed.

Peak power is 822 W marked in chart as red dot.

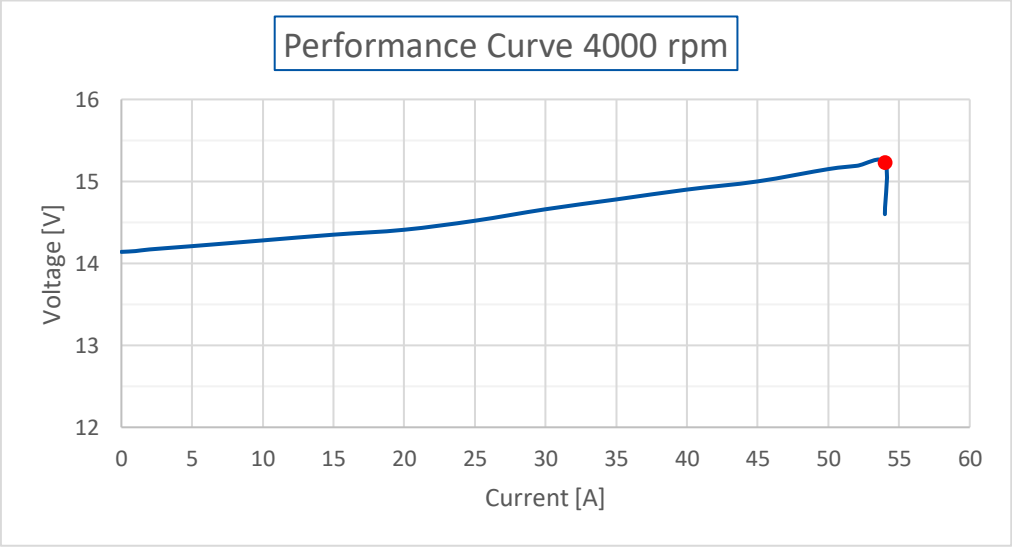

Figure 4-30 : Performance Curve 915iS 70 A (14 V) 4500 rpm

4.1.3.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 7,519 rpm alternator speed.

Peak power is 844 W marked in chart as red dot.

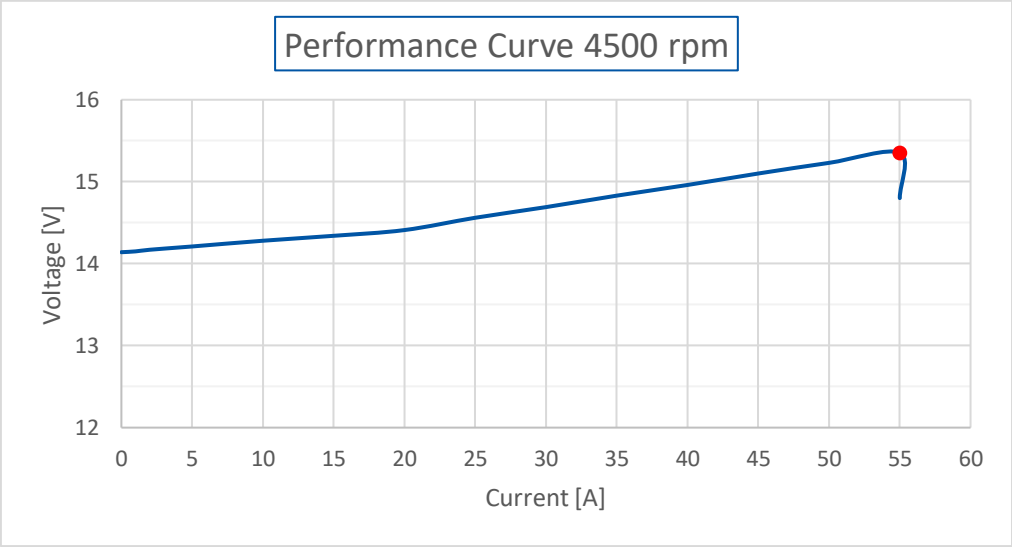

Figure 4-31 : Performance Curve 915iS 70 A (14 V) 4500 rpm

4.1.3.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 8,354 rpm alternator speed.

Peak power is 878 W marked in chart as red dot.

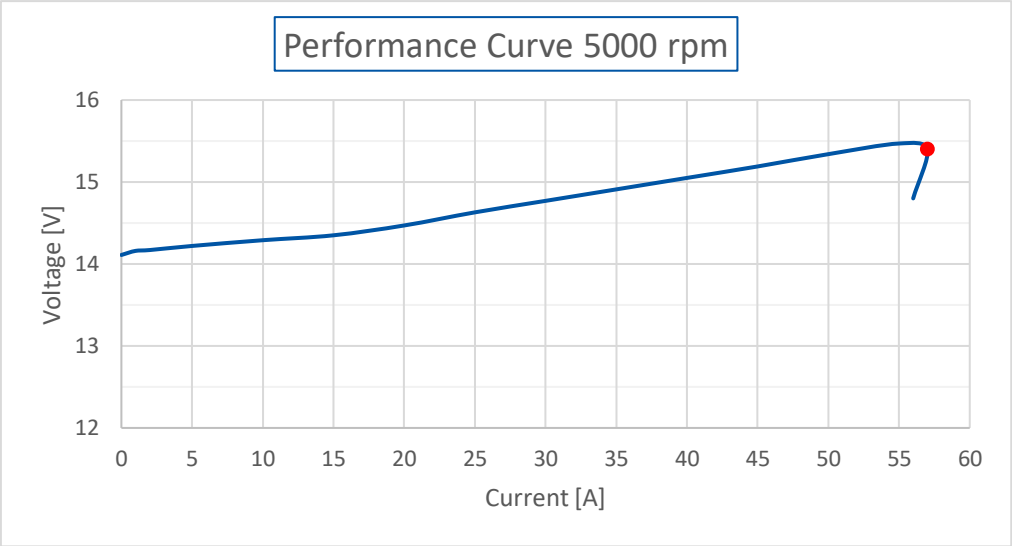

Figure 4-32 : Performance Curve 915iS 70 A (14 V) 5000 rpm

4.1.3.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 8,688 rpm alternator speed.

Peak power is 886 W marked in chart as red dot.

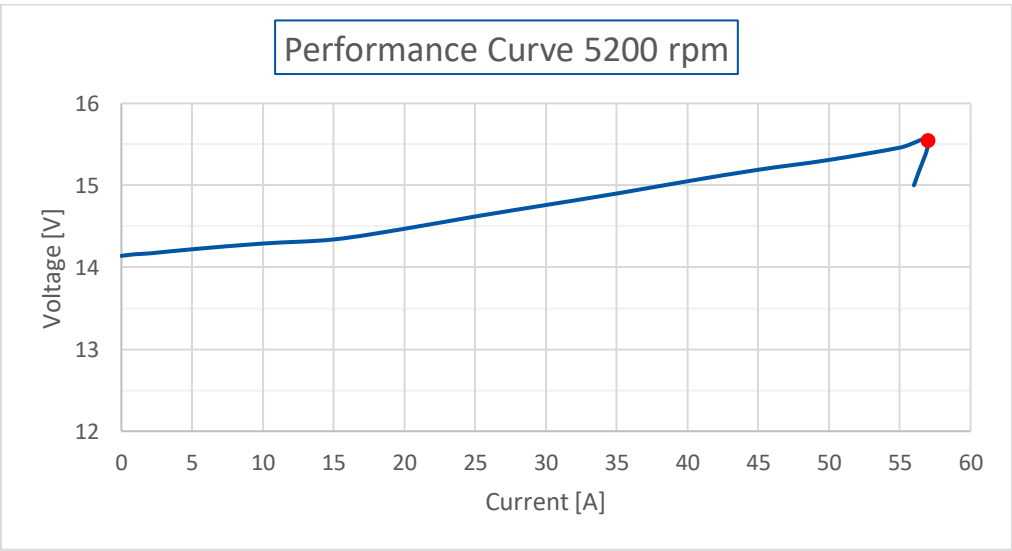

Figure 4-33 : Performance Curve 915iS 70 A (14 V) 5200 rpm

4.1.3.10 5,400 ENGINE PRM

Engine speed 5,400 rpm corresponds to 9,022 rpm alternator speed.

Peak power is 886 W marked in chart as red dot.

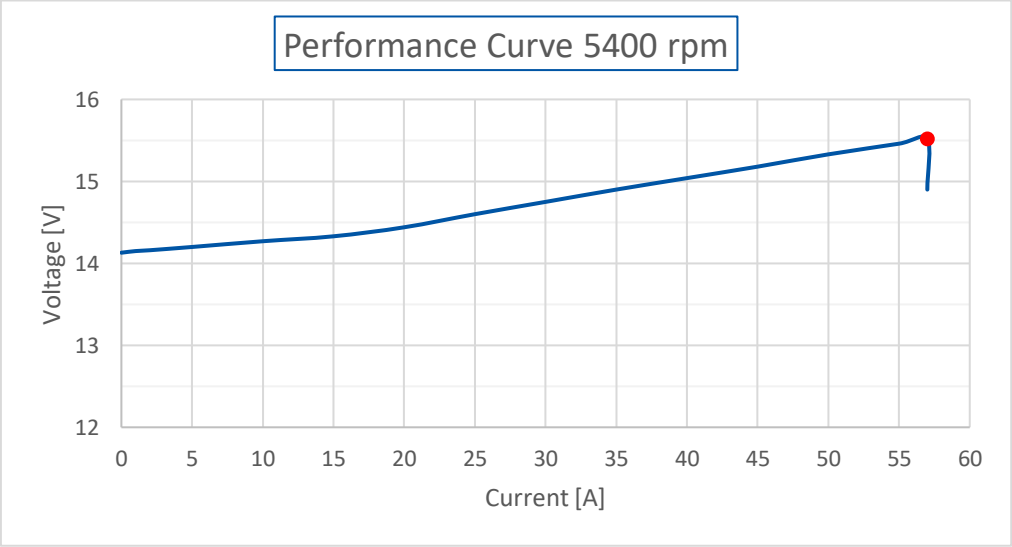

Figure 4-34 : Performance Curve 915iS 70 A (14 V) 5400 rpm

4.1.3.11 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds to 9,356 rpm alternator speed.

Peak power is 891 W marked in chart as red dot.

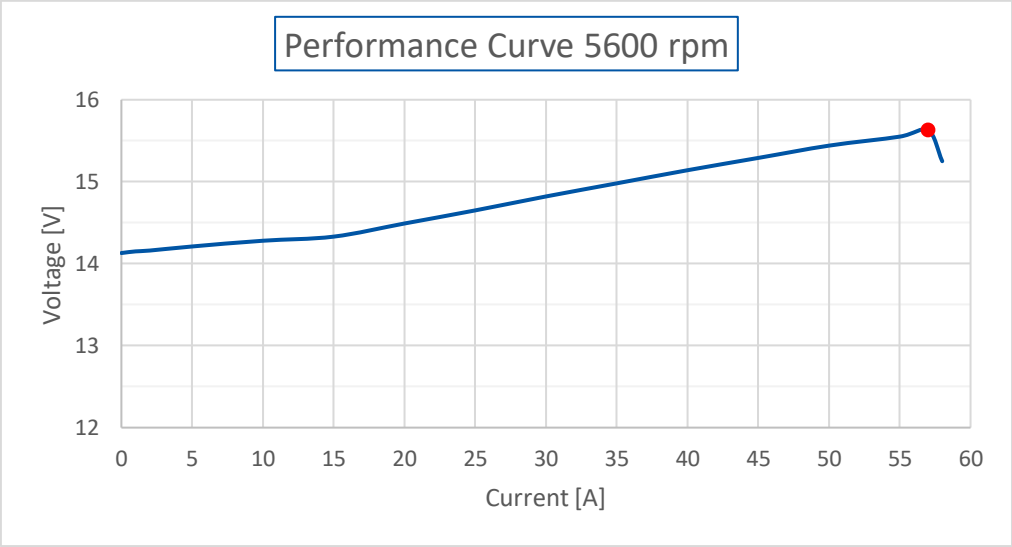

Figure 4-35 : Performance Curve 915iS 70 A (14 V) 5600 rpm

4.1.3.12 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 9,691 rpm alternator speed.

Peak power is 911 W marked in chart as red dot.

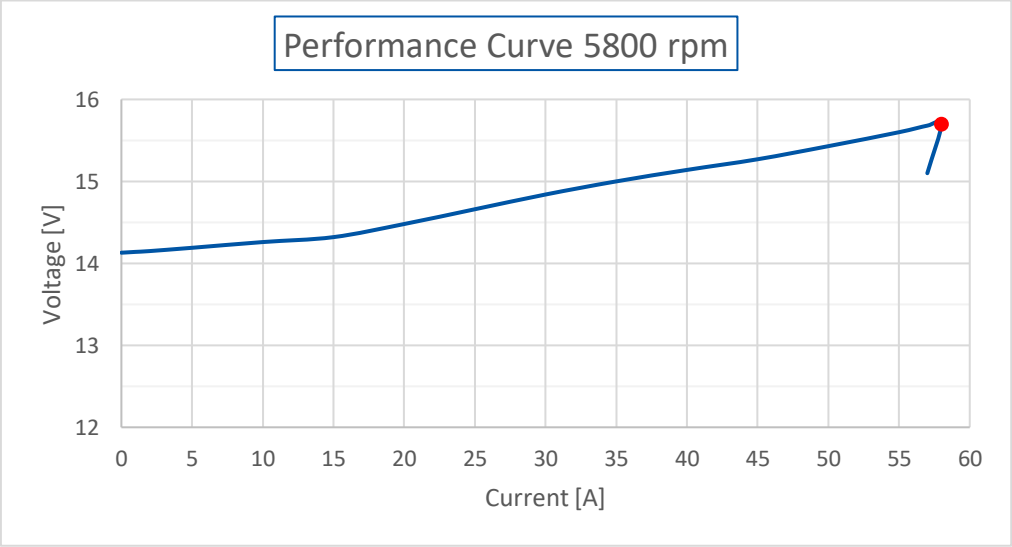

Figure 4-36 : Performance Curve 915iS 70 A (14 V) 5800 rpm

4.1.4 PERFORMANCE CURVES 915IS 150 A (28 V)

4.1.4.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds 2,920 rpm alternator speed.

Peak power 2016 W marked in chart as red dot.

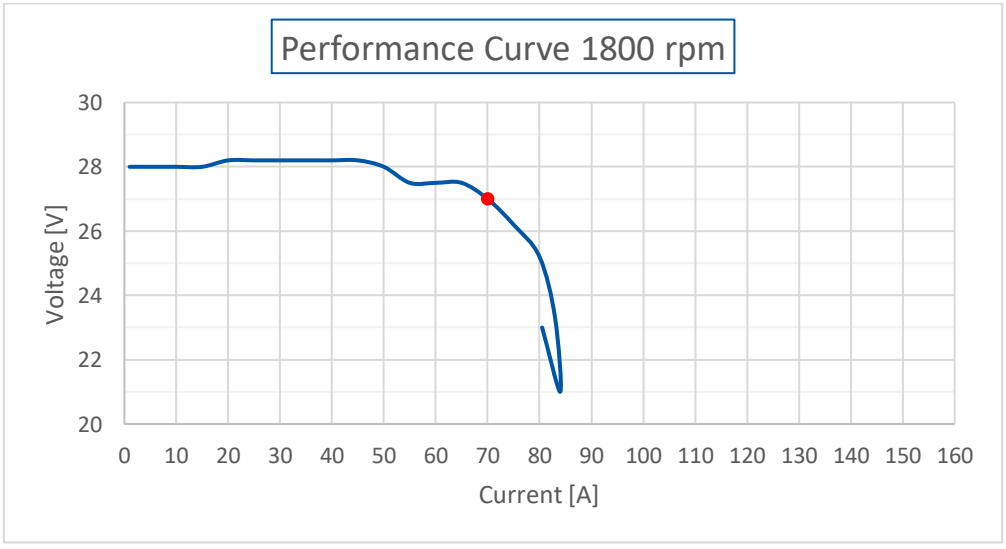

Figure 4-37 : Performance Curve 915iS 150 A (28 V) 1800 rpm

4.1.4.2 2,000 ENGINE RPM

Engine speed 2,000 rpm corresponds 3,244 rpm alternator speed.

Peak power 2,264 W marked in chart as red dot.

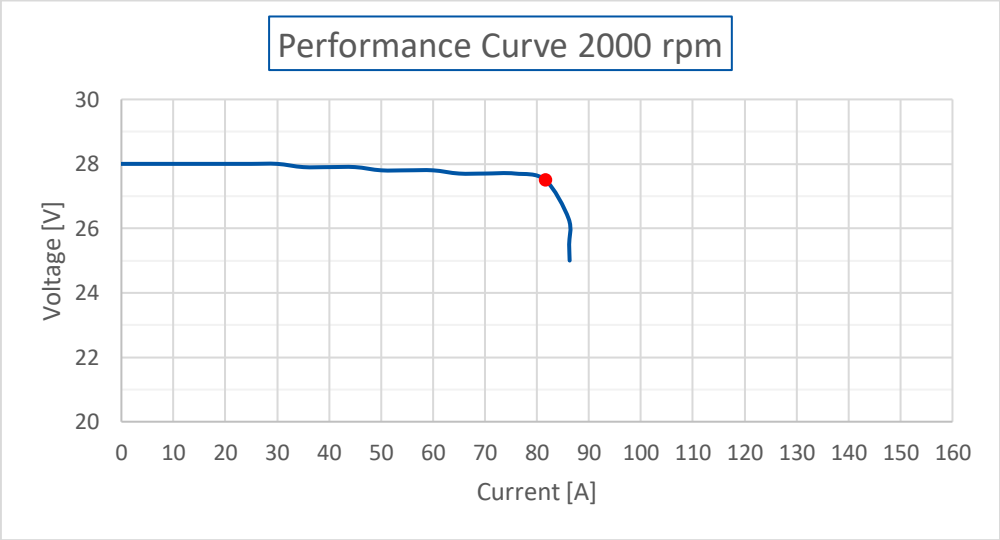

Figure 4-38 : Performance Curve 915iS 150 A (28 V) 2000 rpm

4.1.4.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds 4,055 rpm alternator speed.

Peak power 3,055 W marked in chart as red dot.

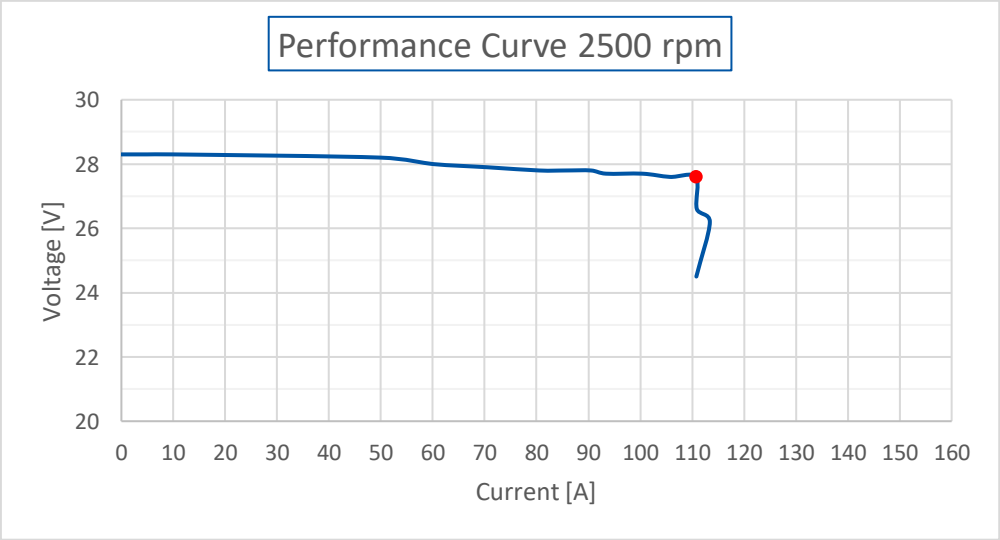

Figure 4-39 : Performance Curve 915iS 150 A (28 V) 2500 rpm

4.1.4.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds 4,866 rpm alternator speed.

Peak power 3,442 W marked in chart as red dot.

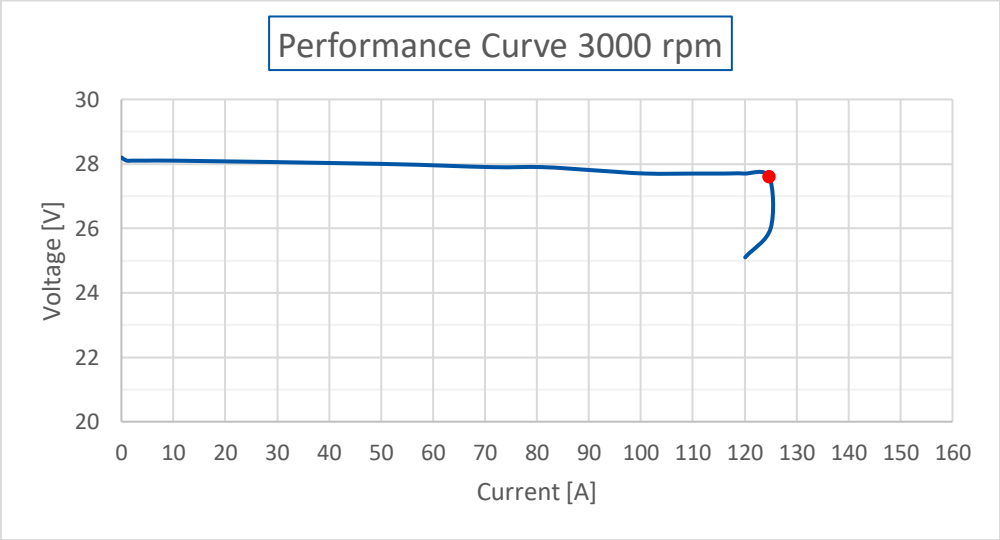

Figure 4-40 : Performance Curve 915iS 150 A (28 V) 3000 rpm

4.1.4.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds 5,677 rpm alternator speed.

Peak power 3,590 W marked in chart as red dot.

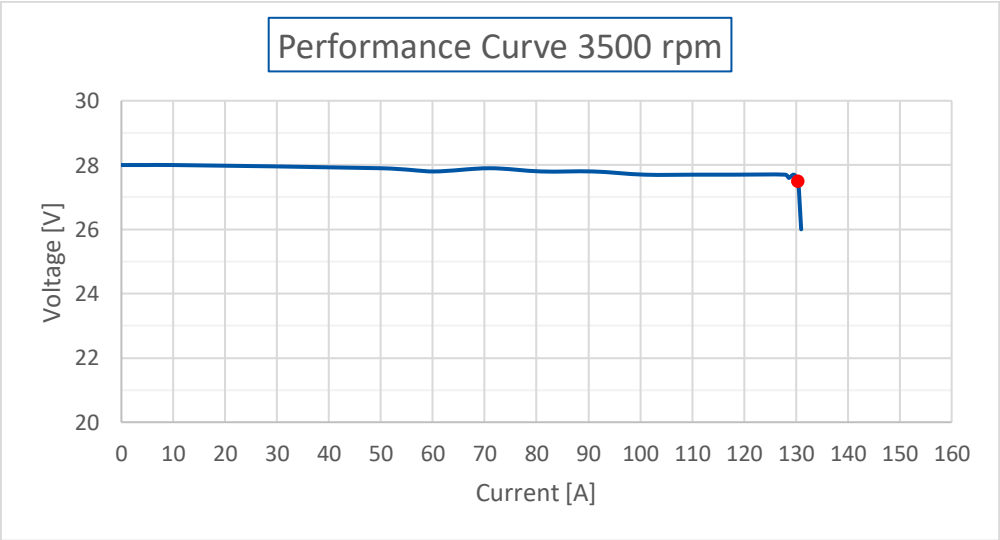

Figure 4-41 : Performance Curve 915iS 150 A (28 V) 3500 rpm

4.1.4.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds 6,488 rpm alternator speed.

Peak power 3,864 W marked in chart as red dot.

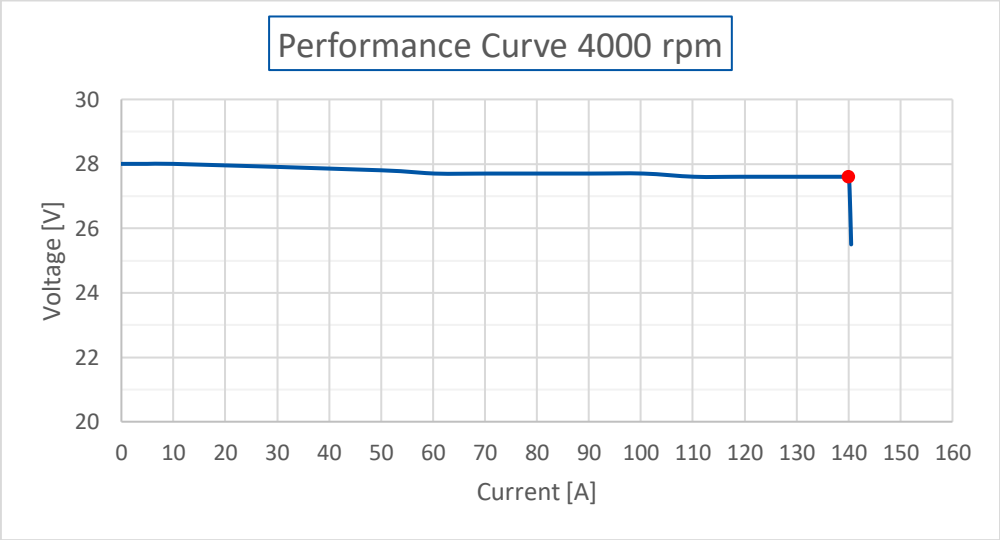

Figure 4-42 : Performance Curve 915iS 150 A (28 V) 4000 rpm

4.1.4.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds 7,299 rpm alternator speed.

