5.3

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1. LY Single Motor and Propeller Test Platform4	ł
2. WF-CO Coaxial Motor and Propeller Test Platform	L

I. Disclaimer

This disclaimer applies to users and authorized distributors who have purchased the product.

Read the disclaimer carefully before using this product. By using this product, you hereby agree to this disclaimer and signify that you have read it fully. Please use this product in strict accordance with the manual and guidance. Our company assumes no liability for damage or injuries incurred directly or indirectly from using, installing or refitting this product improperly.

1. User should set the parameters in accordance with the manual.

2. User can update the software.

3. Manufacturer parameters are used for initial calibration . User CAN NOT change the

settings.

4. Any alteration or destruction of the internal components is prohibited. Our company assumes no liability.

5. MUST use the correct software in case of any unnecessary damage caused by compatibility difference.

II. Notice

The high-speed spinning propeller may cause injury or damage to the product or other

property. Ensure safety when using the test bench.

1. The test bench should be placed in a separate space. Ensure safety before any operation.

Without operator's permission, other people are NOT allowed to approach in case of any personal

injury.

2. DO NOT exceed the max range of the test stand.

3. DO NOT touch or approach to the rotating motor or propeller.

4. Check the propeller and motor rotation before using the test bench .

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5. Ensure all components are in good condition and replace the aging or damages emponent.

6. Make sure operator is NOT under the influence of anesthesia, alcohol, drugs or suffering from

dizziness, fatigue, nausea or any other conditions, whether physical or mental, that could impair

your ability to operate the test stand safely.

7. Stop the operation when the software issues an alarm.

III. Introduction

1. The software is designed for data acquisition and data process.

2. The software can acquire the data of thrust, torque, power consumption, motor efficiency, propeller

efficiency and engine efficiency.

3. Real-time data display and data storage, storage frequency up to 10Hz.

4. Throttle control included. User can clear data, read data and set parameters, etc.

5.Compatible with **Windows system**. Contact us to download the correct software.

6. History data can be read in Chart. User can see the relevant curves and process the data.

IV. Installation

1. Operating System

- \bigcirc CPU: 2Ghz and above
- ◎ Memory: 2G and above
- ©Video card: No requirement
- ◎ Screen: 1366*768 resolution or above
- © Operation system: Windows7, Windows8, Windows10
- ©Software dependencies: Excel, .NetFrameWork4, .NetFrameWork4.6.2

2. Installation and Initialization

ω	MET-V5.3 Setup.rar
	MET-ReadMe.txt

2021,	/2/8 1	3:45
2021,	/2/24	9:05

WinRAR 压缩文件 2,475 KB 3 KB

文本文档

Fig 2. Software Install Pack

Double Click MET-V5.3.msi to run the installer. Follow the instructions to complete installation.

V. Operation

Met-V5.3 software supports LY Single motor and WF-CO Coaxial motors testing.

Open the software, user can choose the type under "Bench Type" Tab, as shown in Fig.2. Click "Apply", it will prompt "Done. Please restart". Click "OK", it will restart and switch to the correct type.

MET SETTINGS		
System Settings		
Safeguard	Bench Type LY-Single Bench Model: 30 KG	
Auto Test Test Info	Theme Color: LY-Single Language: English Apply WF-CO-Double	
	PWM Range: 1100 - 1900	
	Motor Pairs: 4 🕜 Number of blades: 2	
	Voltage reference offset: 0	
	Set Params Read Params Reboot Update	

Fig.2 System Setting

(I) LY Single Motor Testing

1. Main interface



Fig.3 LY Single Motor Testing

Fig. 3 shows the main interface of the software ,which includes device control,data monitor, chart monitor, and device information,etc.

Device Control Settings:

"TT CLR" -- Clear Thrust and Torque

"AS CLR" -- Clear Airspeed

"EP CLR" -- Clear Power Consumption

"EC CLR" -- Clear Current

"Advanced" -- Advanced Throttle

"Unlock" -- Unlock Throttle

Note: Function disable when the button in orange.

(1) Clear Thrust and Torque

Clear thrust and torque before test, otherwise the test data may not accurate. There may be a difference during the test due to ESC connection or other reasons. User can move the throttle and then stop to check the thrust.

(2) Clear Airspeed

Clear airspeed before test.

(3) Clear Power Consumption

Clear Power Consumption before test if user needs to recalculate power consumption.

(4) Lock/Unlock Throttle

User **CAN NOT** issue a command when throttle is locked. Throttle output is constantly the min value. The duration of the tool will be cleared while throttle unlocking. The background data will be saved as a log. When throttle is unlocked, user CAN NOT clear thrust/torque, airspeed, and power consumption, but able to do automatic test. When throttle is locked, user CAN NOT do automatic test, but able to clear thrust/torque, airspeed, and power consumption.