Peak power 4,024 W marked in chart as red dot.

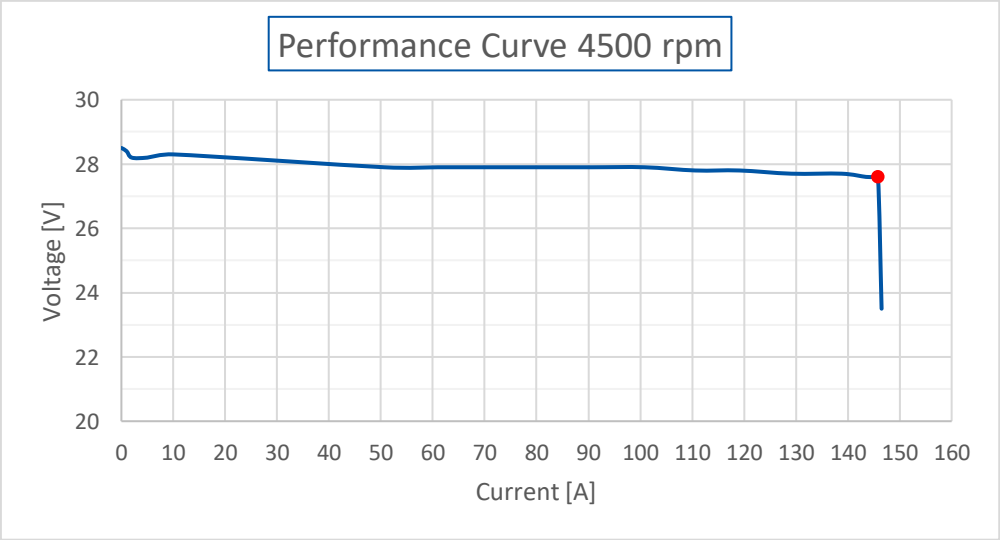

Figure 4-43 : Performance Curve 915iS 150 A (28 V) 4500 rpm

4.1.4.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds 8,110 rpm alternator speed.

Peak power 4,099 W marked in chart as red dot.

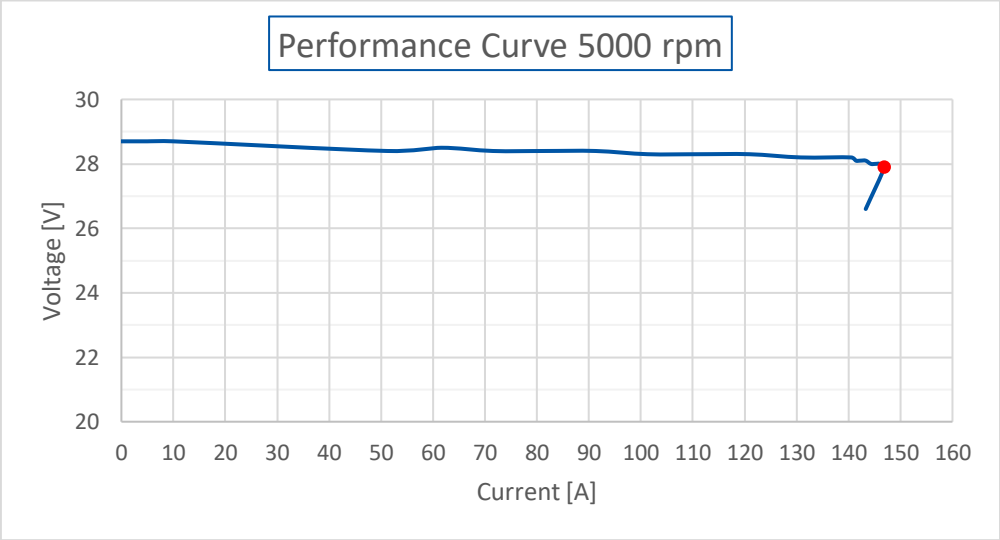

Figure 4-44 : Performance Curve 915iS 150 A (28 V) 5000 rpm

4.1.4.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds 8,435 rpm alternator speed.

Peak power 4,017 W marked in chart as red dot.

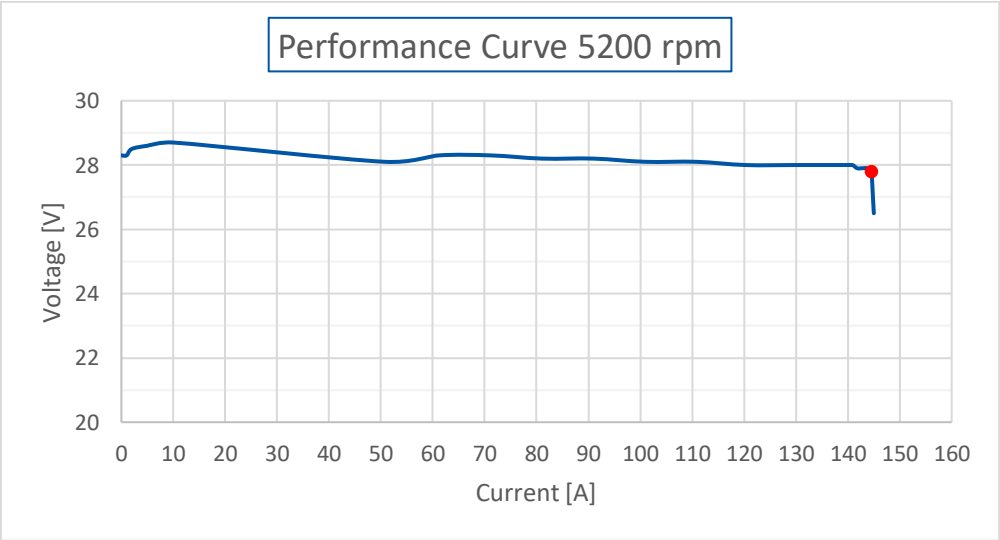

Figure 4-45 : Performance Curve 915iS 150 A (28 V) 5200 rpm

4.1.4.10 5,400 ENGINE RPM

Engine speed 5,400 rpm corresponds 8,759 rpm alternator speed.

Peak power 4,008 W marked in chart as red dot.

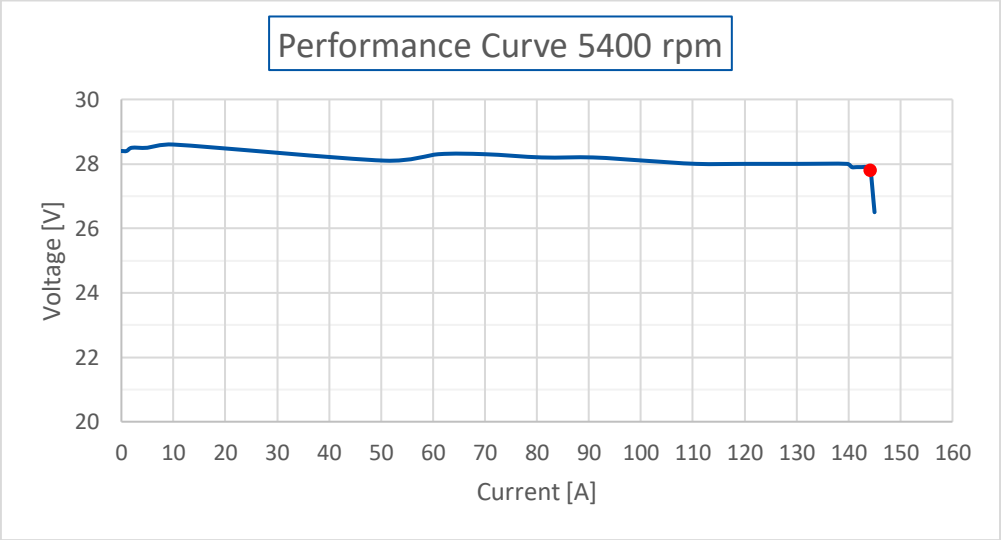

Figure 4-46 : Performance Curve 915iS 150 A (28 V) 5400 rpm

4.1.4.11 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds 9,083 rpm alternator speed.

Peak power 4,017 W marked in chart as red dot.

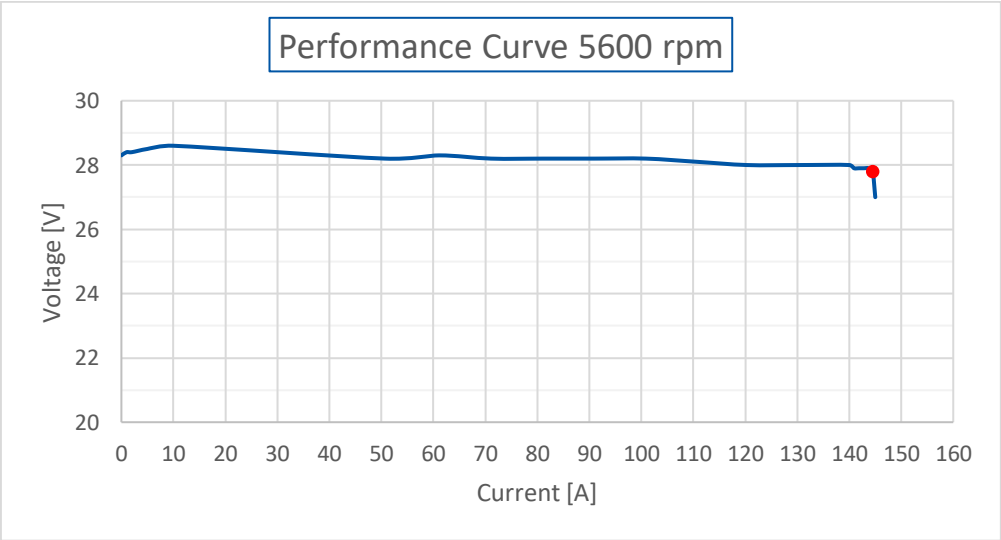

Figure 4-47 : Performance Curve 915iS 150 A (28 V) 5600 rpm

4.1.4.12 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds 9,408 rpm alternator speed.

Peak power 4,034 W marked in chart as red dot.

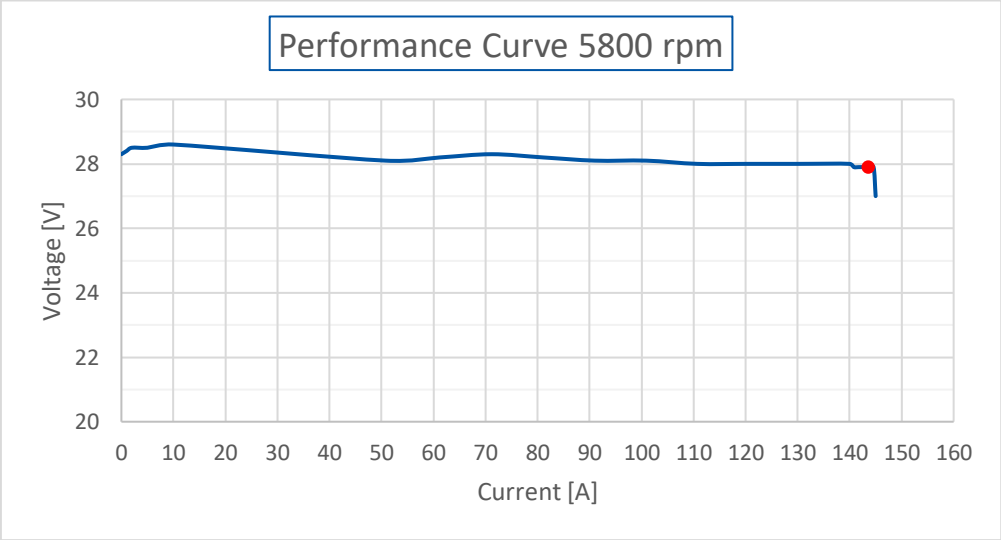

Figure 4-48 : Performance Curve 915iS 150 A (28 V) 5800 rpm

4.1.5 PERFORMANCE CURVES 915IS 150 A (14 V)

4.1.5.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds 2,877 rpm alternator speed.

Peak power 1,368 W marked in chart as red dot.

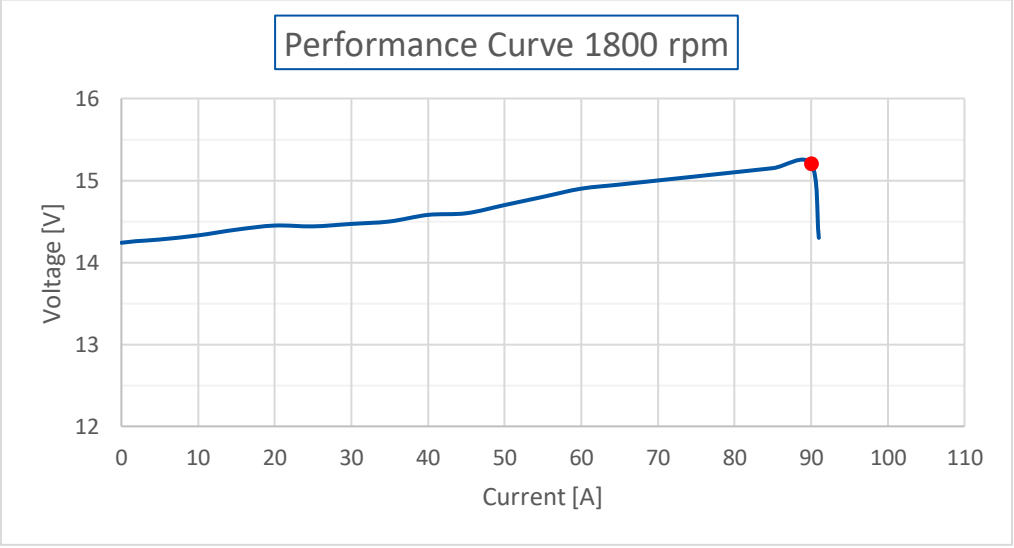

Figure 4-49 : Performance Curve 915iS 150 A (14 V) 1800 rpm

4.1.5.2 2,200 ENGINE RPM

Engine speed 2,200 rpm corresponds 3,517 rpm alternator speed.

Peak power 1,446 W marked in chart as red dot.

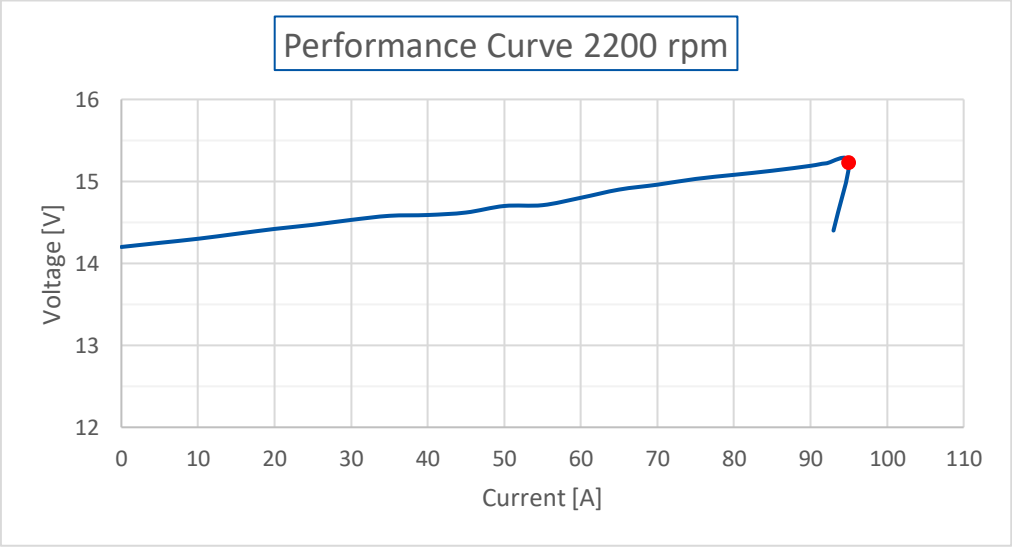

Figure 4-50 : Performance Curve 915iS 150 A (14 V) 2200 rpm

4.1.5.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds 3,996 rpm alternator speed.

Peak power 1,463 W marked in chart as red dot.

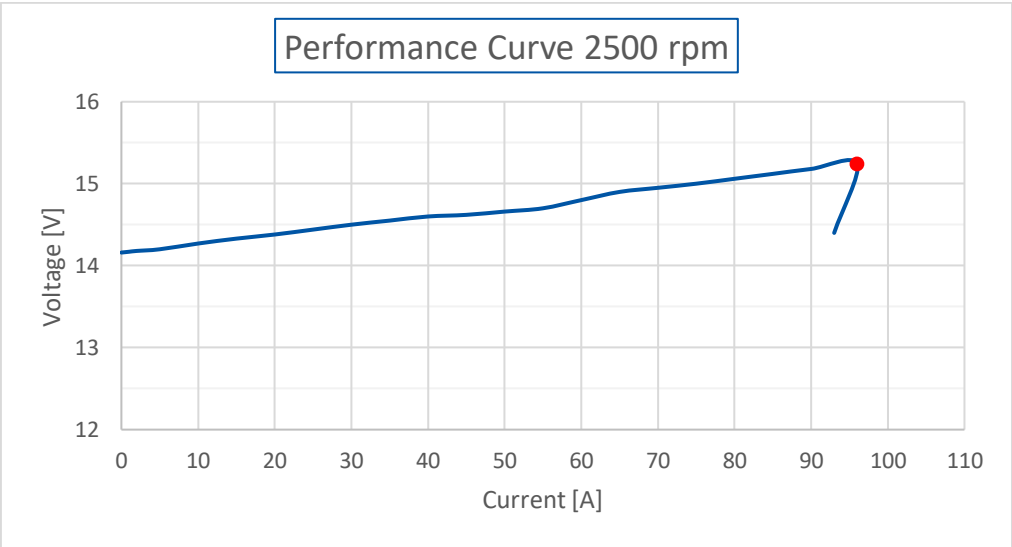

Figure 4-51 : Performance Curve 915iS 150 A (14 V) 2500 rpm

4.1.5.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds 4,795 rpm alternator speed.

Peak power 1,495 W marked in chart as red dot.

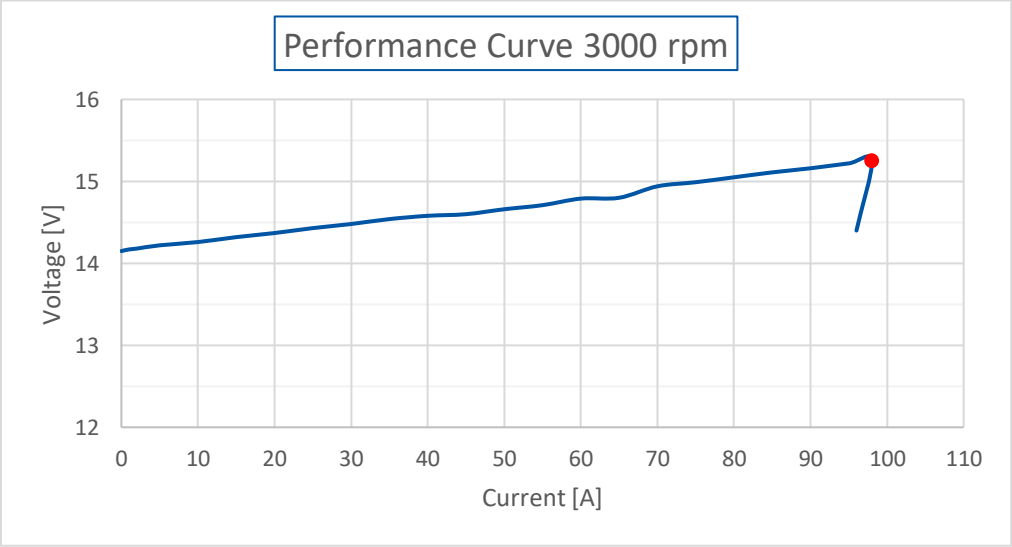

Figure 4-52 : Performance Curve 915iS 150 A (14 V) 3000 rpm

4.1.5.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds 5,594 rpm alternator speed.

Peak power 1,528 W marked in chart as red dot.

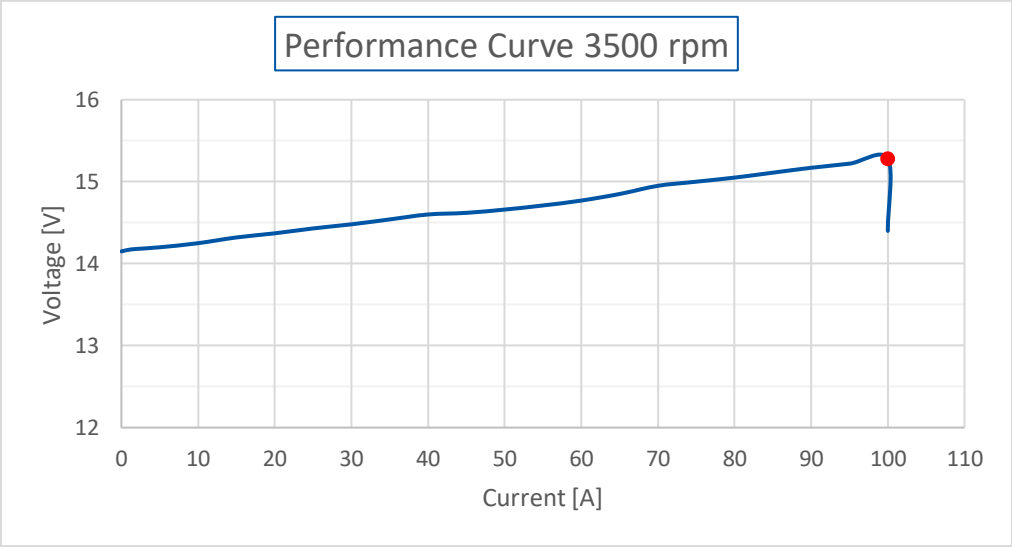

Figure 4-53 : Performance Curve 915iS 150 A (14 V) 3500 rpm

4.1.5.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds 6,394 rpm alternator speed.

Peak power 1,527 W marked in chart as red dot.

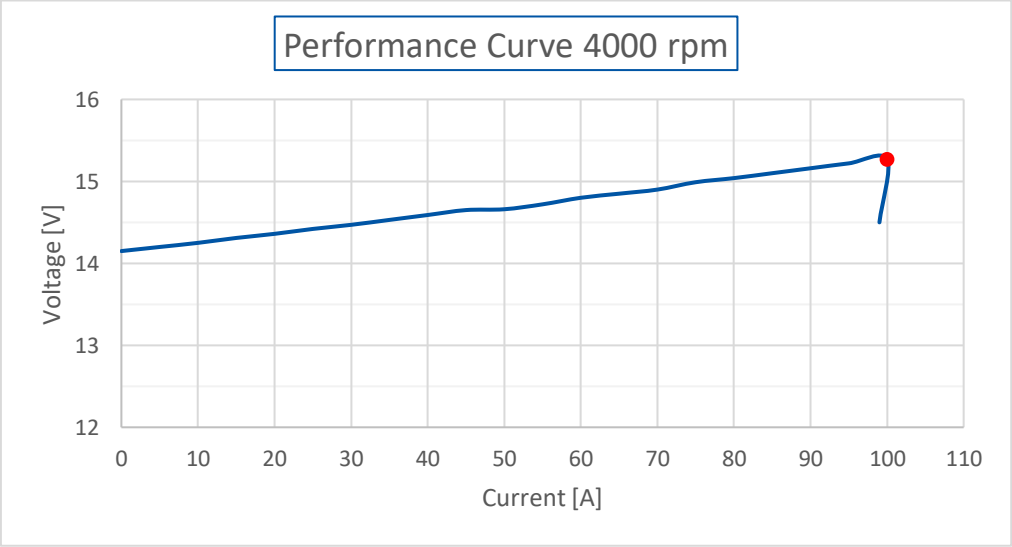

Figure 4-54 : Performance Curve 915iS 150 A (14 V) 4000 rpm

4.1.5.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds 7,193 rpm alternator speed.

Peak power 1,525 W marked in chart as red dot.

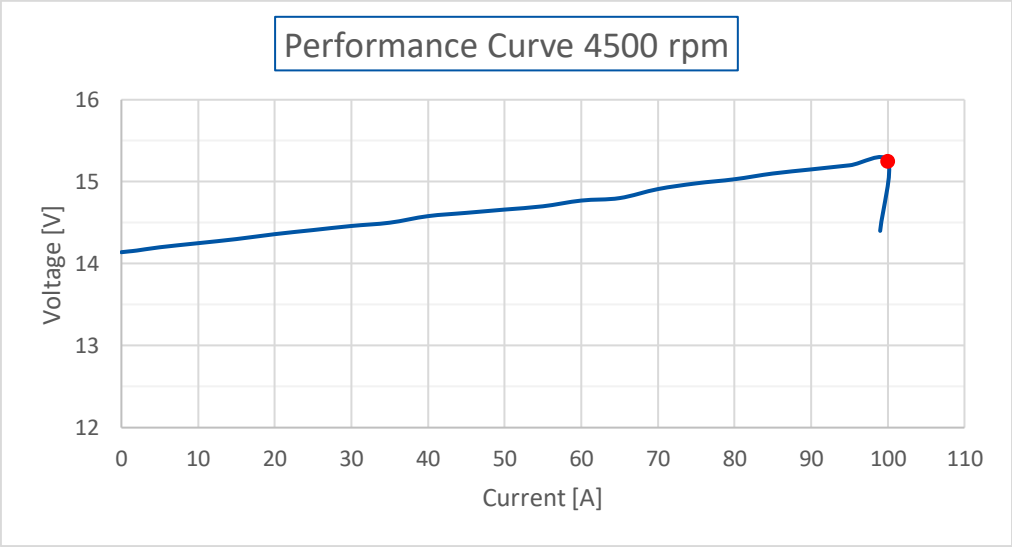

Figure 4-55 : Performance Curve 915iS 150 A (14 V) 4500 rpm

4.1.5.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds 7,992 rpm alternator speed.

Peak power 1,573 W marked in chart as red dot.

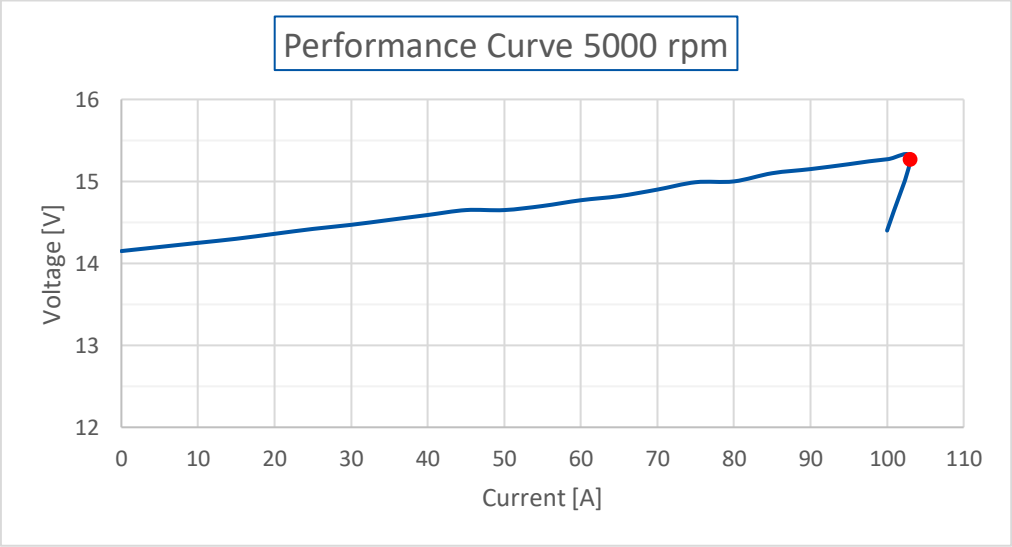

Figure 4-56 : Performance Curve 915iS 150 A (14 V) 5000 rpm

4.1.5.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds 8,312 rpm alternator speed.

Peak power 1,558 W marked in chart as red dot.

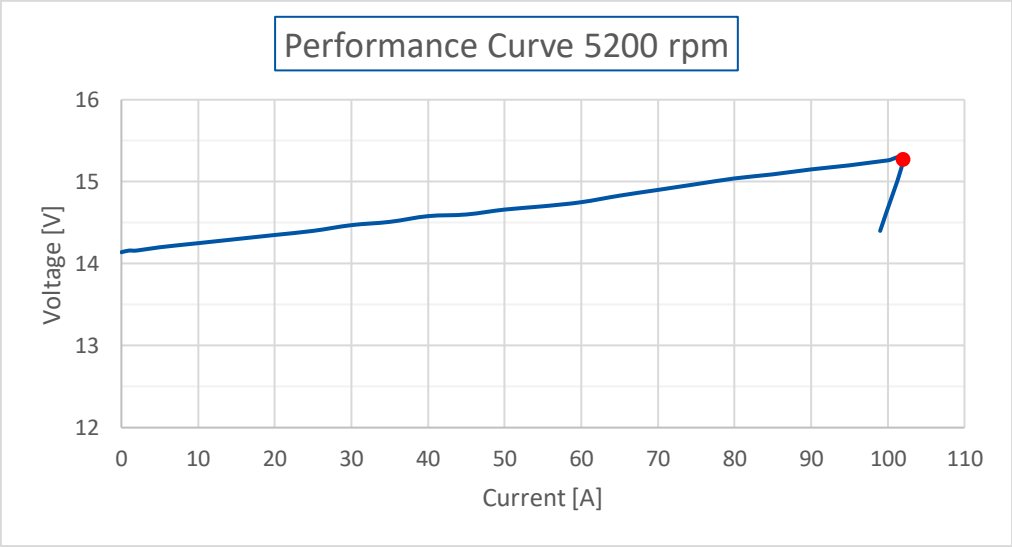

Figure 4-57 : Performance Curve 915iS 150 A (14 V) 5200 rpm

4.1.5.10 5,400 ENGINE RPM

Engine speed 5,400 rpm corresponds 8,631 rpm alternator speed.

Peak power 1,525 W marked in chart as red dot.

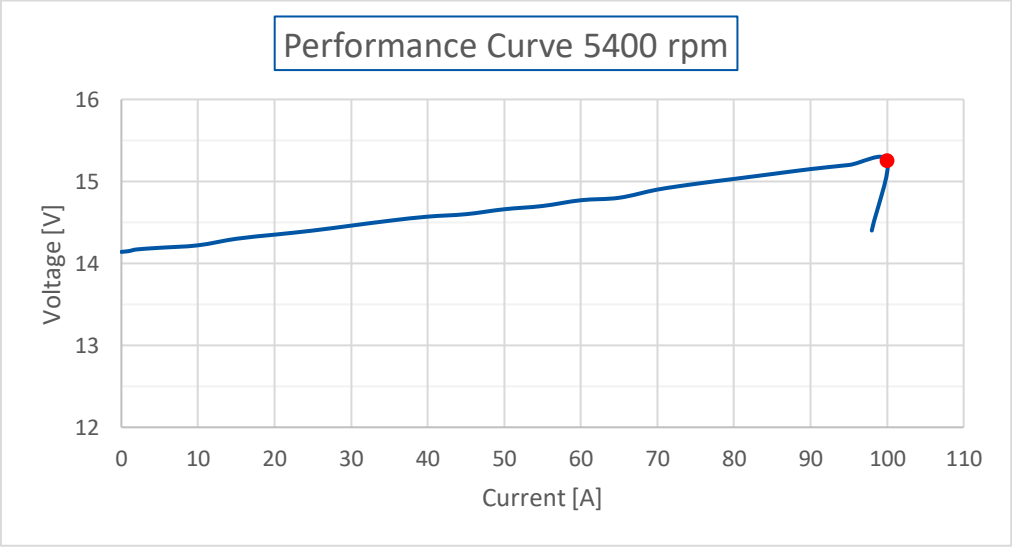

Figure 4-58 : Performance Curve 915iS 150 A (14 V) 5400 rpm

4.1.5.11 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds 8,951 rpm alternator speed.

Peak power 1,556 W marked in chart as red dot.

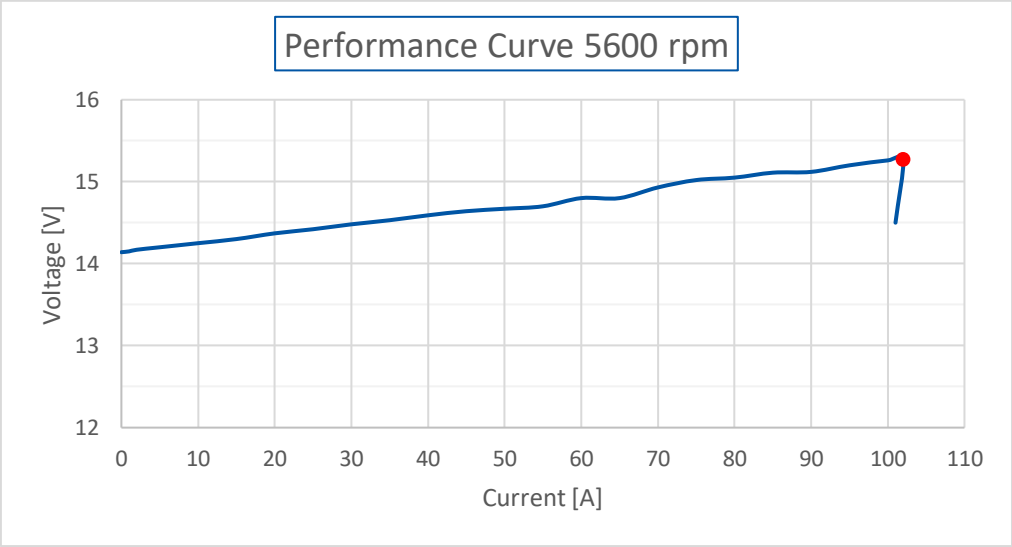

Figure 4-59 : Performance Curve 915iS 150 A (14 V) 5600 rpm

4.1.5.12 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds 9,271 rpm alternator speed.

Peak power 1,575 W marked in chart as red dot.

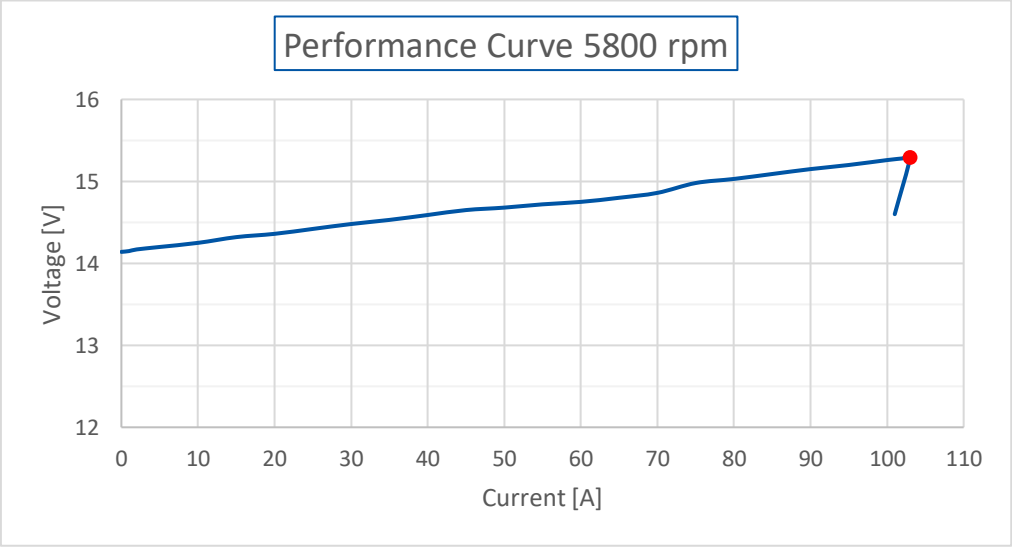

Figure 4-60 : Performance Curve 915iS 150 A (14 V) 5800 rpm

4.2 PERFORMANCE CURVES WITH 912IS ENGINE

4.2.1 PERFORMANCE CURVES 912IS 20 A (28 V)

4.2.1.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds to 1,896 rpm alternator speed.

Peak power is 433 W marked in chart as red dot.

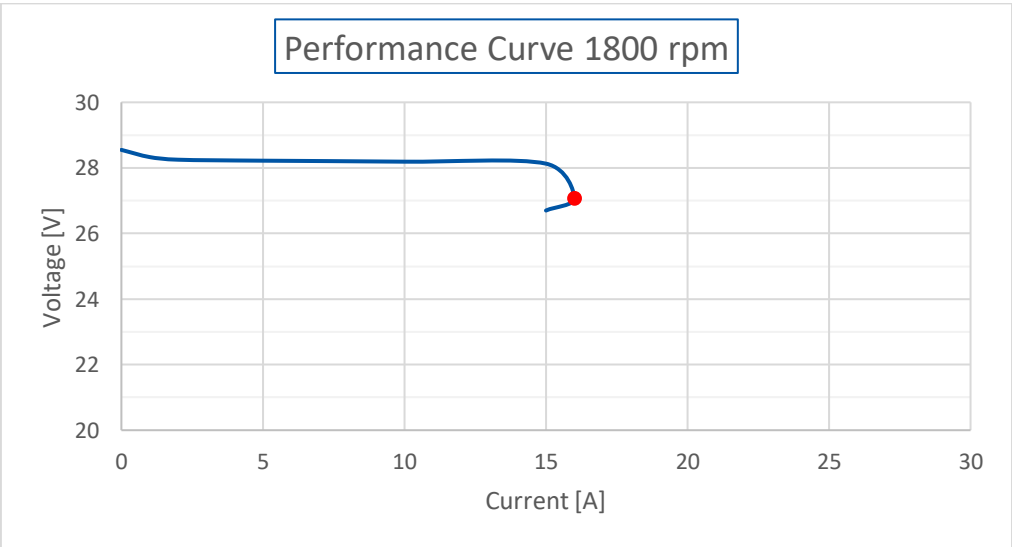

Figure 4-61: Performance Curve 912iS 20 A (28 V) 1800 rpm

4.2.1.2 2,200 ENGINE RPM

Engine speed 2,200 rpm corresponds to 2,318 rpm alternator speed.

Peak power is 521 W marked in chart as red dot.

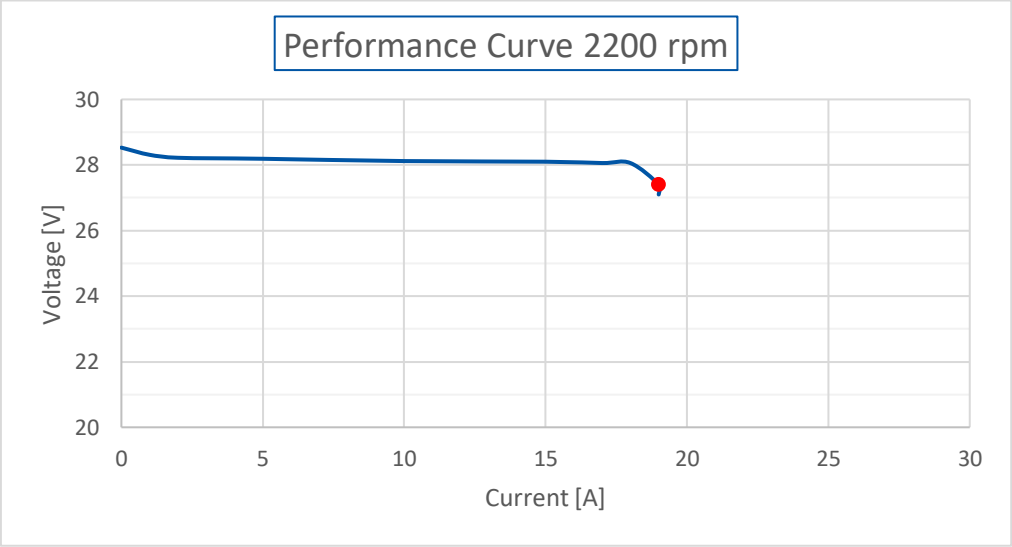

Figure 4-62 : Performance Curve 912iS 20 A (28 V) 2200 rpm

4.2.1.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 2,160 rpm alternator speed.

Peak power is 571 W marked in chart as red dot.

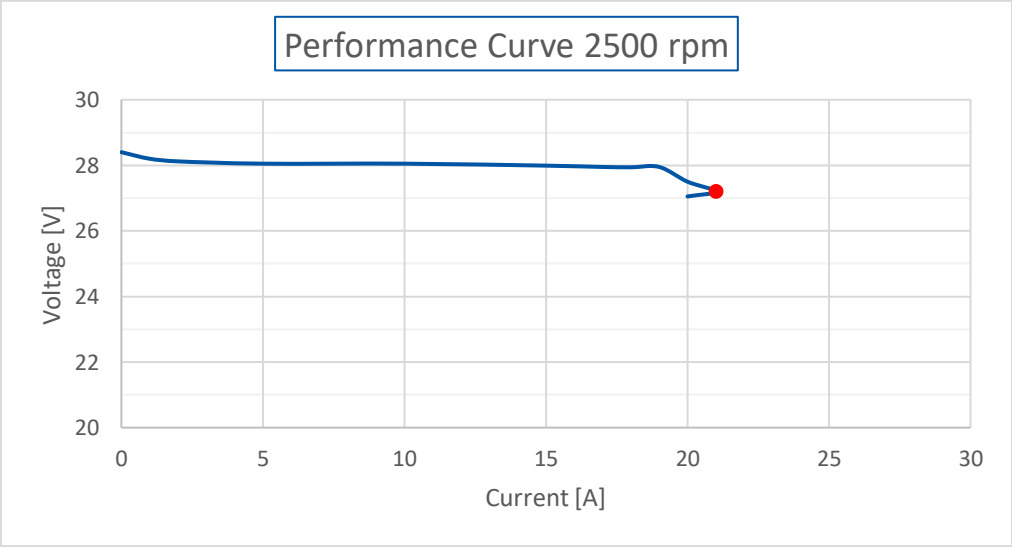

Figure 4-63 : Performance Curve 912iS 20 A (28 V) 2500 rpm

4.2.1.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 3,160 rpm alternator speed.

Peak power is 605 W marked in chart as red dot.

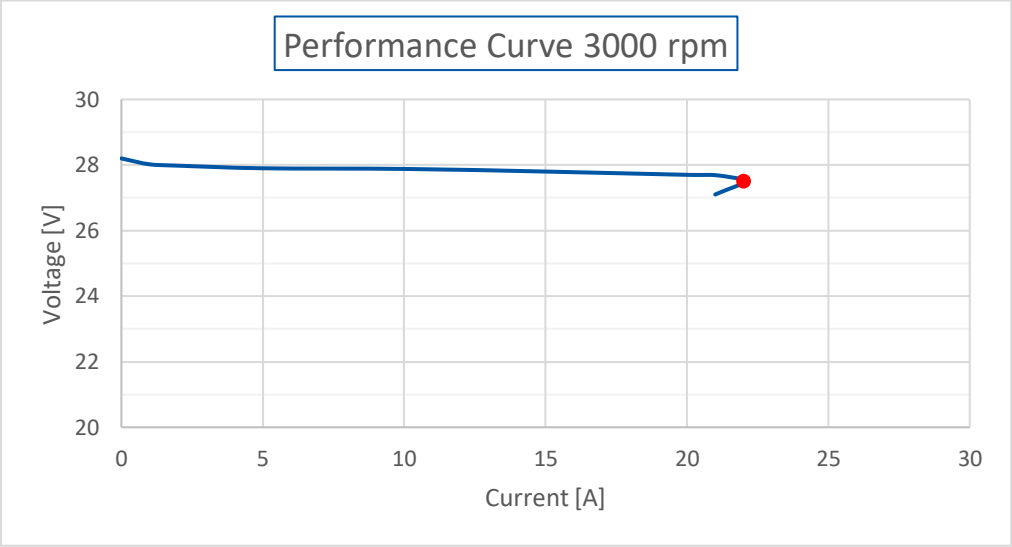

Figure 4-64 : Performance Curve 912iS 20 A (28 V) 3000 rpm

4.2.1.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 3,687 rpm alternator speed.

Peak power is 633 W marked in chart as red dot.

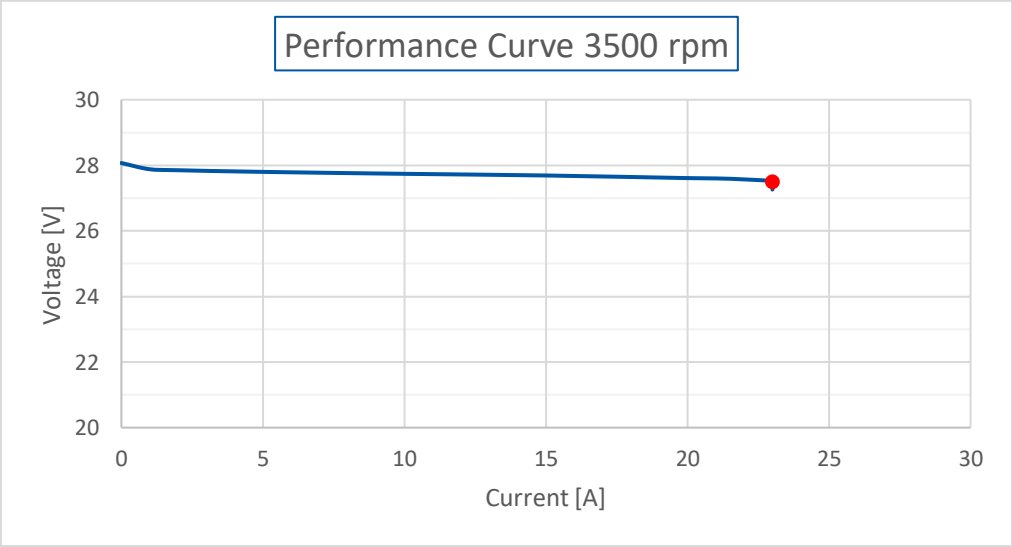

Figure 4-65 : Performance Curve 912iS 20 A (28 V) 3500 rpm

4.2.1.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 4,214 rpm alternator speed.

Peak power is 633 W marked in chart as red dot.

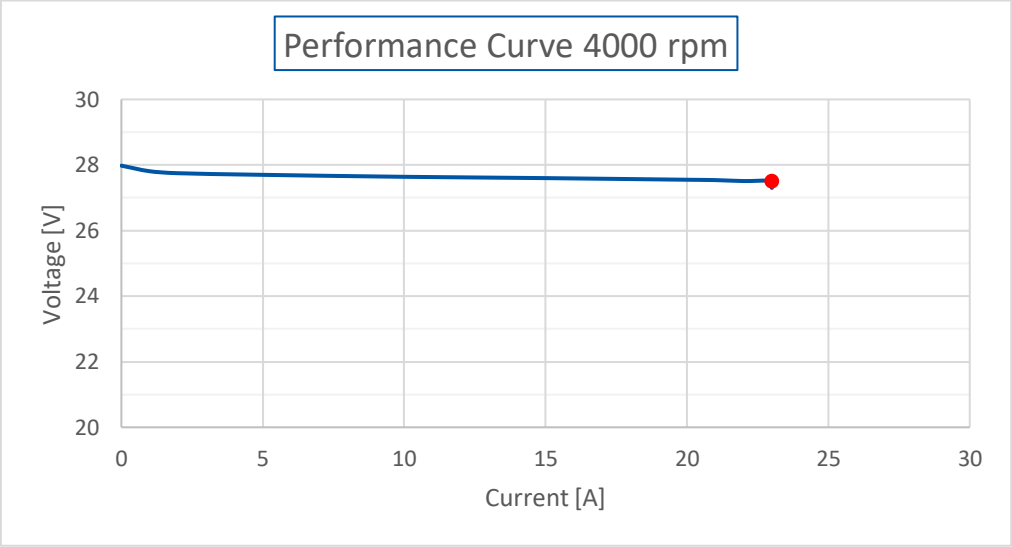

Figure 4-66 : Performance Curve 912iS 20 A (28 V) 4000 rpm

4.2.1.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 4,741 rpm alternator speed.

Peak power is 632 W marked in chart as red dot.

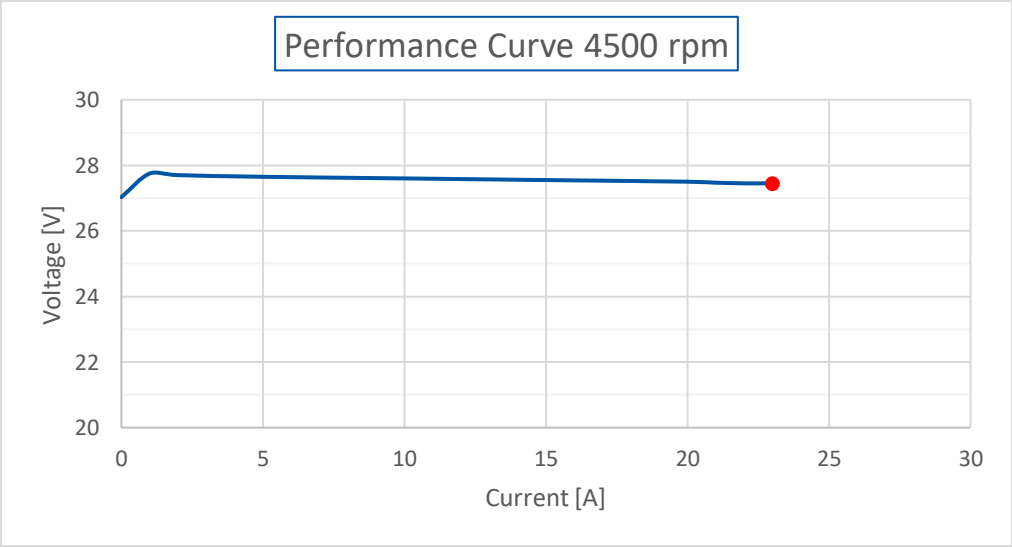

Figure 4-67 : Performance Curve 912iS 20 A (28 V) 4500 rpm

4.2.1.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 5,267 rpm alternator speed.

Peak power is 658 W marked in chart as red dot.