Note: The command will be rejected if there's a throttle input signal.

"Data Monitor": shows the data acquired from the test bench,data update frequency is 3Hz

"Device Information": shows the information of the test bench and warning information.

"Chart Monitor": shows the data in the chart, data refresh frequency is 1Hz

Note 1: Some information may not be displayed, such as optical speed, air speed, barometric pressure, air humidity, etc. These can be displayed only if they are included in hardware configuration.

Note 2: Connect the USB cable after running the software, the software will detect the tool and connect automatically.

2. Test data

◎ Voltage (V): Supply Voltage of the motor(Collected at power plug)

© Current (A): The current of propulsion system. (ESC DC input)

[◎]Thrust (g): Axial tension generated by the spinning propeller.

©Torque (N*M): The Anti-torque generated by air on motor and propeller

◎ Total Power(W): The power consumption of the propulsion system

© Speed (rpm): Revolutions per minute

 \bigcirc Motor Temperature (°C): Real-time temperature of the infrared temperature point (usually irradiates on the motor case)

© Throttle input (%): ESC Throttle input. (Throttle input is proportional to PWM)

◎ Motor output (W): Equals to the shaft power, (torque* PWM)

◎ Motor efficiency (%): Shaft power/ Total Power.(It refers to the efficiency of Motor and ESC)

◎ Propeller efficiency(g/w): The unit power / thrust generated by the propeller. Unit: g/w

© System efficiency(g/w): The unit power/ the thrust generated by the propulsion

system(Unit:g/w). System efficiency=propeller efficiency*Motor efficiency.

Test data below is for Wind Tunnels Testing

◎ Propeller Output Power(W): thrust*airspeed

◎ Propeller Efficiency(%): Propeller output power/Shaft power.

©System Efficiency(%): Propeller Output Power/Total Power or Propeller Constructions Motor

efficiency.

3. Throttle Control

User can move the throttle slider to control the throttle

Advanced throttle control: increase throttle, PWM and set throttle output. User can Input

PWM, then press "Enter" to set PWM value.

Notice: **DO NOT** exceed max PWM range.

ADVANCED	
Throttle(%):	100
Increment(%): 10	Throttle + Throttle -
PWM: 1200	Now PMW: 1200 (1200 - 1900
PWM increment: 100	PWM + PWM -
Lock	Exit

Fig.4 Advanced Throttle Interface

Note: Unlock the tool first, otherwise user CAN NOT control throttle.

4. Data Acquisition and Storage

MET-V5.3 support automatic and manual data acquisition and storage. User can click "Save" to save a record, which is the average within the certain time.

When user runs Automatic data acquisition, the software will store the data automatically.

Manual data acquisition, click "start/stop" to record and save data

As shown in Fig. 5.

Click "Save", it will save a record. "Save" and "New Save" are disable until data acquisition completed. Each record will be saved in the same file. Click "Save New", it will start a new record and a new file. Click "Set" to set the average value, for example, set "10", click "Save", it will collect 10 records continuously.



Fig. 5

5. Automatic test

Click "Auto Test" to start the test; Click"Stop" to stop testing immediately.

User can set different throttle and keep time as shown in Fig. 6:

stem Settings afeguard	AUTO TEST						
uto Test			Dow	nload Load	Macro	Save	
est Info	Test Mode: Costum *	Increment	t(%): 10	+- Keep Times(s):	20 +-	3	
	Periods1: Cycle Costum	10	(1-100)	Keep Times(0.1s):	200	(1-2000)	х
	Periods2: Throttle(%):	20	(1-100)	Keep Times(0.1s):	200	(1-2000)	х
	Periods3: Throttle(%):	30	(1-100)	Keep Times(0.1s):	200	(1-2000)	х
	Periods4: Throttle(%):	40	(1-100)	Keep Times(0.1s):	200	(1-2000)	х
	Periods5: Throttle(%):	50	(1-100)	Keep Times(0.1s):	200	(1-2000)	х
			Ad	Ы			

Fig. 6 Automatic Test

Test modes: increase, cycle and custom modes.

Increase mode: stop testing when throttle range reaches 100%.

Cycle mode: hold up the "Keep time" when throttle reaches 100%, and then decrease to 0% and stop testing.

Custom mode: "Increment" and "Keep Time" are invalid. User can set the throttle and keep time of each period. Additionally, user can define the settings in custom mode.

6. Data Analysis

The log(CSV file) will be saved in "My computer/Document/MET Chart/Log" after test finished and the tool locked.

(1) Data Analysis (Chart):

System Settings	SAFEGUARD	
Safeguard Auto Test Test Info	Protection mode: Warning and closi: *	Enable
	Vol Lower Limit: 10.3 V	Current Upper Limit: 100 A
	Motor TEMP Upper Limit: 70 *C	Thrust Upper Limit: 20000 gf
	Power Upper Limit: 50000 W	RPM Upper Limit: 40000 RPM
	Power Consumed Upper Limit: 40000 mAh	RPM Lower Limit: 100 RPM
	Note: 1.If the lower speed limit is triggered,but th 2.Setting the decimal is only valid for the voltage	

Fig.7 Data Analysis

The system will automatically open and load the last record after running the program.

Data Analysis displays in Chart.

User can drag the graph by pressing your Mouse. Press "Ctrl"+ Mouse to zoom in and out the curves.

User will see the detailed parameters of a specific point when move your mouse there.

Click " data view " to view the specific test data, as shown in Fig. 8 below:

mple settings mpling period 0.1 Sampling mode AW	-	App	ly	Motor I	le 🗌 Vol Power 🗌 M		☐ Thrus ☑ Torq ☑ Propeller Effect	SysEff	ect 🔽 Powe				er
Ambient Temp: Ambient humidity: barometric:	0 %HR	Run Mod Test Ti Test	ne: 2021-0	测试(10%, 12-26 09:43	1	otor Model: Cole Pairs: Blade Num:		Elec	peller Model : tric Control Model: ower Model:			DeviceID: 1 SoftVersion: 5 HardVersion: 2	3
AVGTime	Throttle	٧ol	Current	Thrus	Torque	RSpeed	Photoelectric RFM	Motor TEMT	Sys Power	Motor Power	Motor Rate	Propeller Effect	SysEffe
09:43:49.677	10	12.31	0.28	-16	0.002	2891	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:49.783	10	12.31	0.28	-16	0.002	2891	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:49.888	10	12.31	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:49.995	10	12.31	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.102	10	12.33	0.28	-16	0.002	2892	0	26.5	3.5	0.6	17.5	26.4	4.6
09:43:50.210	10	12.33	0.28	-16	0.002	2892	0	26.5	3.5	0.6	17.5	26.4	4.6
09:43:50.319	10	12.32	0.28	-16	0.002	2893	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.430	10	12.32	0.28	-16	0.002	2893	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.543	10	12.32	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.656	20	12.32	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.768	20	12.31	0.28	-16	0.002	3109	0	26.5	3.4	0.7	18.9	24.6	4.6
09:43:50.882	20	12.31	0.28	-16	0.004	4031	0	26.5	3.4	1.7	49	9.5	4.6
09:43:50.994	20	12.27	0.53	-20	0.009	4446	0	26.5	6.5	4.2	64.4	4.8	3.1
09:43:51.107	20	12.27	0.53	-31	0.009	4609	0	26.5	6.5	4.3	66.8	7.1	4.8
09:43:51.219	20	12.29	0.64	-39	0.007	4679	0	26.4	7.9	3.4	43.6	11.4	5
09:43:51.332	20	12.29	0.64	-45	0.006	4710	0	26.4	7.9	3	37.6	15.2	5.7

Fig. 8 Data Analysis (data view)

Click "File" and select a log, it will be displayed in data sheet or chart.

(2) Throttle Average

The software records the test data and eliminates unstable data by Filter setting. It calculates

the average of each throttle and forms a file.

Click "Throttle AVG", the throttle average can be saved in Excel, as shown in Fig.9.



Fig. 9 Throttle Average

Note: user can adjust the filter setting according his own propulsion system to optimize the test data.

7. Other Settings

"System Setting" contains the software and test bench configuration.

"Safeguard", it will alarm and throttle off when reaches the limits, as shown in Fig. 10 below:

MET SETTINGS			×
System Settings Safeguard	SAFEGUARD		
Auto Test Test Info	Protection mode: Warning and closh *	Enable	
	Vol Lower Limit: 10.5 V	Current Upper Limit: 100 A	
	Motor TEMP Upper Limit: 70 °C	Thrust Upper Limit: 20000 gf	
	Power Upper Limit: 50000 W	RPM Upper Limit: 40000 RPM	
	Power Consumed Upper Limit: 40000 mAh	RPM Lower Limit: 100 RPM	
	Note: 1.If the lower speed limit is triggered,but the 2.Setting the decimal is only valid for the voltage		
			_

Fig. 10 Safeguard

"Test Information", set the information of the motor, propeller, etc so that t... , tem can generate the test report automatically.

(II) WF-CO Coaxial Motors Testing

1. Main interface



Fig.11 WF-CO Coaxial motors testing

Fig. 11 shows the main interface of the software ,which includes device control,data monitor, chart monitor, and device information.etc.

Note: Function disable when the button in orange.