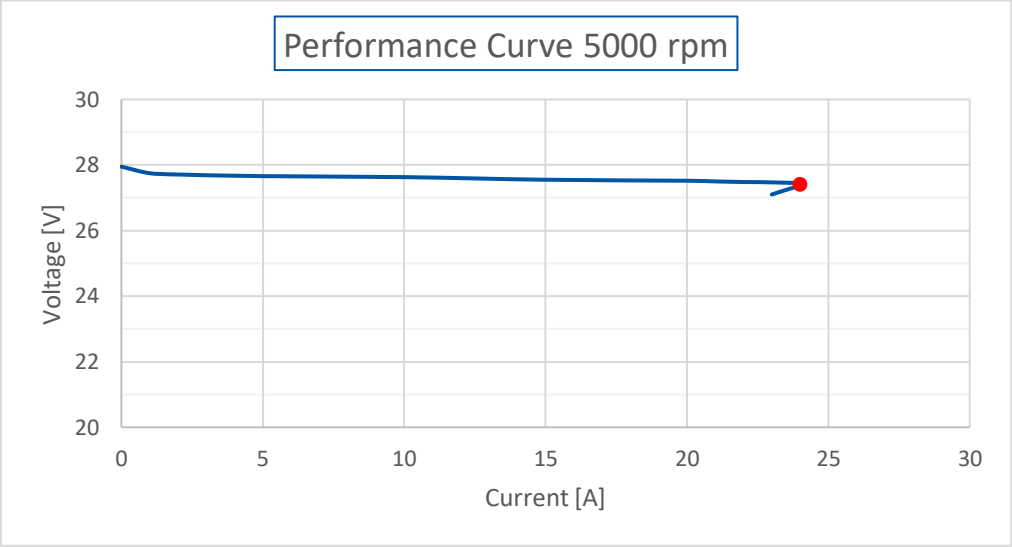

Figure 4-68 : Performance Curve 912iS 20 A (28 V) 5000 rpm

4.2.1.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 5,478 rpm alternator speed.

Peak power is 658 W marked in chart as red dot.

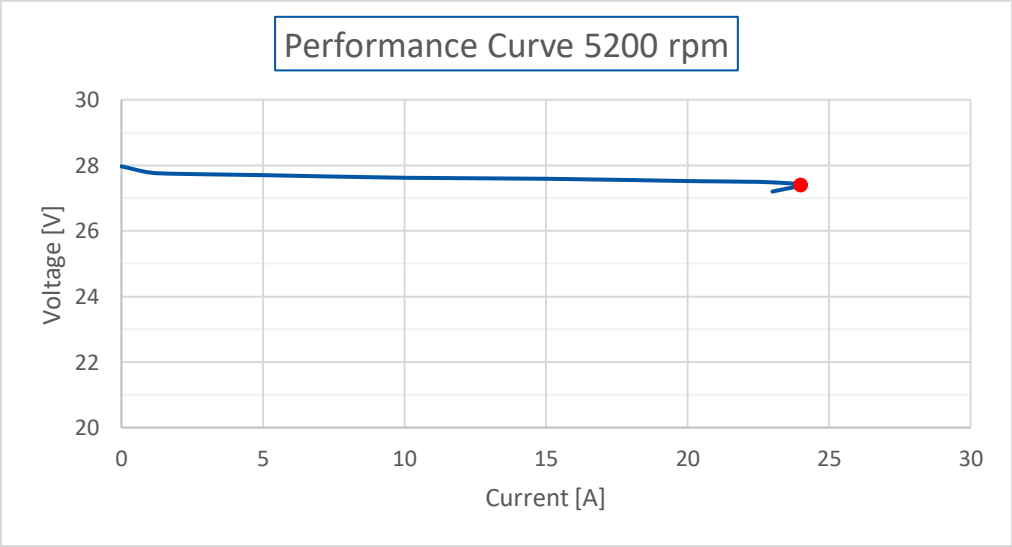

Figure 4-69 : Performance Curve 912iS 20 A (28 V) 5200 rpm

4.2.1.10 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds to 5,900 rpm alternator speed.

Peak power is 660 W marked in chart as red dot.

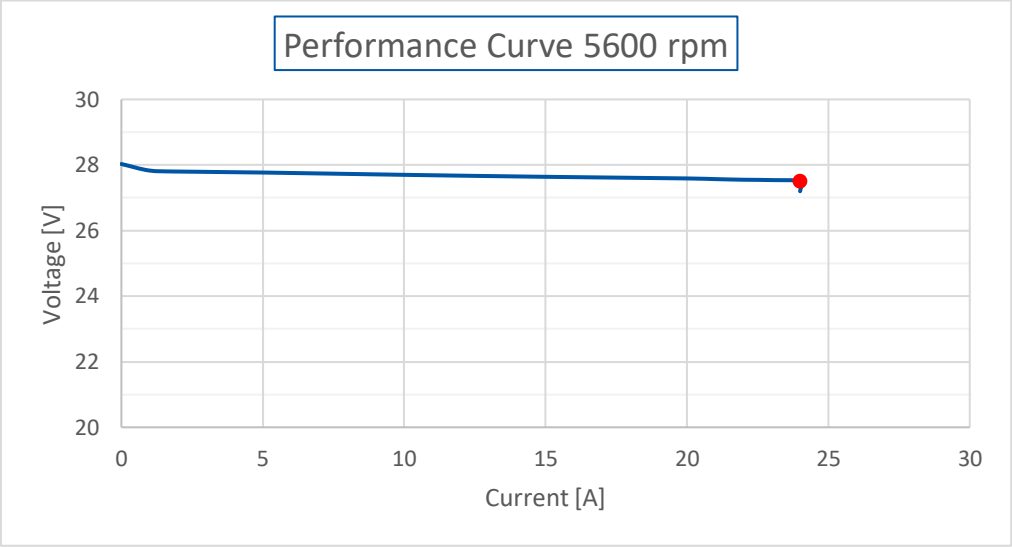

Figure 4-70 : Performance Curve 912iS 20 A (28 V) 5600 rpm

4.2.1.11 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 6,110 rpm alternator speed.

Peak power is 661 W marked in chart as red dot.

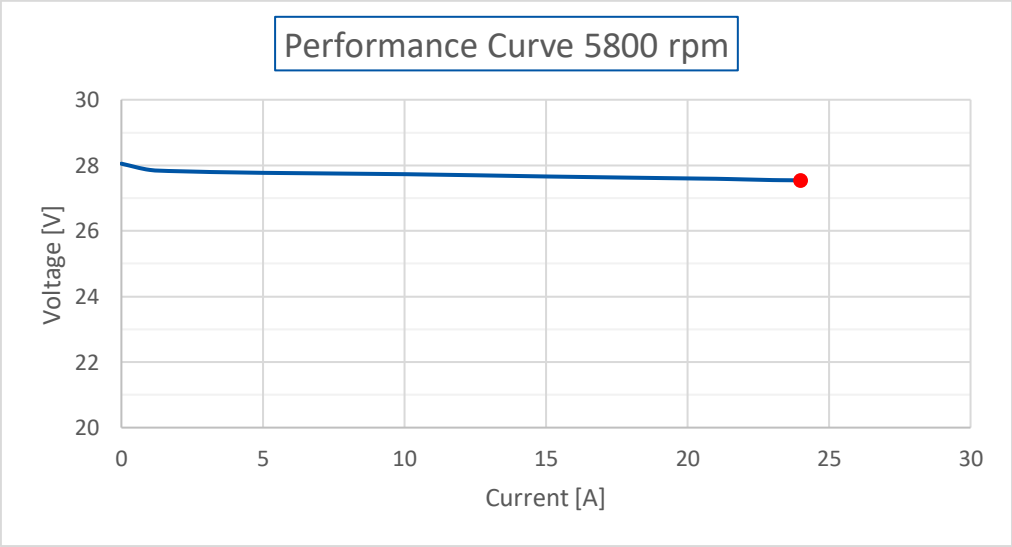

Figure 4-71 : Performance Curve 912iS 20 A (28 V) 5800 rpm

4.2.2 PERFORMANCE CURVES 912IS 70 A (28 V)

4.2.2.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds to 3,007 rpm alternator speed.

Peak power is 709 W marked in chart as red dot.

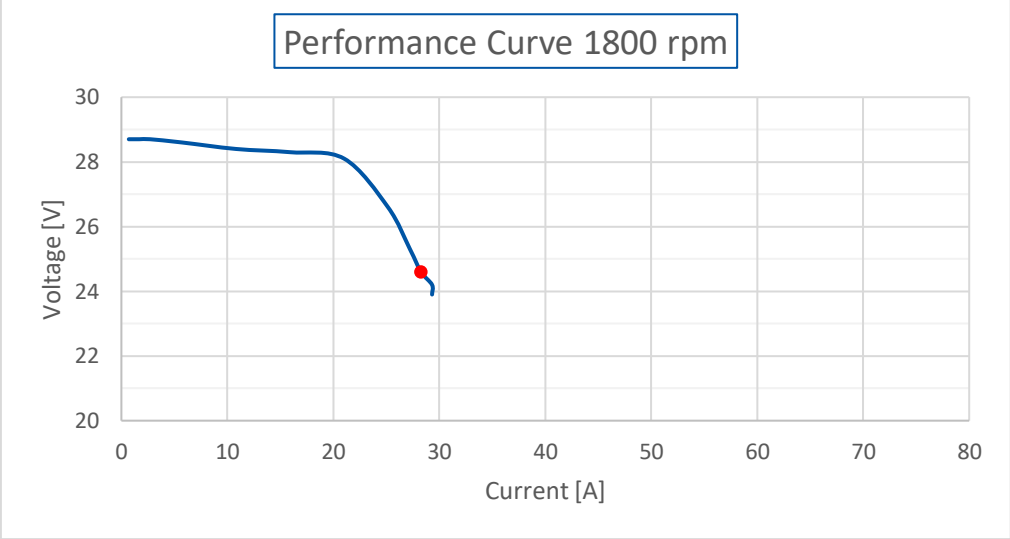

Figure 4-72 : Performance Curve 912iS 70 A (28 V) 1800 rpm

4.2.2.2 2,000 ENGINE RPM

Engine speed 2,000 rpm corresponds to 3342 rpm alternator speed.

Peak power is 908 W marked in chart as red dot.

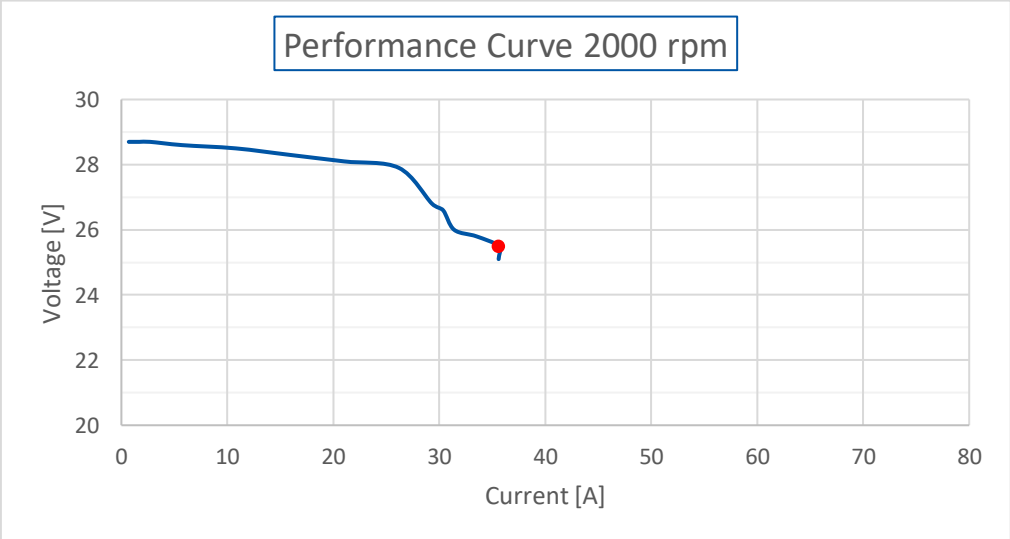

Figure 4-73 : Performance Curve 912iS 70 A (28 V) 2000 rpm

4.2.2.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 4,177 rpm alternator speed.

Peak power is 1,196 W marked in chart as red dot.

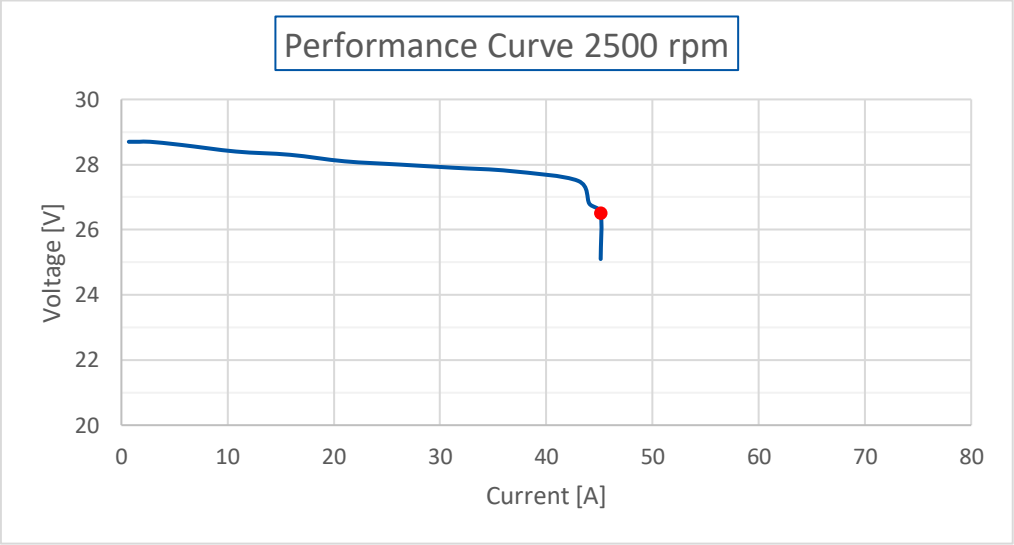

Figure 4-74 Performance Curve 912iS 70 A (28 V) 2500 rpm

4.2.2.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 5,012 rpm alternator speed.

Peak power is 1,415 W marked in chart as red dot.

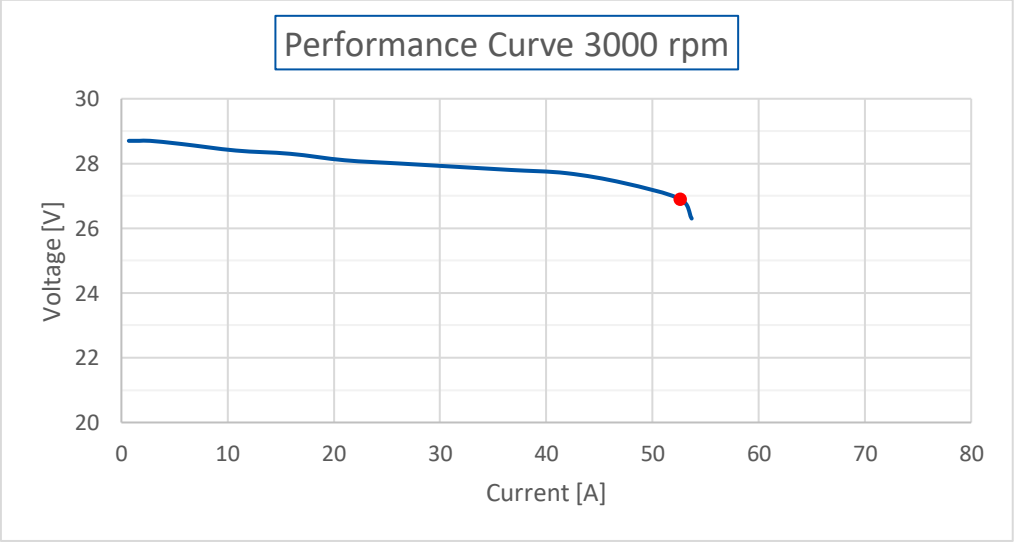

Figure 4-75 : Performance Curve 912iS 70 A (28 V) 3000 rpm

4.2.2.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 5,848 rpm alternator speed.

Peak power is 1,520 W marked in chart as red dot.

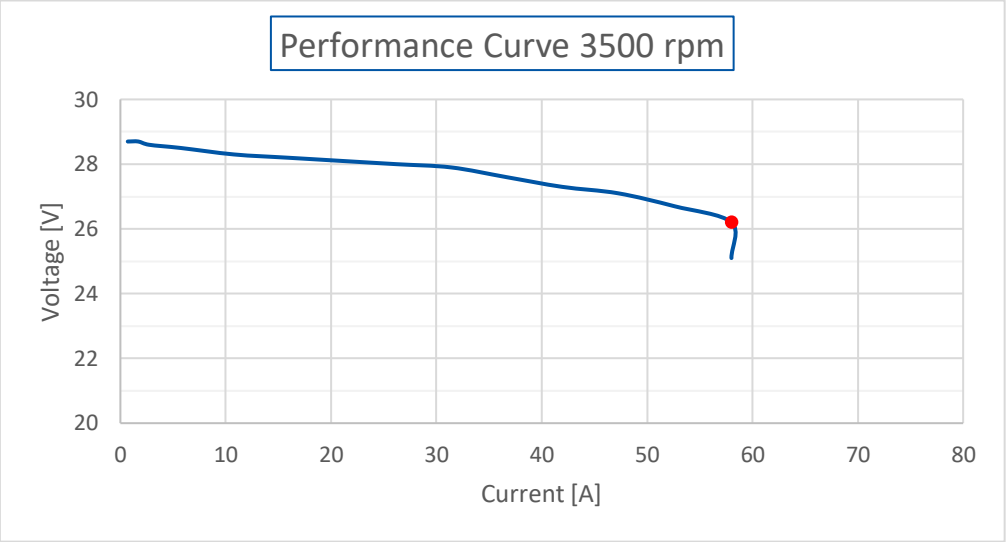

Figure 4-76 : Performance Curve 912iS 70 A (28 V) 3500 rpm

4.2.2.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 6,683 rpm alternator speed.

Peak power is 1,643 W marked in chart as red dot.

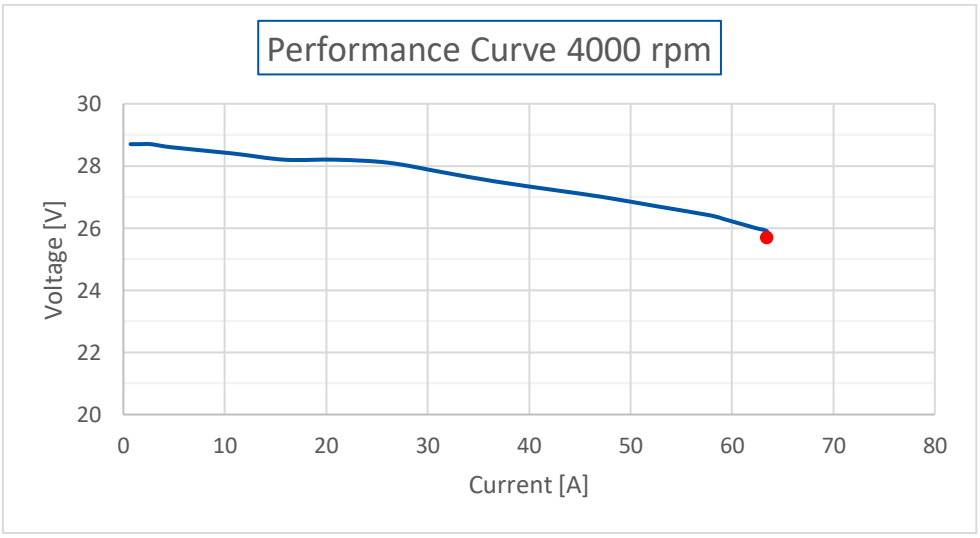

Figure 4-77 : Performance Curve 912iS 70 A (28 V) 4000 rpm

4.2.2.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 7,519 rpm alternator speed.

Peak power is 1,771 W marked in chart as red dot.

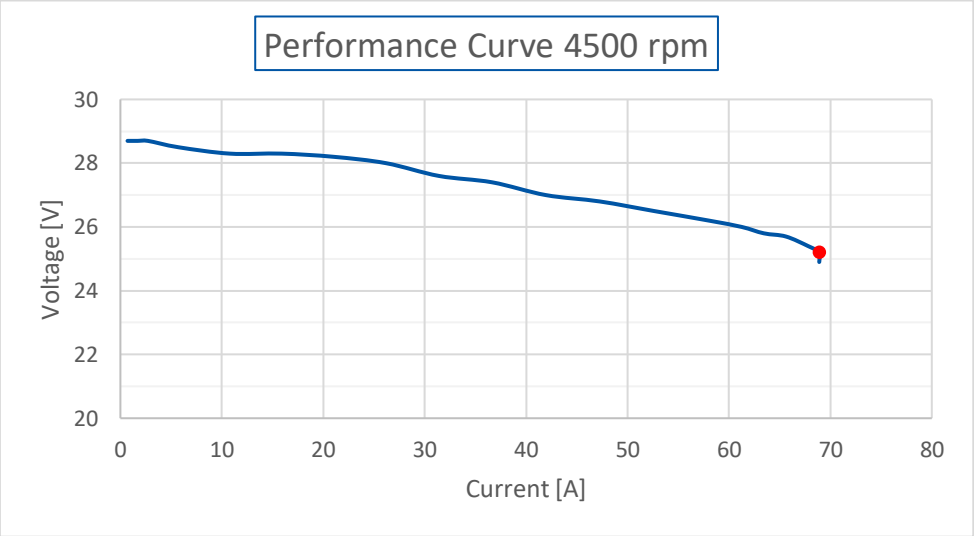

Figure 4-78 : Performance Curve 912iS 70 A (28 V) 4500 rpm

4.2.2.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 8,354 rpm alternator speed.

Peak power is 1,716 W marked in chart as red dot.

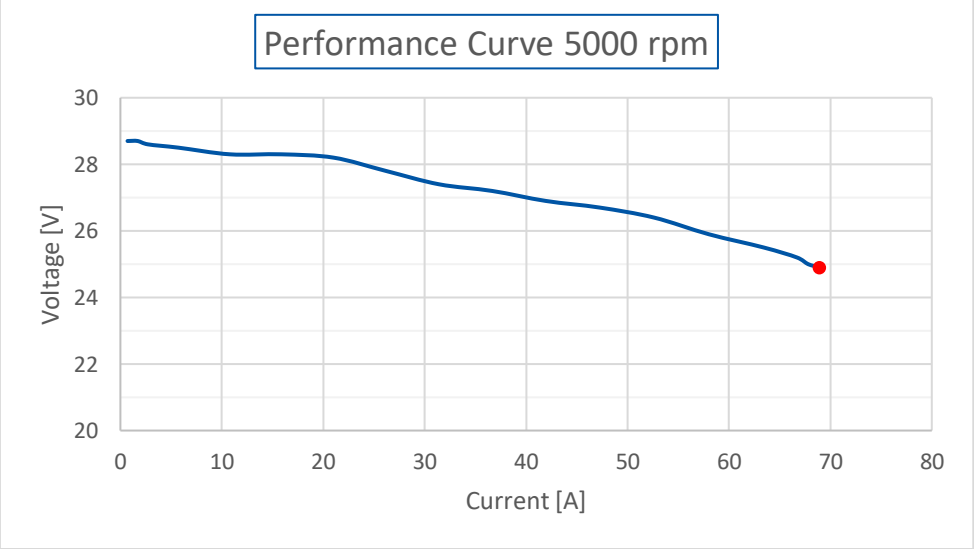

Figure 4-79 : Performance Curve 912iS 70 A (28 V) 5000 rpm

4.2.2.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 8,688 rpm alternator speed.

Peak power is 1,716 W marked in chart as red dot.

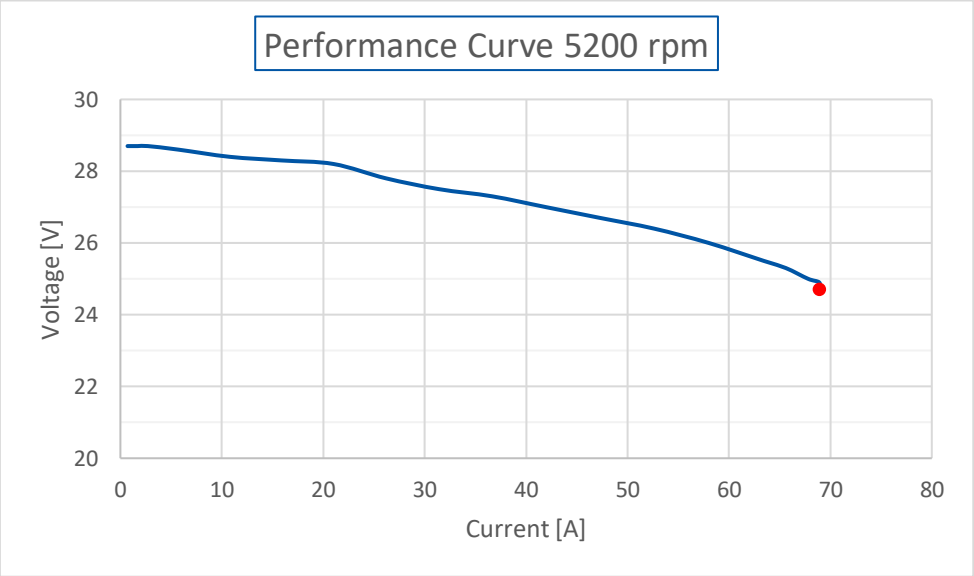

Figure 4-80 : Performance Curve 912iS 70 A (28 V) 5200 rpm

4.2.2.10 5,400 ENGINE RPM

Engine speed 5,400 rpm corresponds to 9,022 rpm alternator speed.

Peak power is 1,735 W marked in chart as red dot.

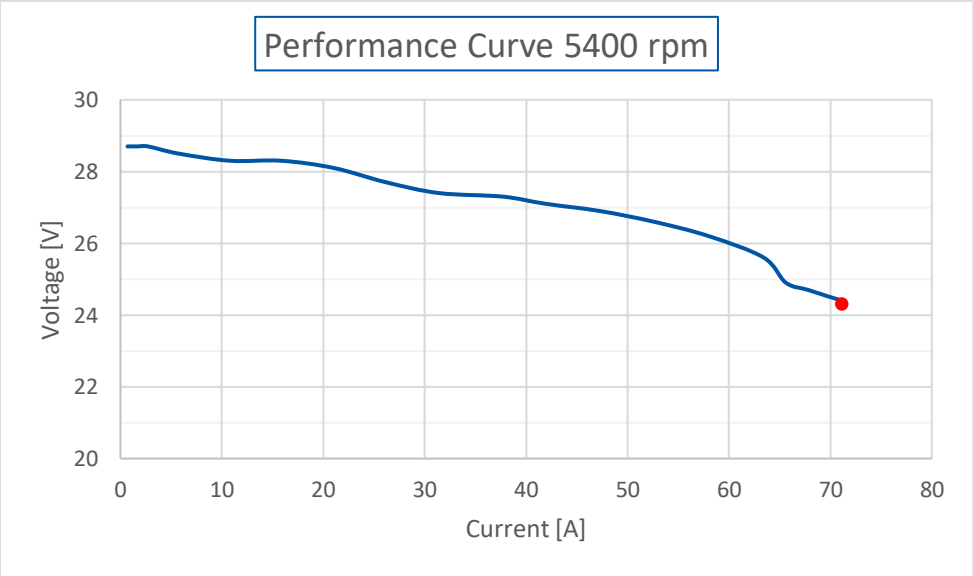

Figure 4-81 : Performance Curve 912iS 70 A (28 V) 5400 rpm

4.2.2.11 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds to 9,356 rpm alternator speed.

Peak power is 1,688 W marked in chart as red dot.

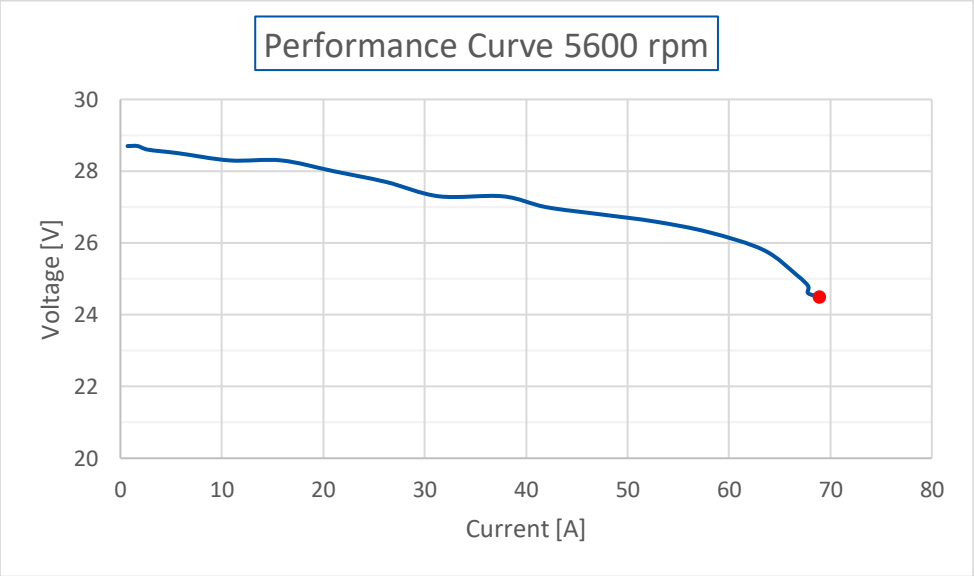

Figure 4-82 : Performance Curve 912iS 70 A (28 V) 5600 rpm

4.2.2.12 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 9,691 rpm alternator speed.

Peak power is 1,654 W marked in chart as red dot.

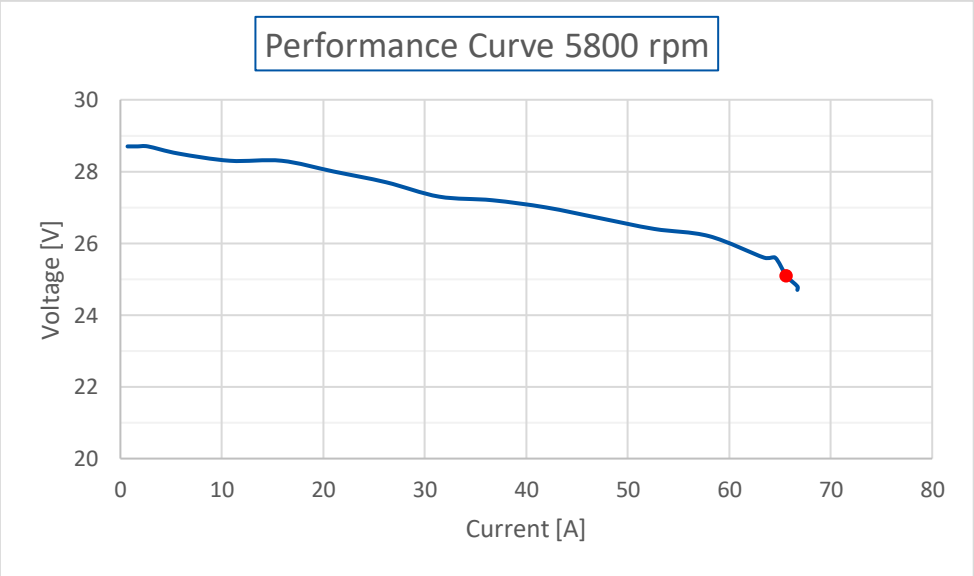

Figure 4-83 : Performance Curve 912iS 70 A (28 V) 5800 rpm

4.2.3 PERFORMANCE CURVES 912IS 70 A (14 V)

4.2.3.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds to 3,007 rpm alternator speed.

Peak power is 586 W marked in chart as red dot.

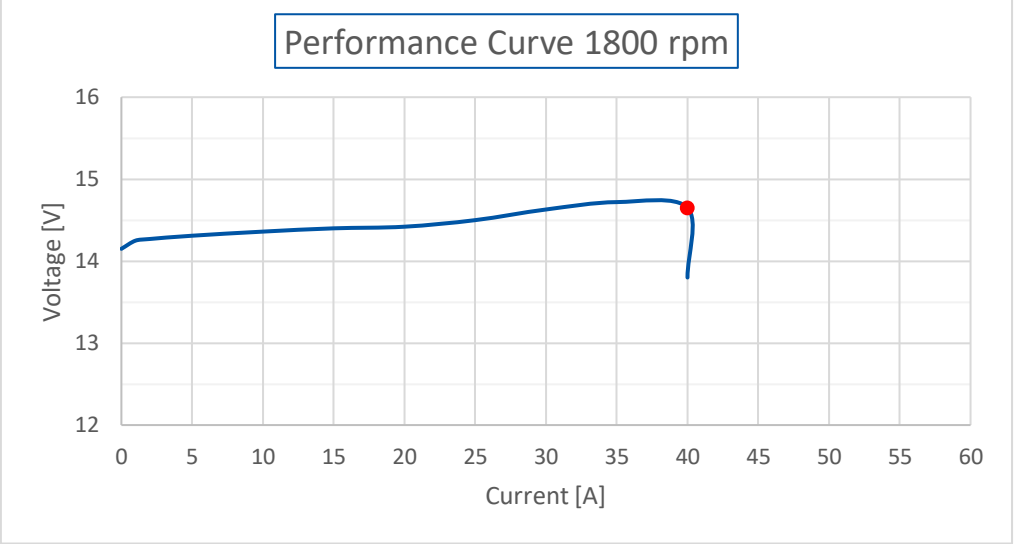

Figure 4-84 : Performance Curve 912iS 70 A (14 V) 1800 rpm

4.2.3.2 2,200 ENGINE RPM

Engine speed 2,200 rpm corresponds to 3,676 rpm alternator speed.

Peak power is 649 W marked in chart as red dot.

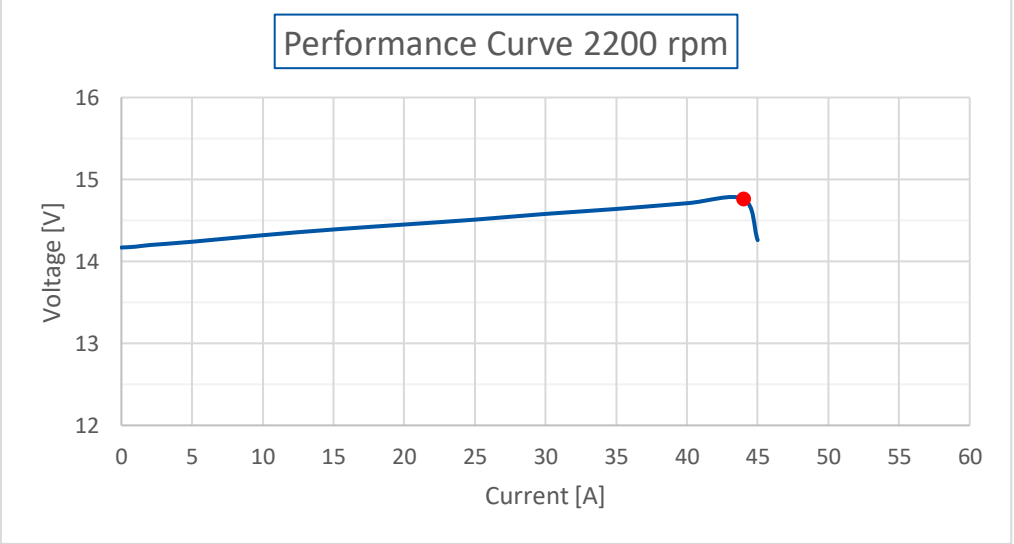

Figure 4-85 : Performance Curve 912iS 70 A (14 V) 2200 rpm

4.2.3.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 4,177 rpm alternator speed.

Peak power is 686 W marked in chart as red dot.

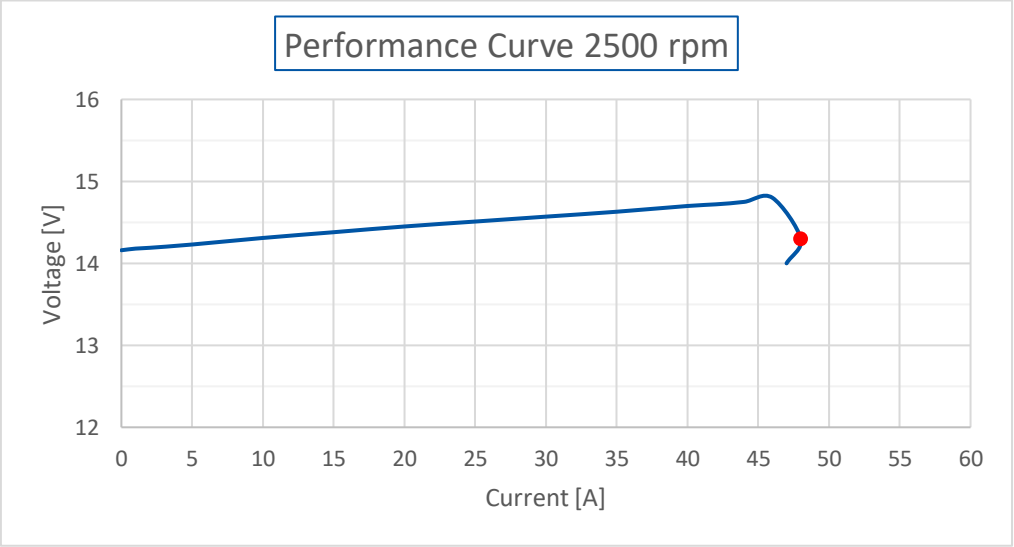

Figure 4-86 : Performance Curve 912iS 70 A (14 V) 3000 rpm

4.2.3.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 5,012 rpm alternator speed.

Peak power is 748 W marked in chart as red dot.

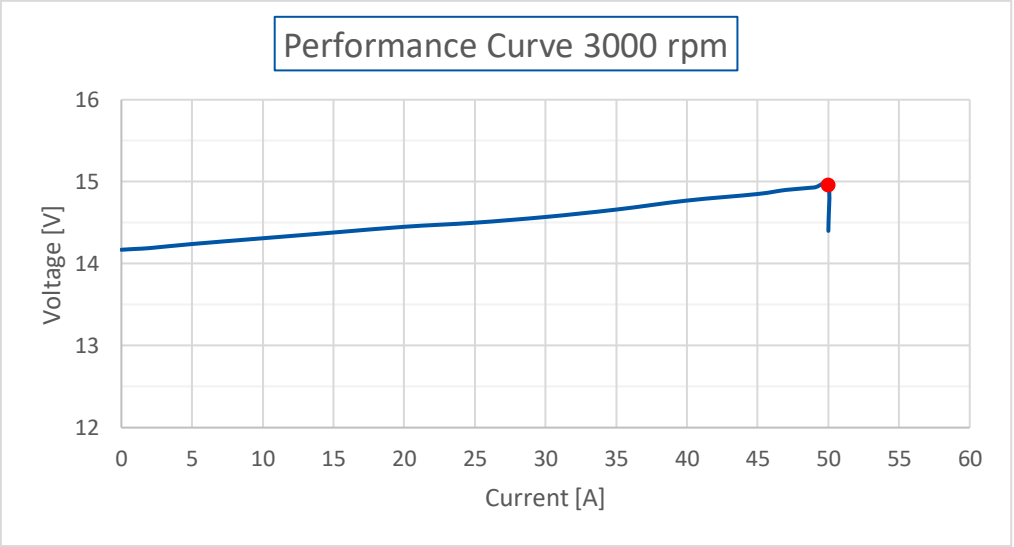

Figure 4-87 : Performance Curve 912iS 70 A (14 V) 3000 rpm

4.2.3.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 5,848 rpm alternator speed.

Peak power is 785 W marked in chart as red dot.

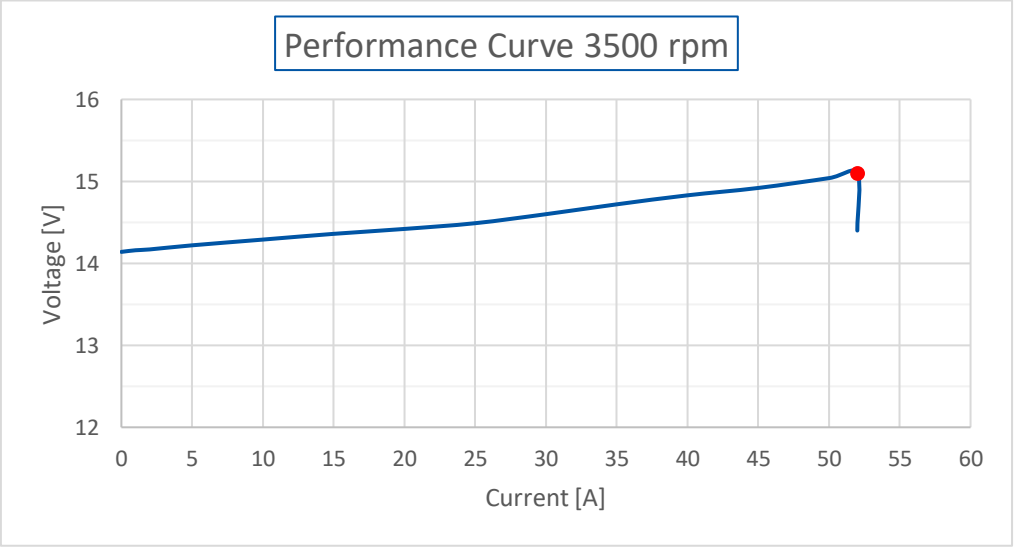

Figure 4-88 : Performance Curve 912iS 70 A (14 V) 3500 rpm

4.2.3.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 6,683 rpm alternator speed.

Peak power is 822 W marked in chart as red dot.

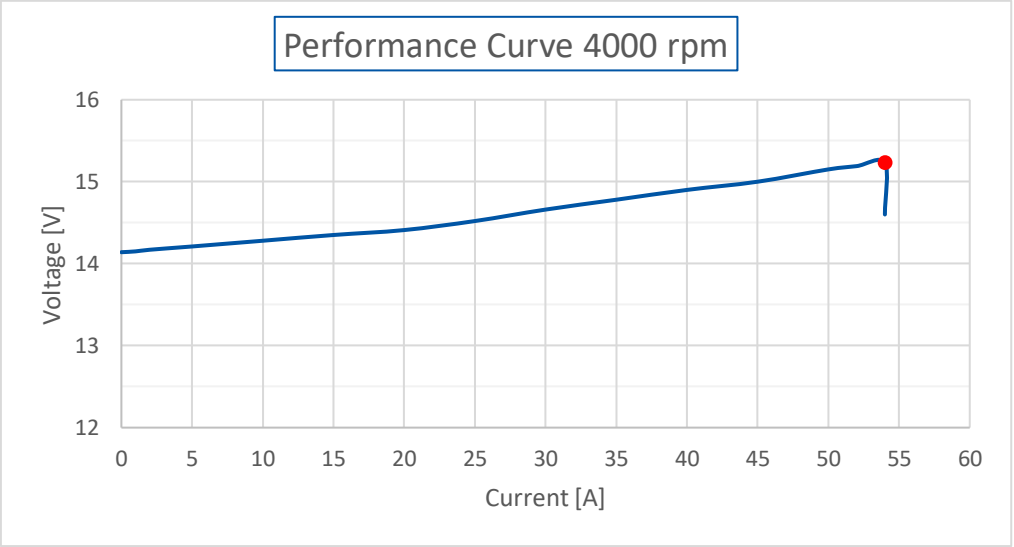

Figure 4-89 : Performance Curve 912iS 70 A (14 V) 4000 rpm

4.2.3.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 7,519 rpm alternator speed.

Peak power is 844 W marked in chart as red dot.

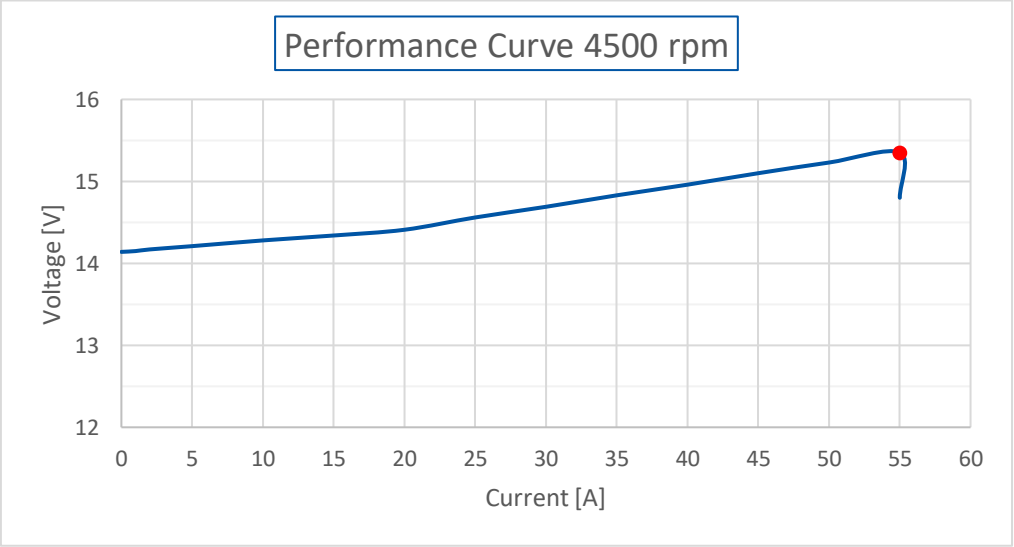

Figure 4-90 : Performance Curve 912iS 70 A (14 V) 4500 rpm

4.2.3.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 8,354 rpm alternator speed.

Peak power is 878 W marked in chart as red dot.

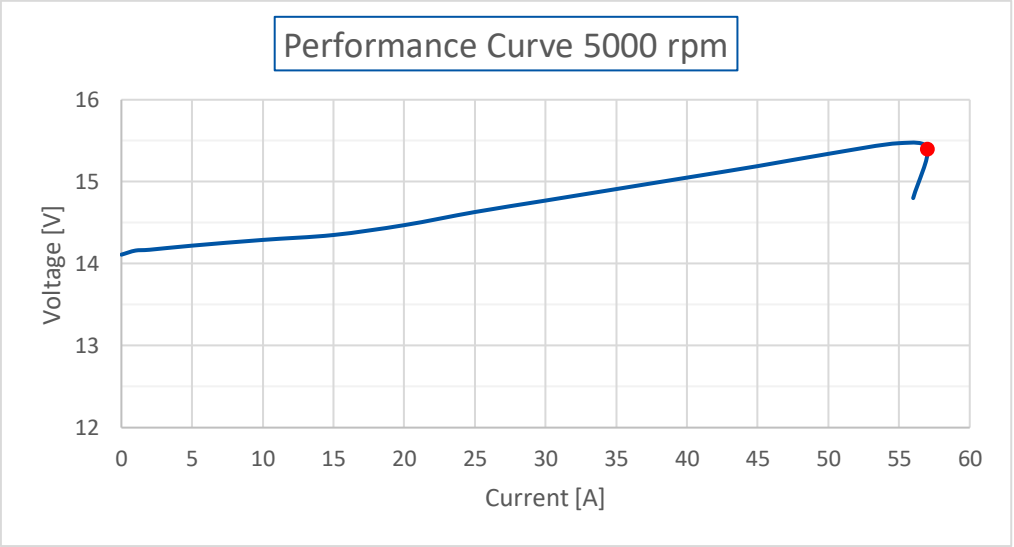

Figure 4-91 : Performance Curve 912iS 70 A (14 V) 5000 rpm

4.2.3.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 8,688 rpm alternator speed.

Peak power is 886 W marked in chart as red dot.

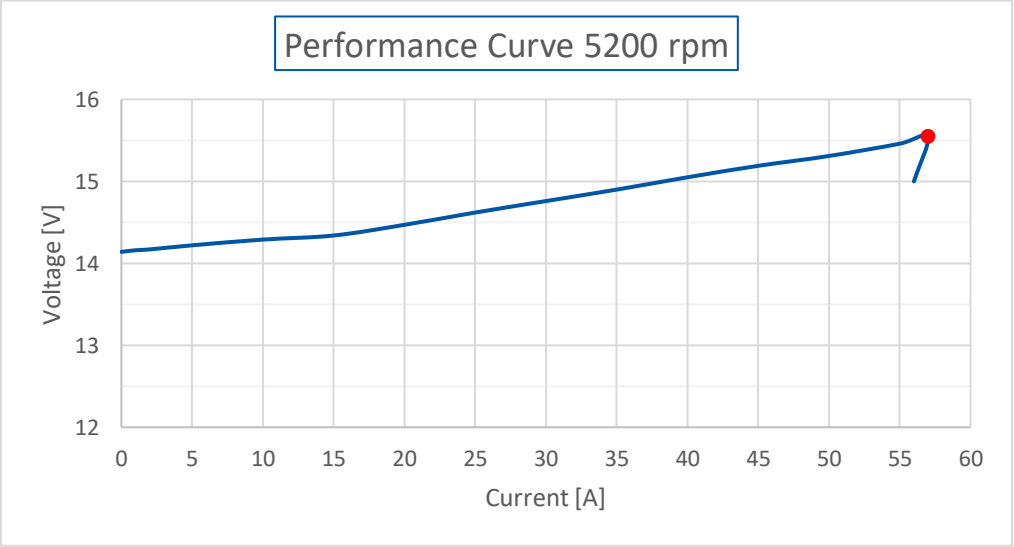

Figure 4-92 : Performance Curve 912iS 70 A (14 V) 5200 rpm

4.2.3.10 5,400 ENGINE RPM

Engine speed 5,400 rpm corresponds to 9,022 rpm alternator speed.

Peak power is 885 W marked in chart as red dot.

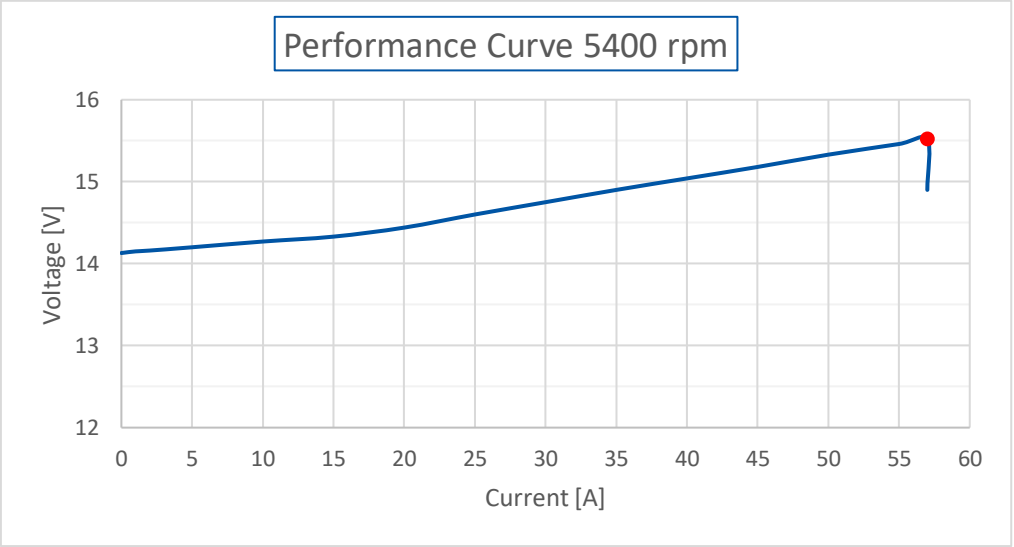

Figure 4-93 : Performance Curve 912iS 70 A (14 V) 5400 rpm

4.2.3.11 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds to 9,356 rpm alternator speed.

Peak power is 891 W marked in chart as red dot.

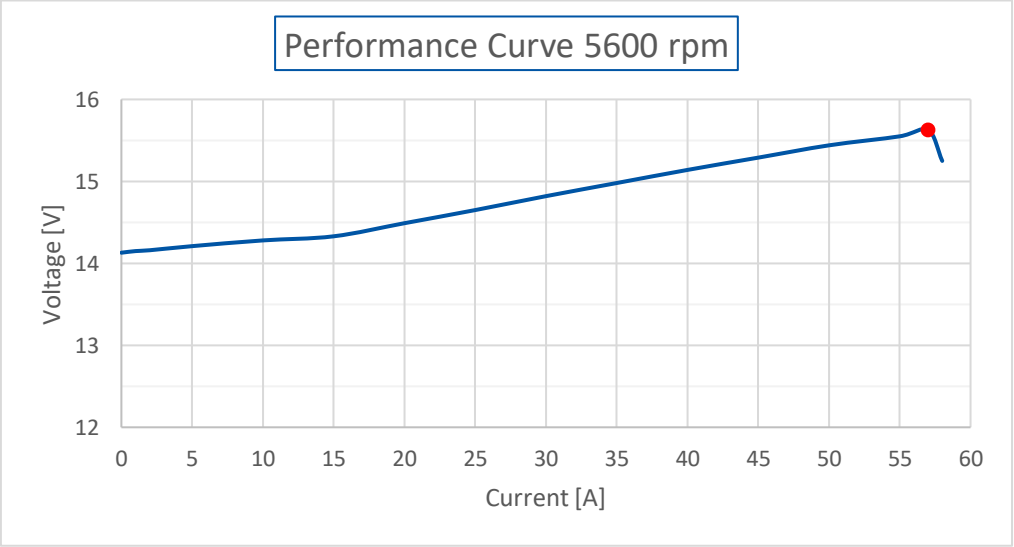

Figure 4-94 : Performance Curve 912iS 70 A (14 V) 5600 rpm

4.2.3.12 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 9,691 rpm alternator speed.

Peak power is 911 W marked in chart as red dot.

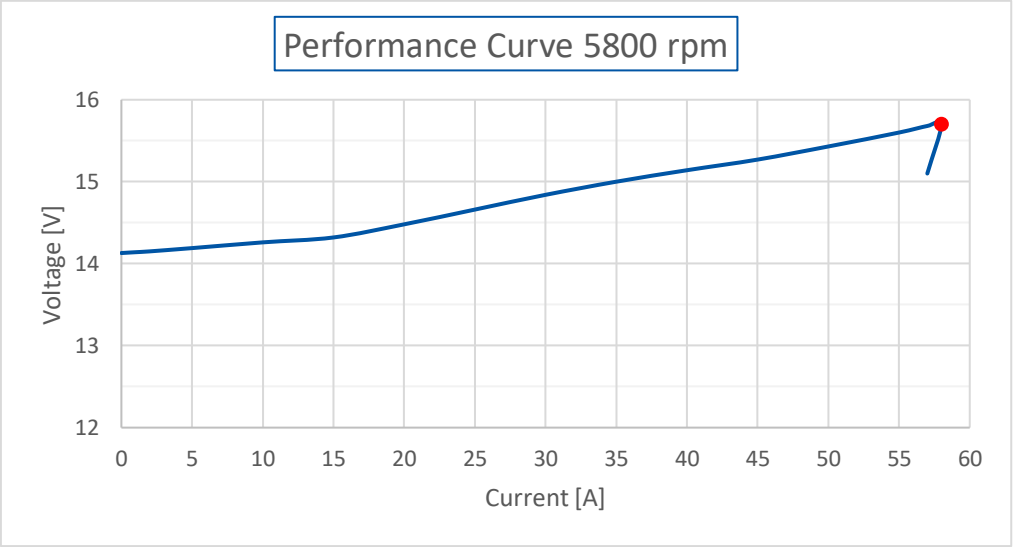

Figure 4-95 : Performance Curve 912iS 70 A (14 V) 5800 rpm

4.2.4 PERFORMANCE CURVES 912IS 150 A (28 V)

4.2.4.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds to 3,007 rpm alternator speed.

Peak power is 2,232 W marked in chart as red dot.

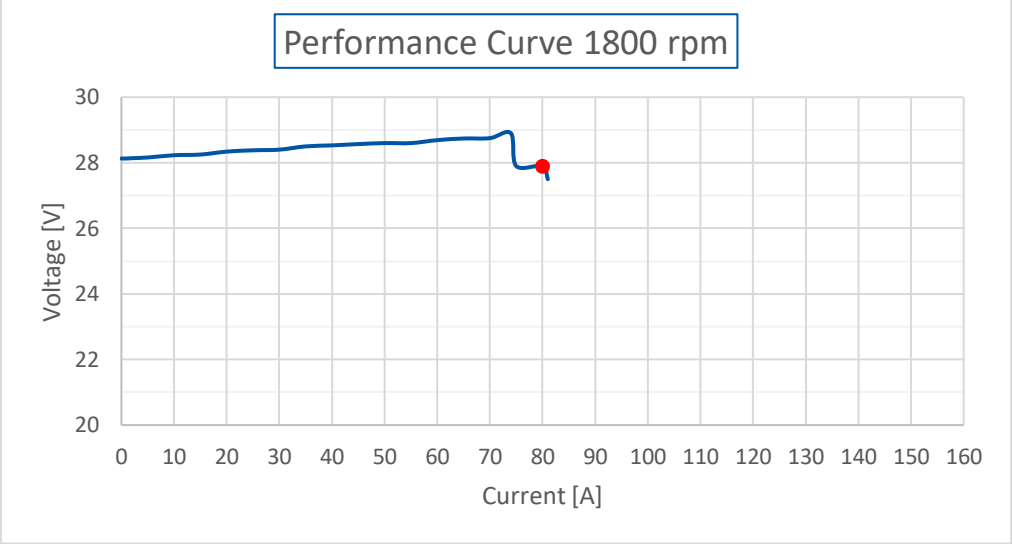

Figure 4-96 : Performance Curve 912iS 150 A (28 V) 1800 rpm

4.2.4.2 2,200 ENGINE RPM

Engine speed 2,200 rpm corresponds to 3,676 rpm alternator speed.

Peak power is 2,746 W marked in chart as red dot.

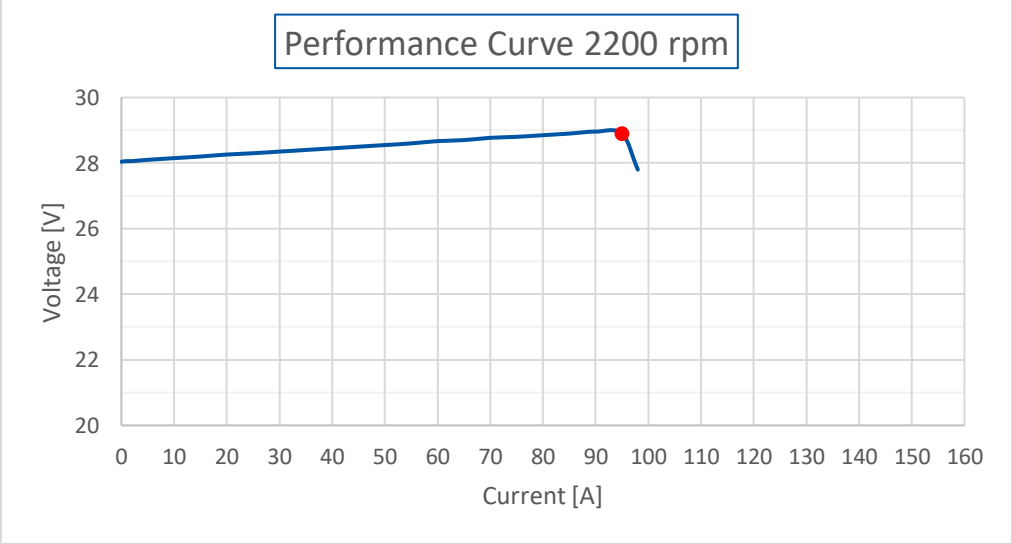

Figure 4-97 : Performance Curve 912iS 150 A (28 V) 2200 rpm

4.2.4.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 4,177 rpm alternator speed.

Peak power is 3,074 W marked in chart as red dot.

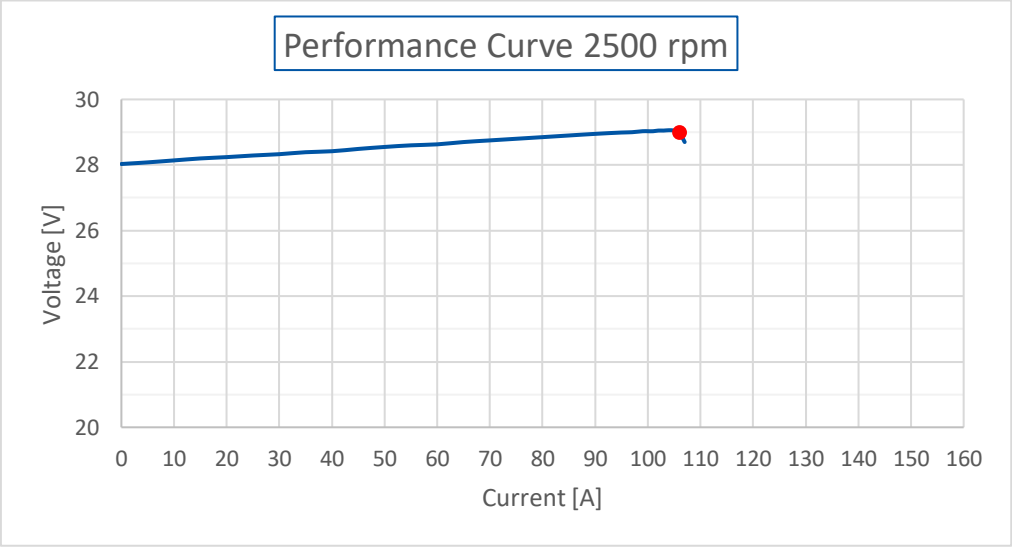

Figure 4-98 : Performance Curve 912iS 150 A (28 V) 2500 rpm

4.2.4.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 5,012 rpm alternator speed.

Peak power is 3,499 W marked in chart as red dot.

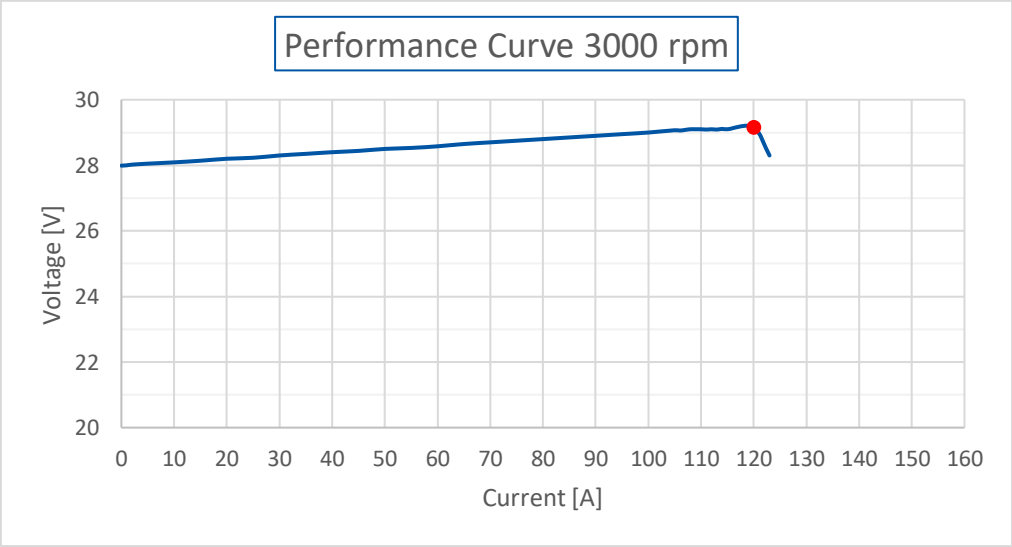

Figure 4-99 : Performance Curve 912iS 150 A (28 V) 3000 rpm

4.2.4.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 5,848 rpm alternator speed.

Peak power is 3,844 W marked in chart as red dot.

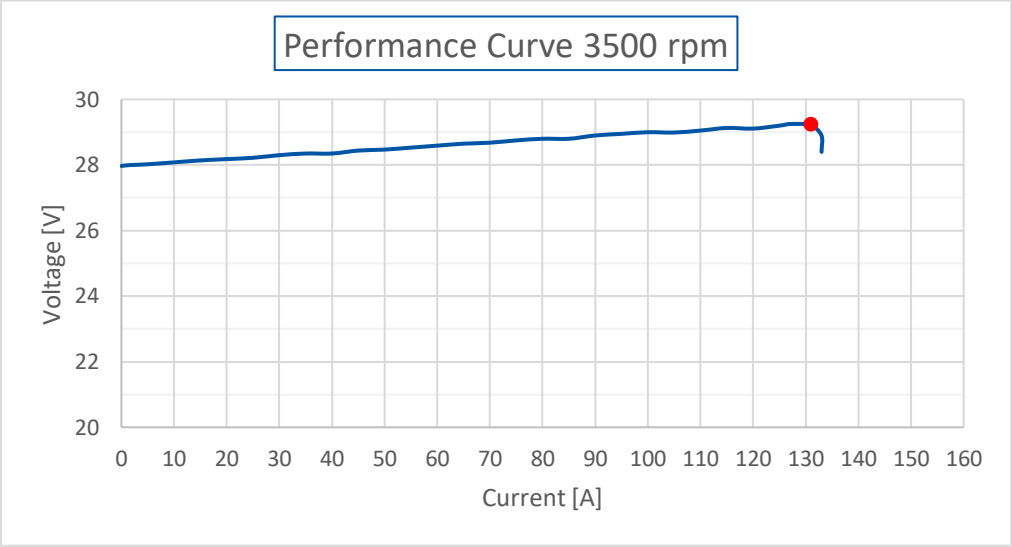

Figure 4-100 : Performance Curve 912iS 150 A (28 V) 3500 rpm

4.2.4.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 6,683 rpm alternator speed.

Peak power is 4,013 W marked in chart as red dot.

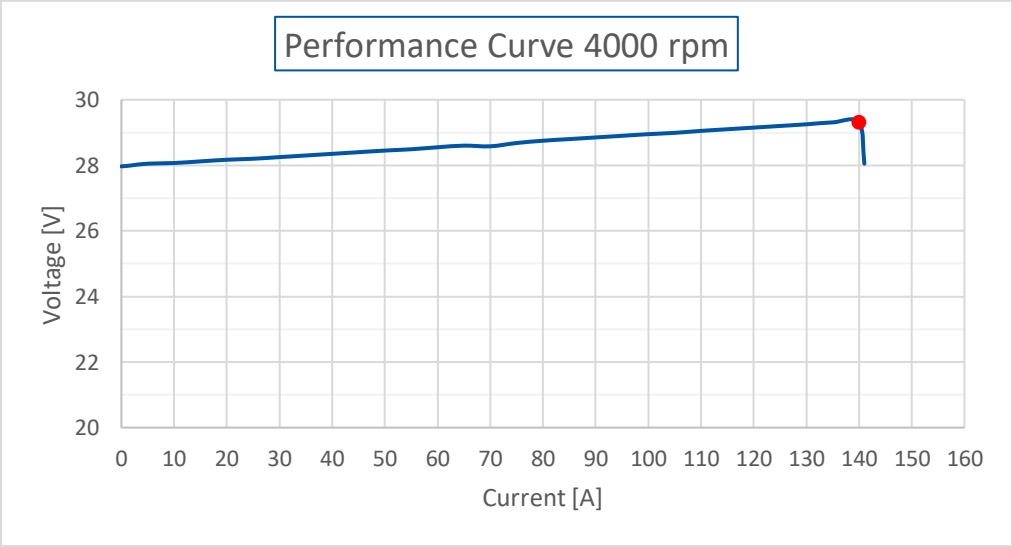

Figure 4-101 : Performance Curve 912iS 150 A (28 V) 4000 rpm

4.2.4.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 7,519 rpm alternator speed.

Peak power is 4,256 W marked in chart as red dot.

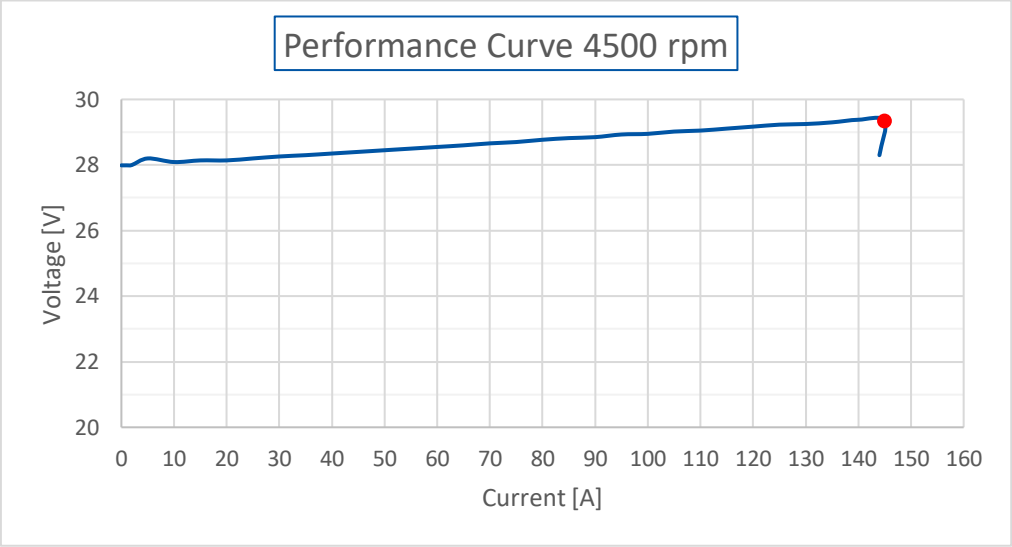

Figure 4-102 : Performance Curve 912iS 150 A (28 V) 4500 rpm

4.2.4.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 8,354 rpm alternator speed.

Peak power is 4,263 W marked in chart as red dot.

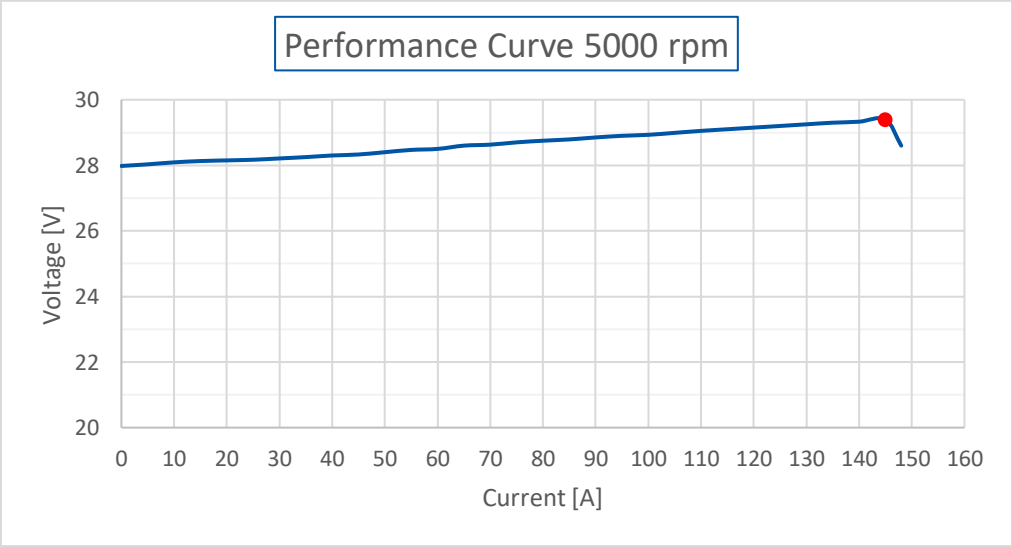

Figure 4-103 : Performance Curve 912iS 150 A (28 V) 5000 rpm

4.2.4.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 8,688 rpm alternator speed.

Peak power is 4,290 W marked in chart as red dot.

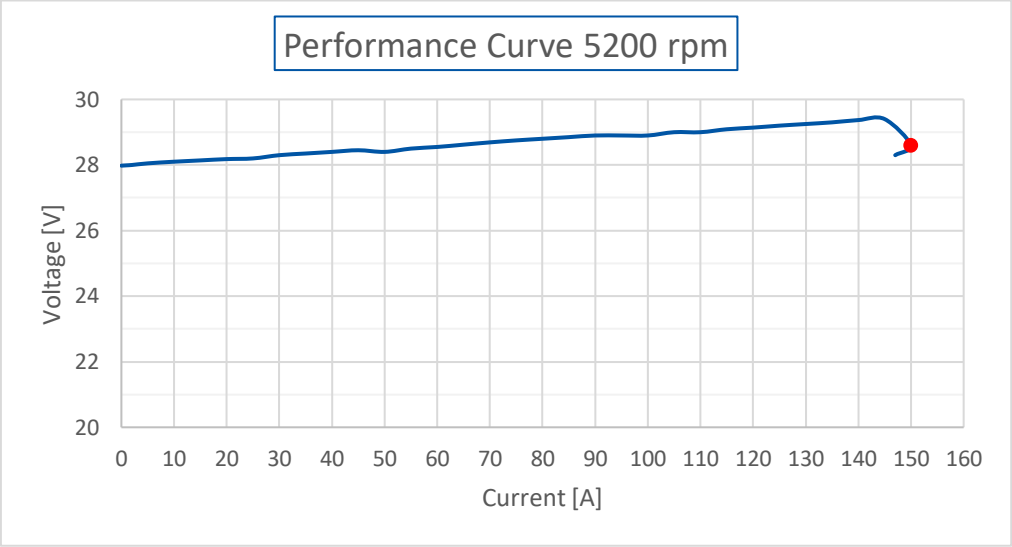

Figure 4-104 : Performance Curve 912iS 150 A (28 V) 5200 rpm

4.2.4.10 5,600 ENGINE RPM

Engine speed 5,600 rpm corresponds to 9,356 rpm alternator speed.

Peak power is 4,469 W marked in chart as red dot.

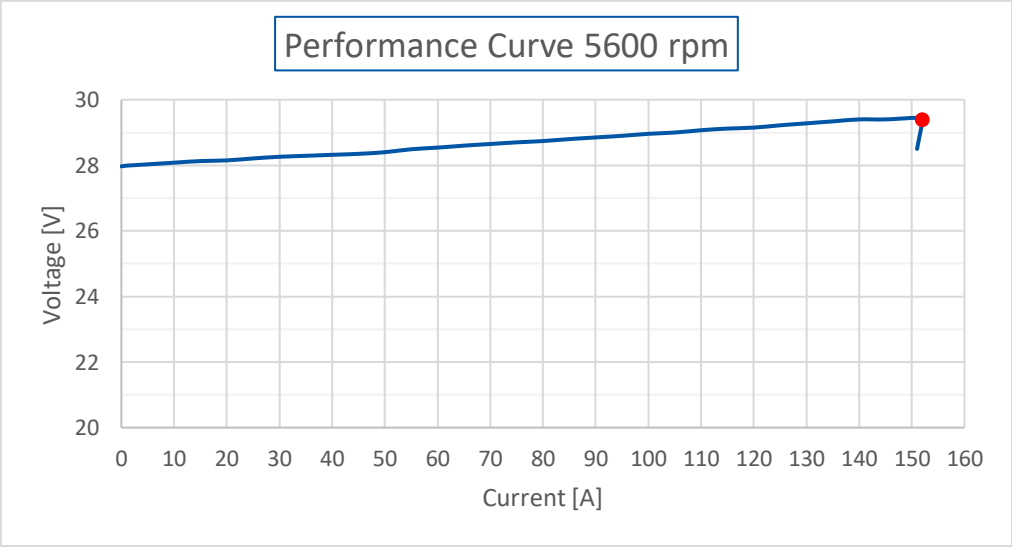

Figure 4-105 : Performance Curve 912iS 150 A (28 V) 5600 rpm

4.2.4.11 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 9,691 rpm alternator speed.

Peak power is 4,541 W marked in chart as red dot.

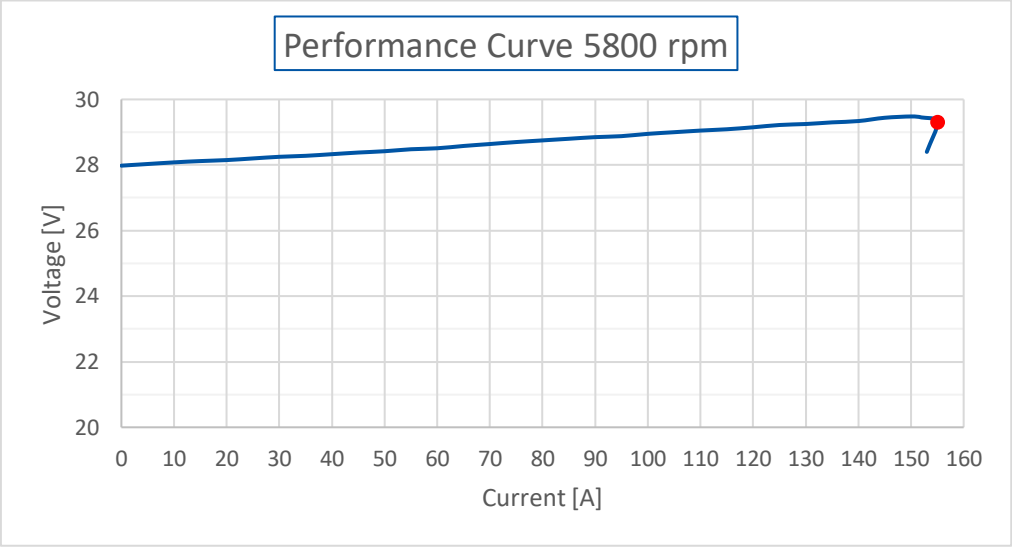

Figure 4-106 : Performance Curve 912iS 150 A (28 V) 5800 rpm

4.2.5 PERFORMANCE CURVES 912IS 150 A (14 V)

4.2.5.1 1,800 ENGINE RPM

Engine speed 1,800 rpm corresponds to 3,007 rpm alternator speed.

Peak power is 1,357 W marked in chart as red dot.

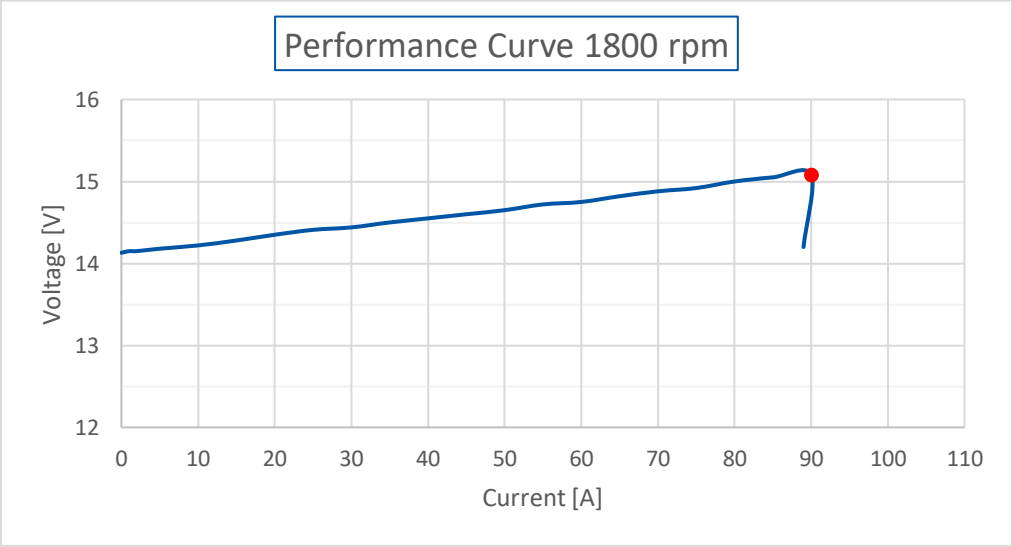

Figure 4-107 : Performance Curve 912iS 150 A (14 V) 1800 rpm

4.2.5.2 2,200 ENGINE RPM

Engine speed 2,200 rpm corresponds to 3,676 rpm alternator speed.

Peak power is 1,404 W marked in chart as red dot.

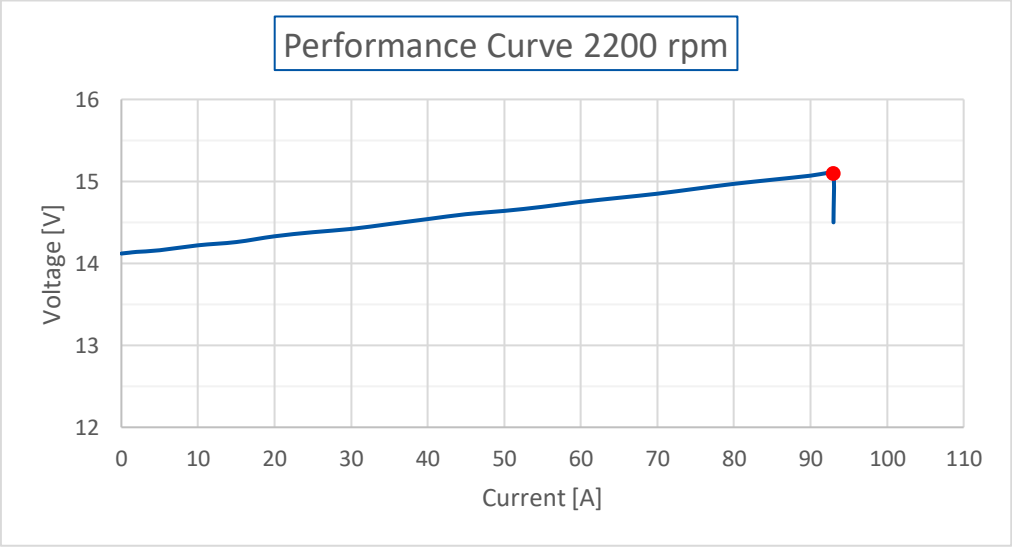

Figure 4-108 : Performance Curve 912iS 150 A (28 V) 2200 rpm

4.2.5.3 2,500 ENGINE RPM

Engine speed 2,500 rpm corresponds to 4,177 rpm alternator speed.

Peak power is 1,434 W marked in chart as red dot.

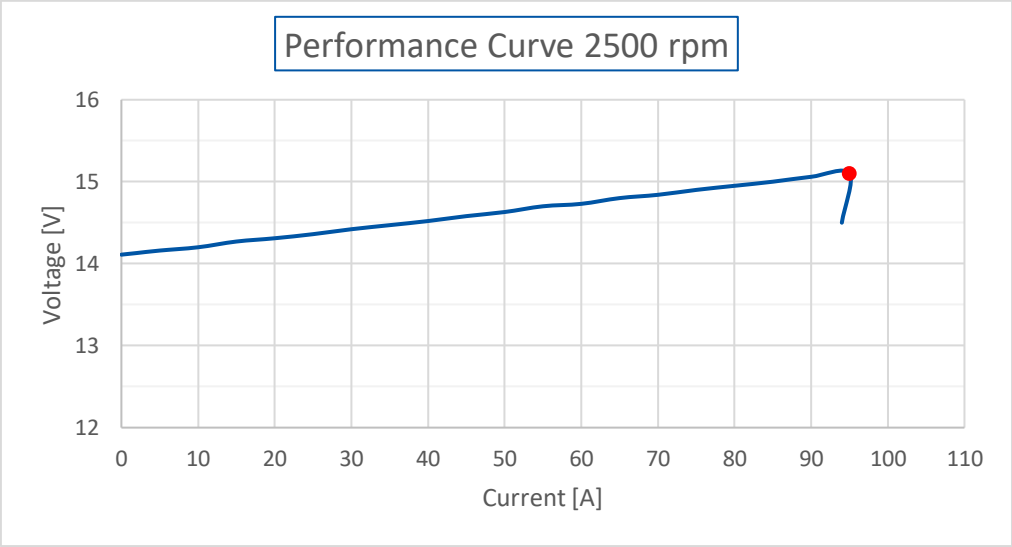

Figure 4-109 : Performance Curve 912iS 150 A (28 V) 2500 rpm

4.2.5.4 3,000 ENGINE RPM

Engine speed 3,000 rpm corresponds to 5,012 rpm alternator speed.

Peak power is 1,467 W marked in chart as red dot.

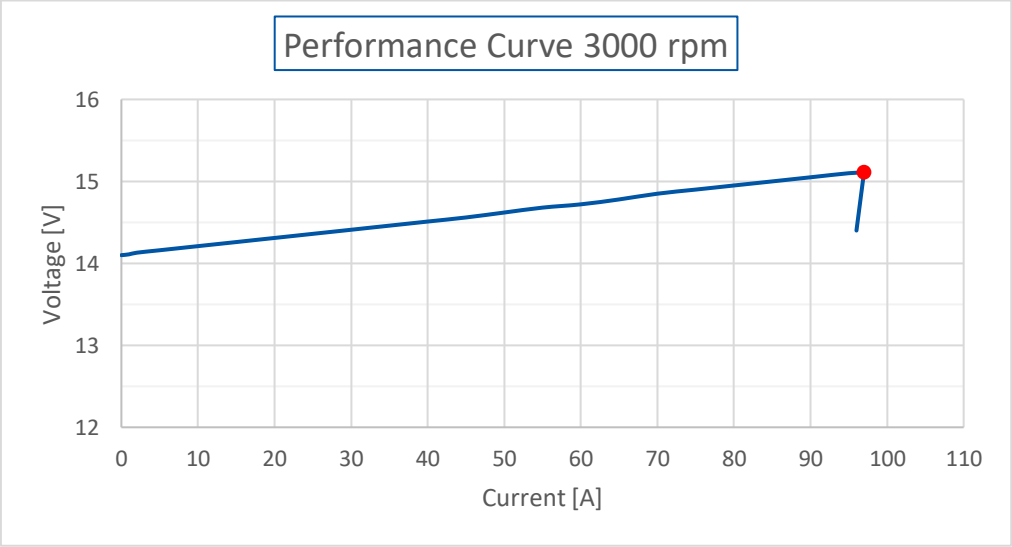

Figure 4-110 : Performance Curve 912iS 150 A (28 V) 3000 rpm

4.2.5.5 3,500 ENGINE RPM

Engine speed 3,500 rpm corresponds to 5,848 rpm alternator speed.

Peak power is 1,485 W marked in chart as red dot.

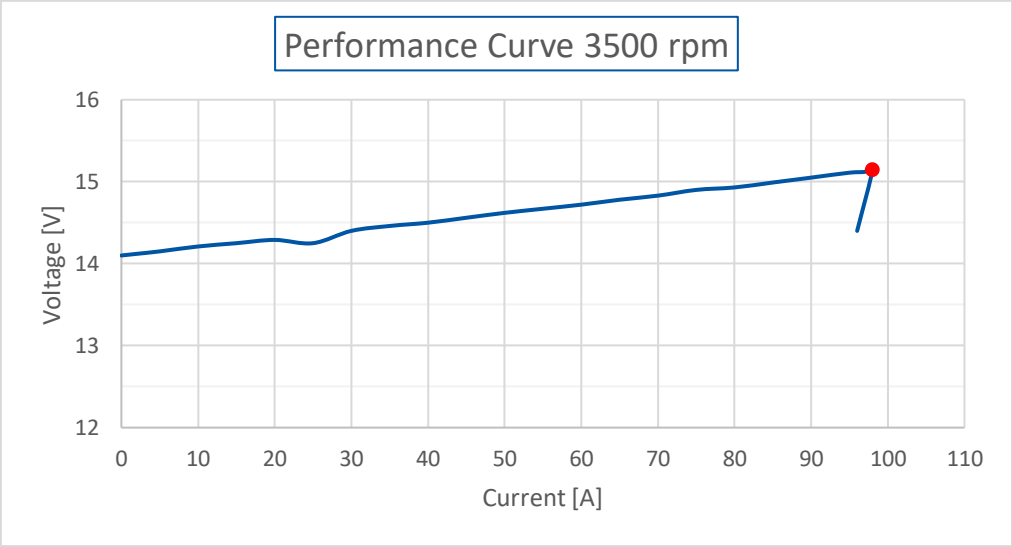

Figure 4-111 : Performance Curve 912iS 150 A (28 V) 3500 rpm

4.2.5.6 4,000 ENGINE RPM

Engine speed 4,000 rpm corresponds to 6,683 rpm alternator speed.

Peak power is 1,483 W marked in chart as red dot.

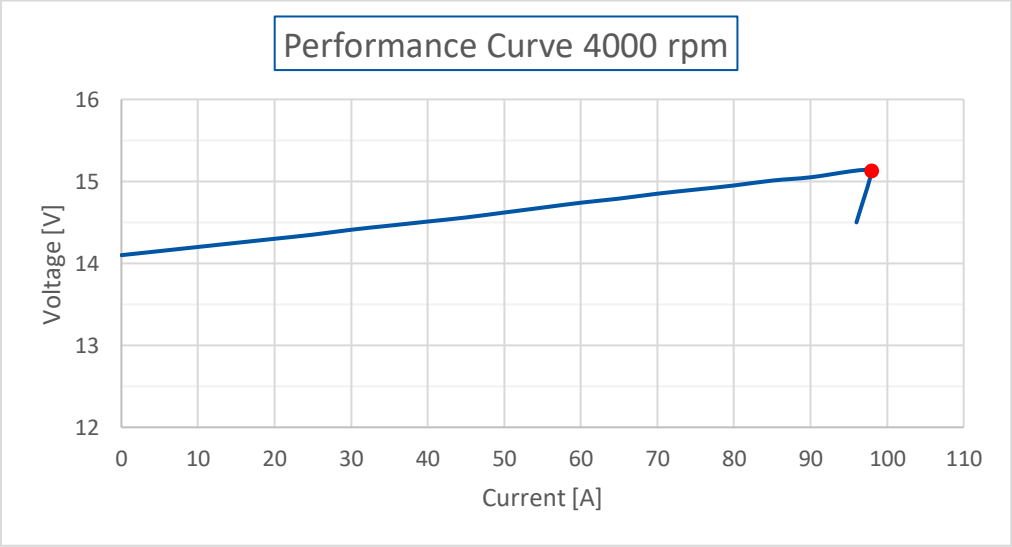

Figure 4-112 : Performance Curve 912iS 150 A (28 V) 4000 rpm

4.2.5.7 4,500 ENGINE RPM

Engine speed 4,500 rpm corresponds to 7,519 rpm alternator speed.

Peak power is 1,501 W marked in chart as red dot.

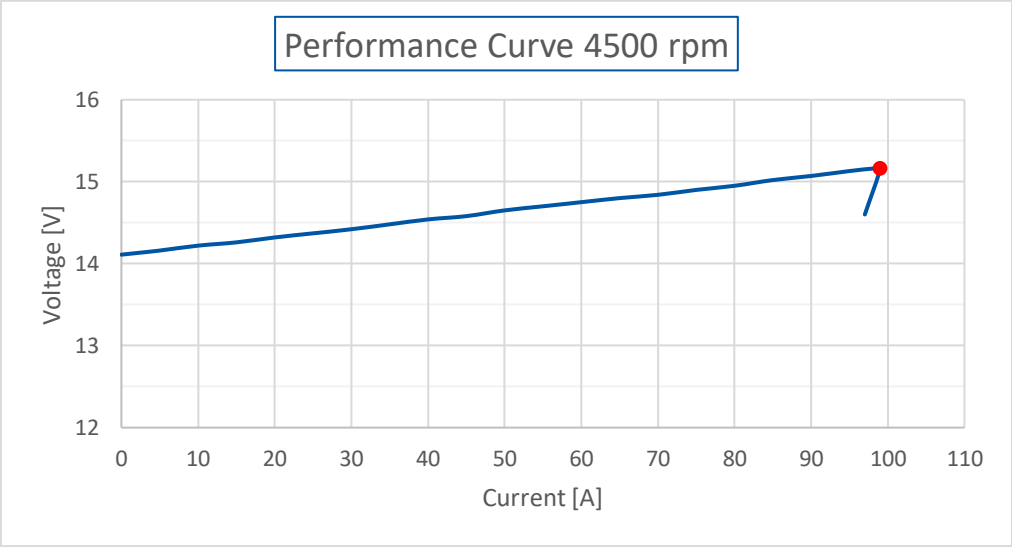

Figure 4-113 : Performance Curve 912iS 150 A (28 V) 4500 rpm

4.2.5.8 5,000 ENGINE RPM

Engine speed 5,000 rpm corresponds to 8,354 rpm alternator speed.

Peak power is 1,597 W marked in chart as red dot.

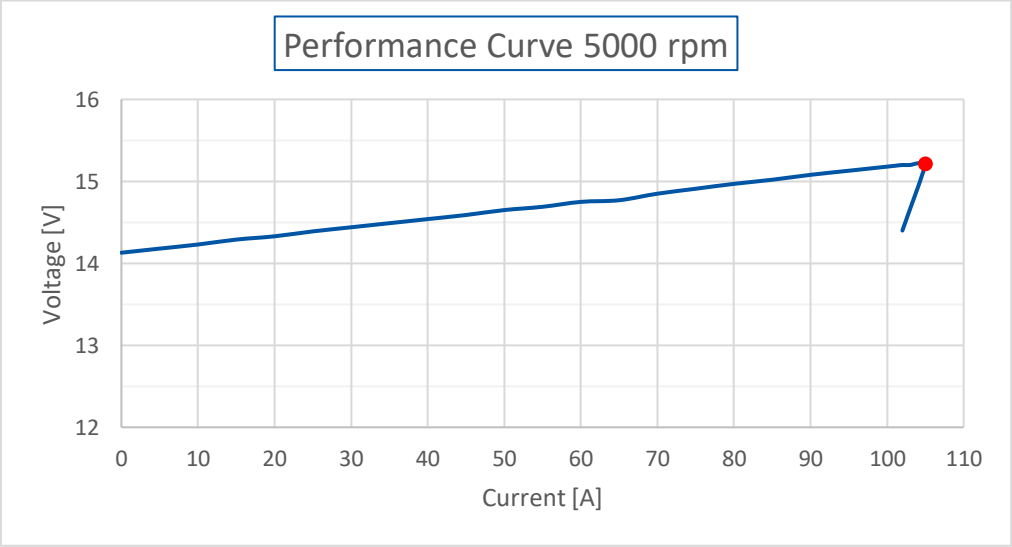

Figure 4-114 : Performance Curve 912iS 150 A (28 V) 5000 rpm

4.2.5.9 5,200 ENGINE RPM

Engine speed 5,200 rpm corresponds to 8,688 rpm alternator speed.

Peak power is 1,566 W marked in chart as red dot.

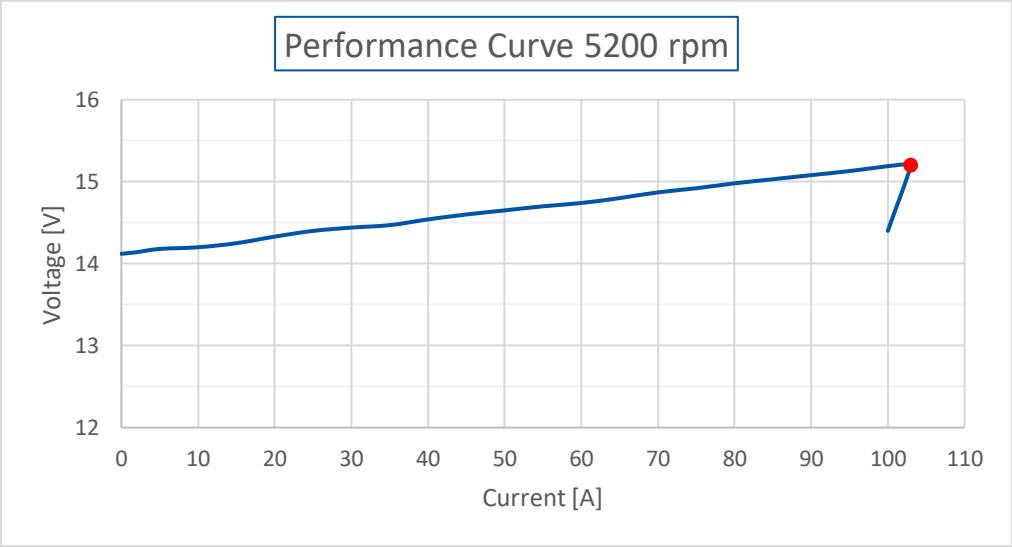

Figure 4-115 : Performance Curve 912iS 150 A (28 V) 5200 rpm

4.2.5.10 5,400 ENGINE RPM

Engine speed 5,400 rpm corresponds to 9,022 rpm alternator speed.

Peak power is 1,571 W marked in chart as red dot.

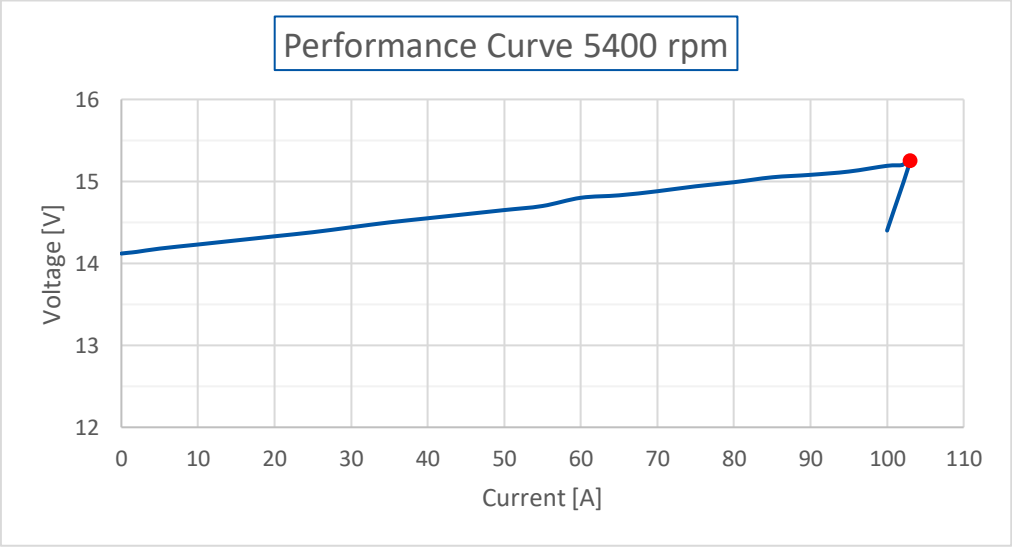

Figure 4-116 : Performance Curve 912iS 150 A (28 V) 5400 rpm

4.2.5.11 5,800 ENGINE RPM

Engine speed 5,800 rpm corresponds to 9,691 rpm alternator speed.

Peak power is 1,583 W marked in chart as red dot.

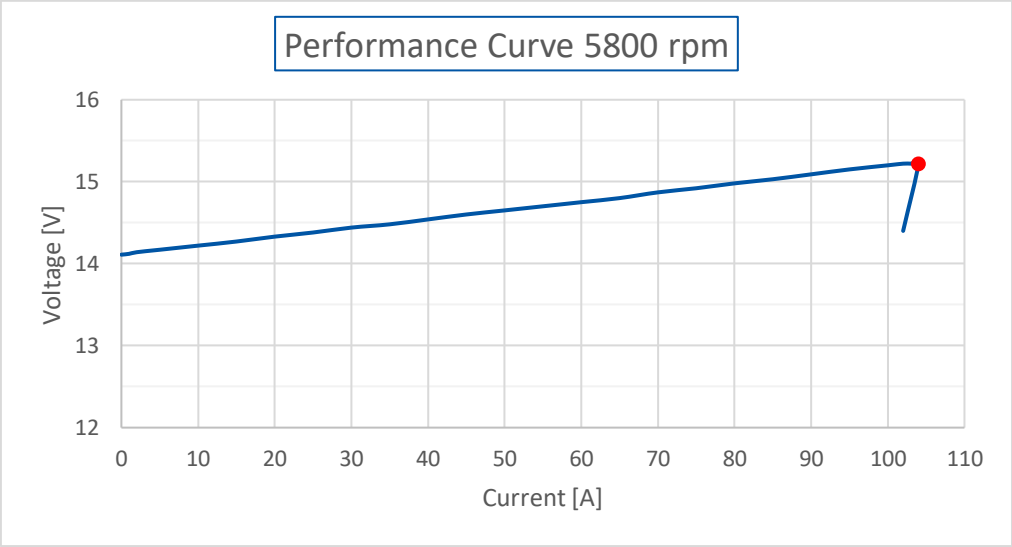

Figure 4-117 : Performance Curve 912iS 150 A (28 V) 5800 rpm

4.3 PERFORMANCE OVER ENGINE SPEED WITH 915IS ENGINES

4.3.1 PERFORMANCE OVER ENGINE SPEED 915IS 20 A (28 V)

The following chart shows the alternators power and current output over engine speed.

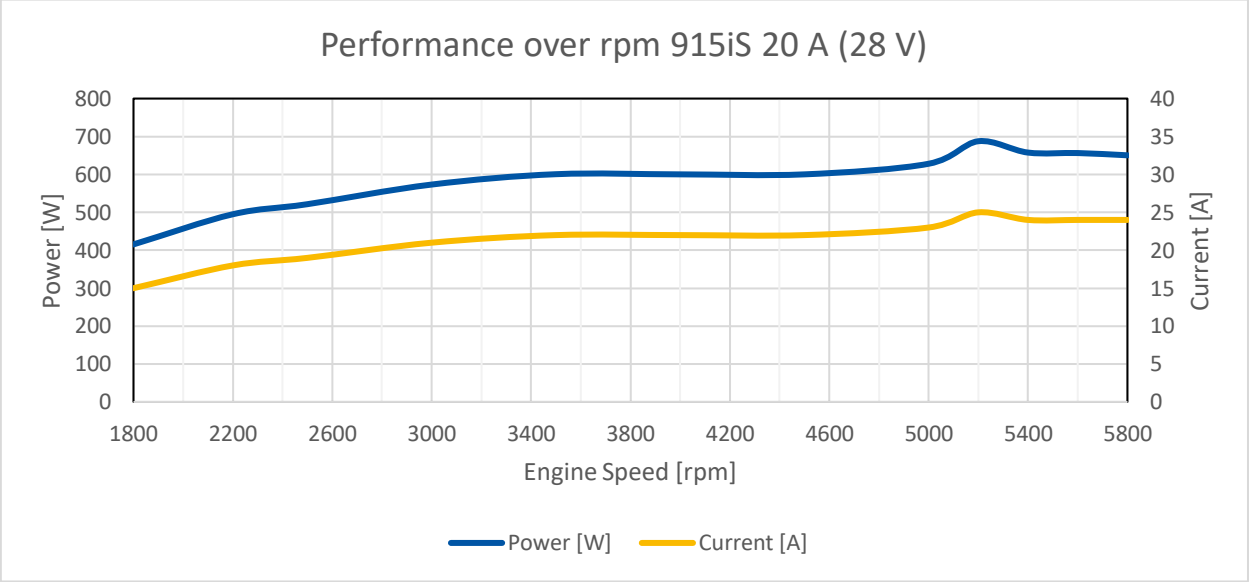

Figure 4-118 : Performance over Engine Speed 915iS 20 A (28 V)

4.3.2 PERFORMANCE OVER ENGINE SPEED 915IS 70 A (28 V)

The following chart shows the alternators power and current output over engine speed.

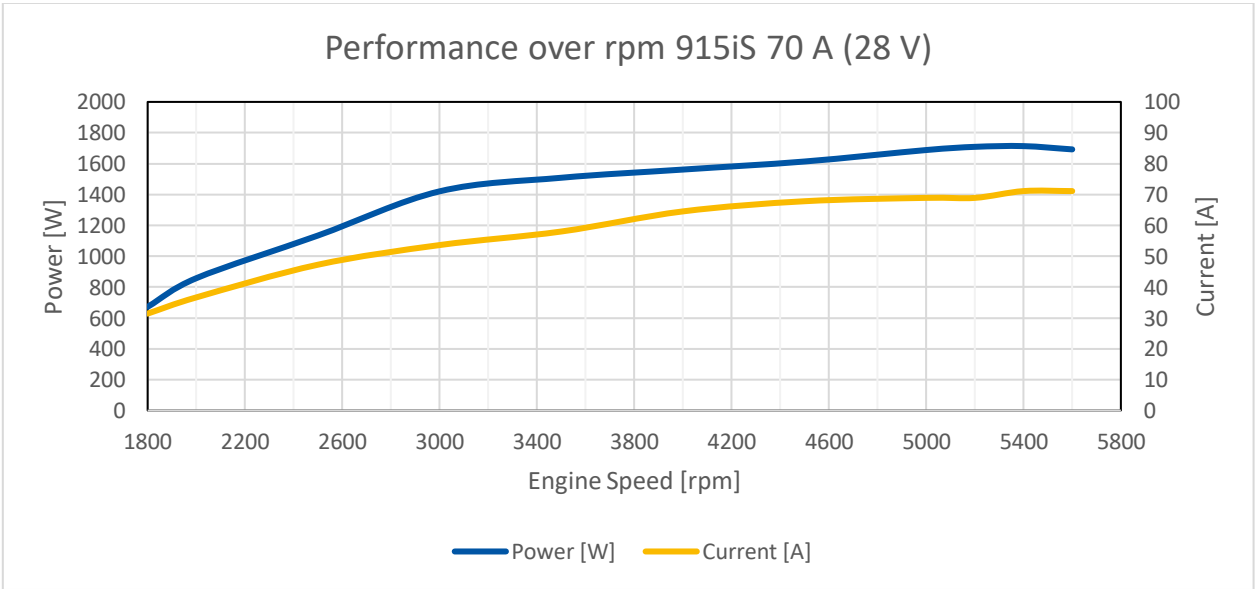

Figure 4-119 : Performance over Engine Speed 915iS 70 A (28 V)

4.3.3 PERFORMANCE OVER ENGINE SPEED 915IS 70 A (14 V)

The following chart shows the alternators power and current output over engine speed.

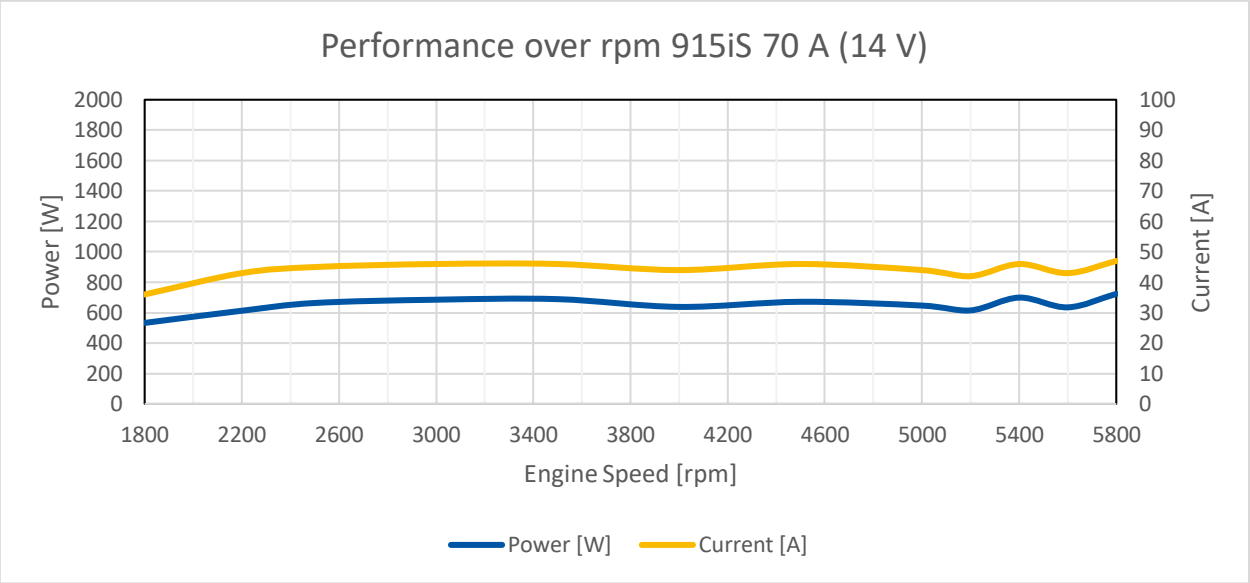

Figure 4-120 : Performance over Engine Speed 915iS 70 A (14 V)

4.3.4 PERFORMANCE OVER ENGINE SPEED 915IS 150 A (28 V)

The following chart shows the alternators power and current output over engine speed.

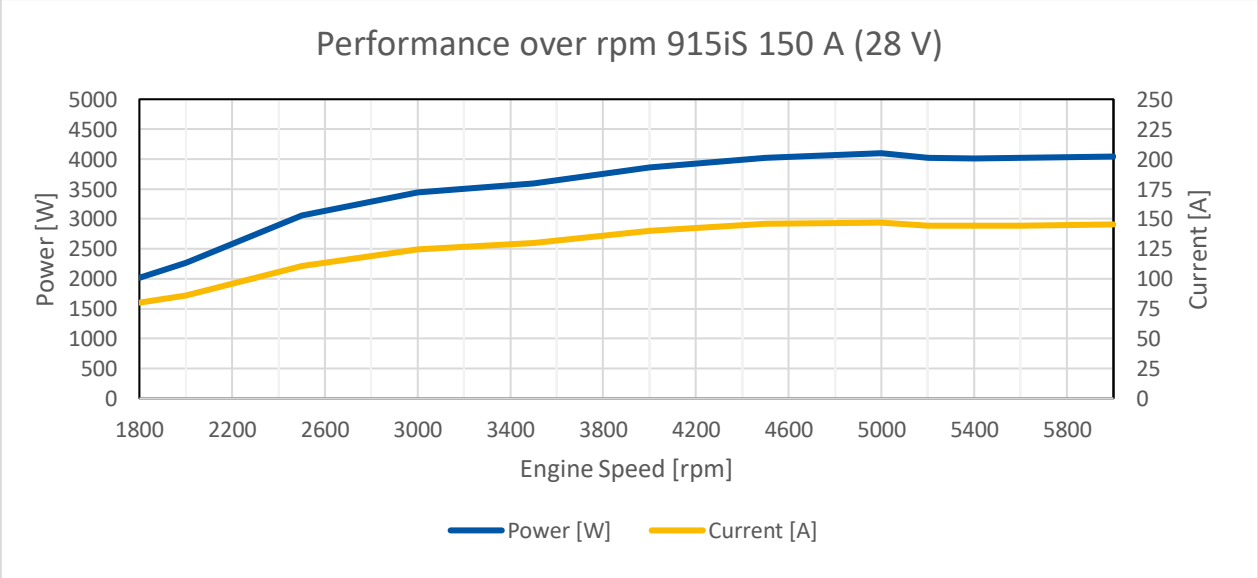

Figure 4-121 : Performance over Engine Speed 915iS 150 A (28 V)

4.3.5 PERFORMANCE OVER ENGINE SPEED 915IS 150 A (14 V)

The following chart shows the alternators power and current output over engine speed.

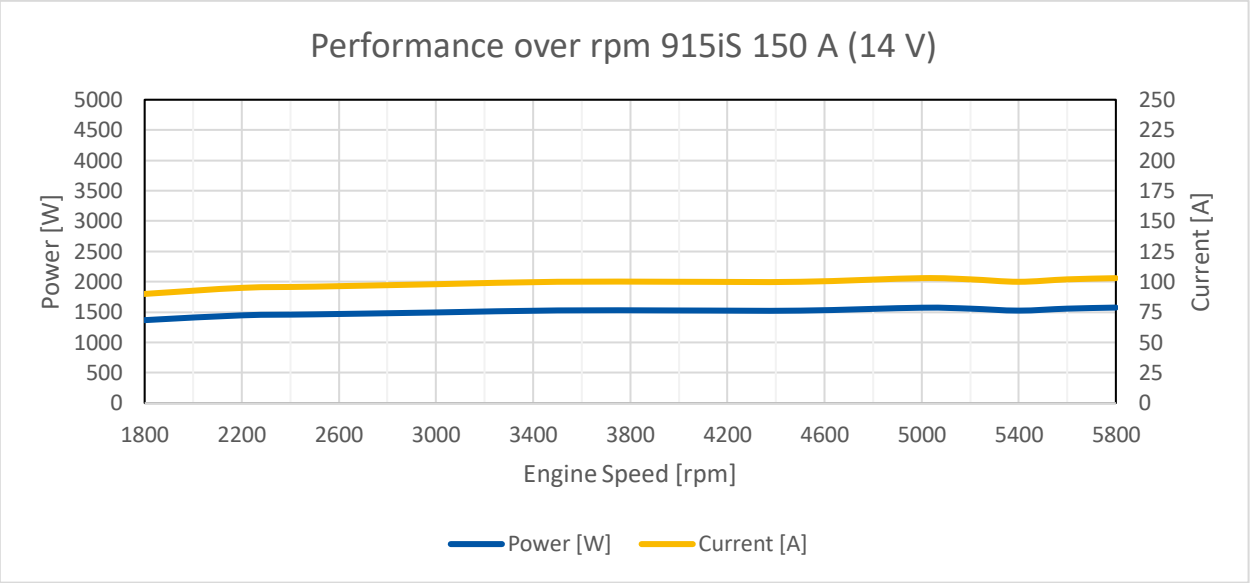

Figure 4-122 : Performance over Engine Speed 915iS 150 A (14 V)

4.4 PERFORMANCE OVER ENGINE SPEED WITH 912IS ENGINES

4.4.1 PERFORMANCE OVER ENGINE SPEED 912IS 20 A (28 V)

The following chart shows the alternators power and current output over engine speed.

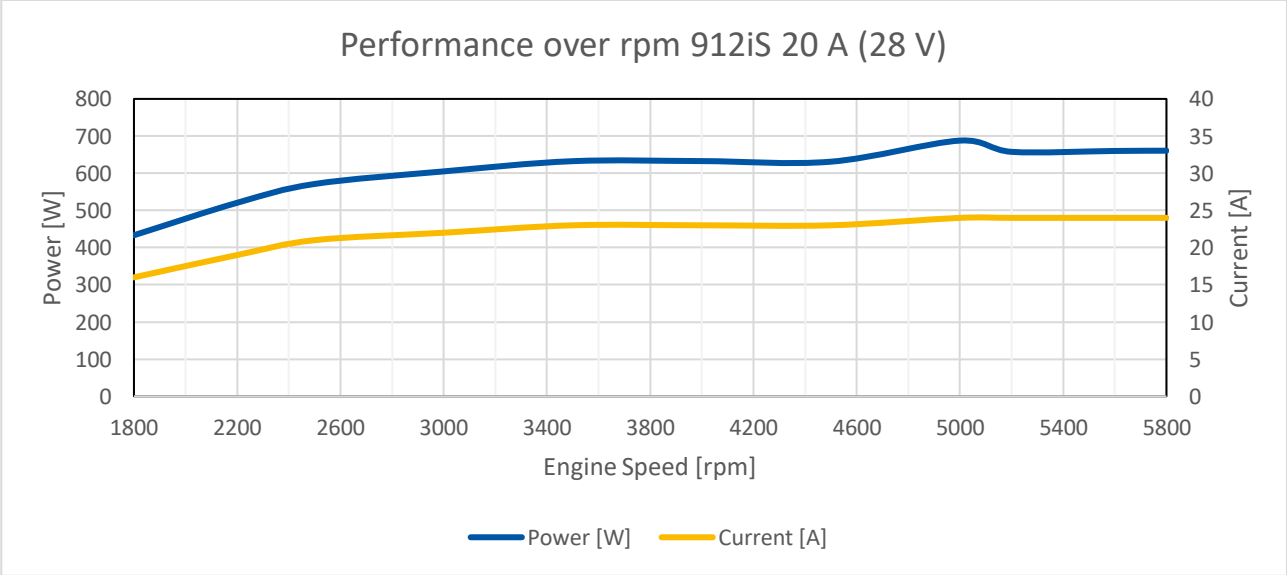

Figure 4-123 : Performance over Engine Speed 912iS 20 A (28 V)

4.4.2 PERFORMANCE OVER ENGINE SPEED 912IS 70 A (28 V)

The following chart shows the alternators power and current output over engine speed.

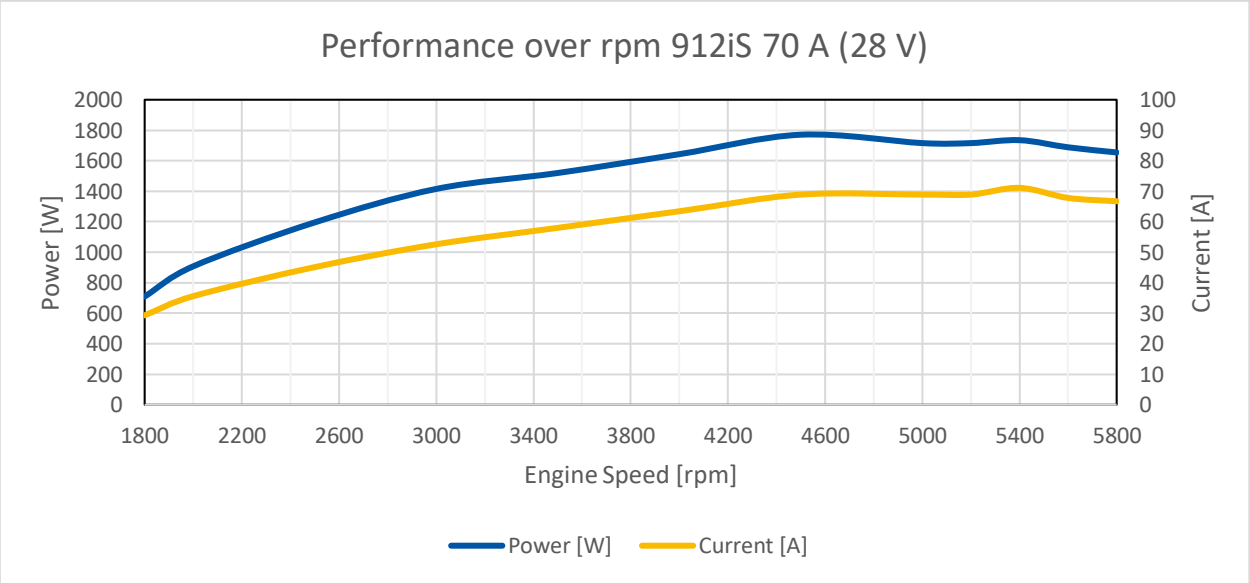

Figure 4-124 : Performance over Engine Speed 912iS 70 A (28 V)

4.4.3 PERFORMANCE OVER ENGINE SPEED 912IS 70 A (14 V)

The following chart shows the alternators power and current output over engine speed.

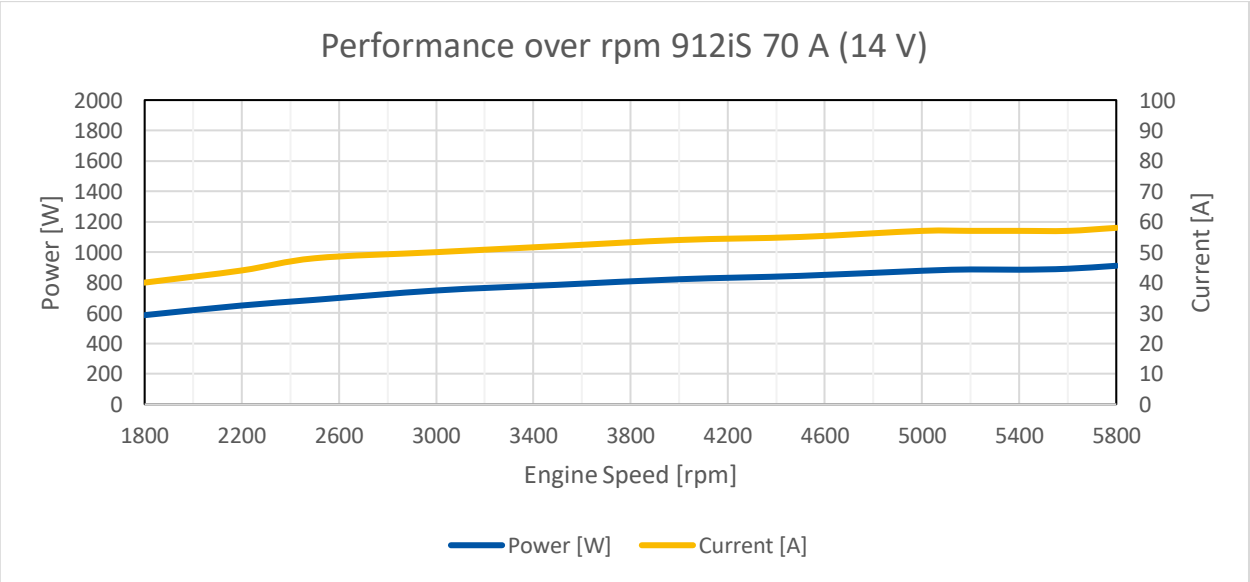

Figure 4-125 : Performance over Engine Speed 912iS 70 A (14 V)

4.4.4 PERFORMANCE OVER ENGINE SPEED 912IS 150 A (28 V)

The following chart shows the alternators power and current output over engine speed.

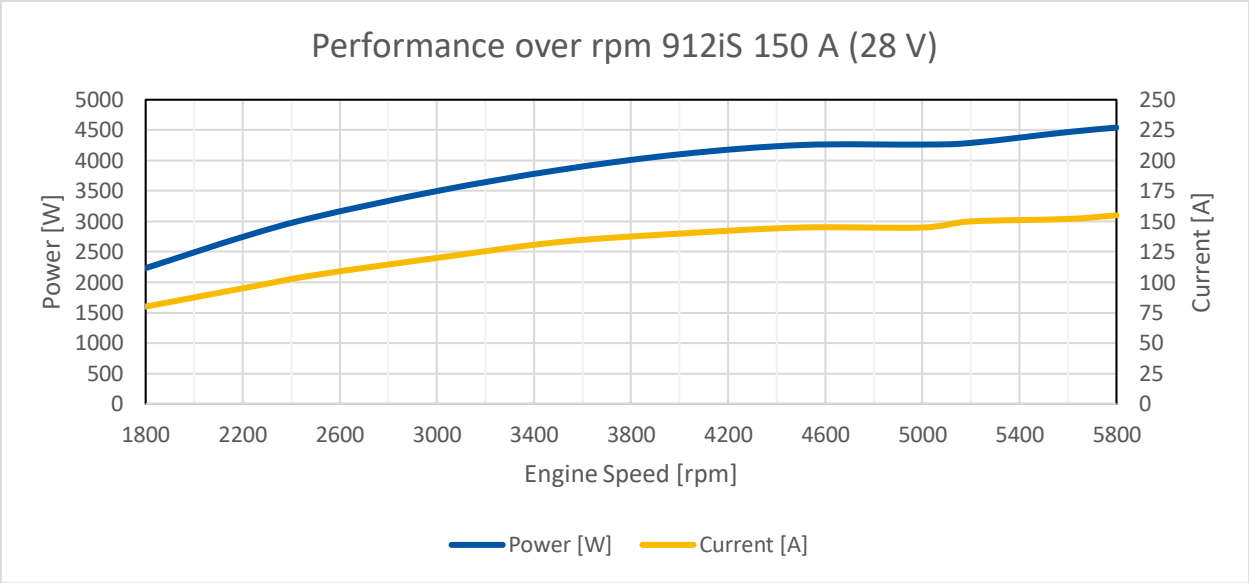

Figure 4-126 : Performance over Engine Speed 912iS 150 A (28 V)

4.4.5 PERFORMANCE OVER ENGINE SPEED 912IS 150 A (14 V)

The following chart shows the alternators power and current output over engine speed.

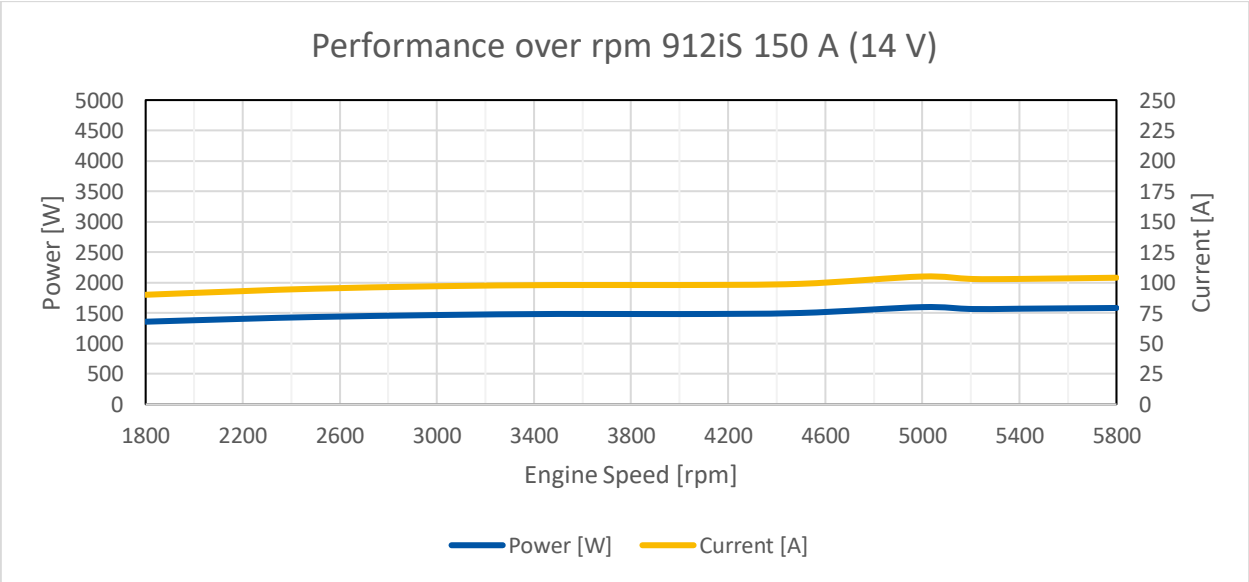

Figure 4-127 : Performance over Engine Speed 912iS 150 A (14 V)

5 CONCLUSION

5.1 TEST SUMMARY

The tests have shown that all alternators deliver the specified maximum current in 28 V configuration, and even sometimes exceeded those, with both the Rotax 915iS and Rotax 912iS engine. Power curves of the same alternators vary slightly between the two engines due to different gear box ratios and resulting output rpm. The tests also showed that the Hartzell Alternators (70 A and 150 A) delivered less power in 14 V configuration but a more even output of power as well as current. The 20A HC-Cargo alternator also delivered a verry even power and current output throughout the rpm band of the engine. It also delivered its nominal power output at a comparatively low rpm. The RSFS alternator mounting kits proved to fit every engine with every alternator and were easy to install.

The electrical test setup with batteries provided a realistic simulation of the electrical system of an aircraft and protected the regulators form damage by voltage peaks. Both the electrical and the passive load were working verry good together during the testing. The current measurement via the shunt resistor and the voltage measurement via the internal voltmeter of the electrical load delivered sufficiently precise data.

5.2 FUTURE OUTLOOK

Since all alternators met expectations and sometimes even exceeded them, RSFS can now officially launch the alternator product family for Rotax 915iS and Rotax 912iS engines. The test setup satisfied with its ability to produce precise data in a user-friendly way and can be used for further testing in the future. All parts of the mounting kits were produced with high quality standards and always fit. Therefore, RSFS can rely on its chosen suppliers for the serial production. There is already an additional mounting kit in planning stage which will be able to accommodate two Hartzell ALT-FLX alternators to generate a nominal output of 300 A for both Rotax 915iS and Rotax 912iS engines.

End of Document