(2) Clear Thrust and Torque

Clear thrust and torque before test, otherwise the test data may not accurate. There may be a difference during the test due to ESC connection or other reasons. User can pull throttle and then stop to check the thrust.

(2) Clear Airspeed

Clear airspeed before test.

(3) Power Consumption Reset

Clear Power Consumption before test if user needs to recalculate power consumption.

(4) Lock/Unlock Throttle

User CAN NOT issue a command when throttle is locked. Throttle output is constantly the

min value. The duration of test bench will be reset while unlocking. The backgruand data will be saved as a log. When throttle is unlocked, user CAN NOT clear thrust/torque, airspeed, and power consumption, but able to do automatic test. When throttle is locked, user CAN NOT do automatic test, but able to clear thrust/torque, airspeed, and power consumption.

Note: The command will be rejected if there's throttle input signal.

"Real-time Data" Display the data of two motors at the same time.(distinguished by D1 and D2),data update frequency is 3Hz.

"Chart Monitor", able to display the data of two motors in same chart. Data refresh

frequency is 1Hz.

"Device Information" shows the information of the test bench and warning information.

Note: Some information may not be displayed, such as photoelectric speed, air speed, barometric pressure, air humidity, etc. These can be displayed only if they are included in hardware configuration.

2. Test data

◎ Voltage (V): Supply Voltage of the motor(Collected at power plug)

© Current (A): The current of propulsion system. (ESC DC input)

[⊙]Thrust (g): Axial tension generated by the spinning propeller.

©Torque (N*M): The Anti-torque generated by air on motor and propeller

◎ Total Power(W): The power consumption of the propulsion system

© Speed (rpm): Revolutions per minute

 \bigcirc Motor Temperature (°C): Real-time temperature of the infrared temperature point (usually irradiates on the motor case)

© Throttle input (%): ESC Throttle input. (Throttle input is proportional to PWM)

◎ Motor output (W): Equals to the shaft power, (torque* PWM)

◎ Motor efficiency (%): Shaft power/ Total Power.(It refers to the efficiency of Motor and ESC)

© Propeller efficiency(g/w): The unit power/ the thrust generated by the propeller. Unit: g/w

© System efficiency(g/w): The unit power / the thrust generated by the propulsion

system(Unit:g/w). System efficiency=propeller efficiency*Motor efficiency.

Test data below is for Wind Tunnels Testing

© Propeller Output Power(W): thrust*airspeed

◎ Propeller Efficiency(%): Propeller output power/Shaft power.

©System Efficiency(%): Propeller Output Power/Total Power or Propeller efficiency*Motor efficiency.

3. Throttle Control

User can move the throttle slider to control the throttle. It is able to control the throttle of two motors.(Two motors have the same throttle input)

Advanced throttle control: Two motors can be controlled separately. User can increase throttle, PWM and set throttle output. User can input PWM, then press "Enter" to set PWM. (as shown in Fig.12)

Notice: **DO NOT** exceed max PWM range

Note: Unlock the tool first, otherwise user CAN NOT control throttle.



Fig. 12 Advanced Throttle Interface

4. Data Acquisition and Storage

MET-V5.3 support automatic and manual data acquisition and storage. User can click"Save" to save a record, which is the average within the certain time.

When user runs Automatic data acquisition, the software will store the testing data automatically.

Manual data acquisition, click "start/stop" to record and save data

Click "Save", it will save a record. "Save" and "New Save" are disable until data acquisition completed. Each record will be saved in the same file. Click "Save New", it will start a new record and a new file. Click "Set" to set the average value, for example, set "10", click "Save", it will collect 10 records continuously.(As shown in Fig. 13.)



5. Automatic test

Click "Auto Test" to start the test; Click"Stop" to stop testing immediately.

User can set different throttle and keep time as shown in Fig. 14:

System Settings Safeguard Auto Test	AUTO TEST		Download	Load Macro	Save	
est Info	Test Mode: Costum *	Increment(%):	10 +- Keep	Times(s): 20 -		-
	Periods1: Cycle	10 (1-1	00) Keep Ti	mes(0.1s): 200	(1-2000)	х
	Periods2: Throttle(%):	20 (1-1	00) Keep Ti	mes(0.1s): 200	(1-2000)	х
	Periods3: Throttle(%):	30 (1-1	00) Keep Ti	mes(0.1s): 200	(1-2000)	х
	Periods4: Throttle(%):	40 (1-1	00) Keep Ti	mes(0.1s): 200	(1-2000)	х
	Periods5: Throttle(%):	50 (1-1	00) Keep Ti	mes(0.1s): 200	(1-2000)	х
			Add			

Fig. 14 Automatic Testing Interface

Test modes: increase, cycle and custom modes.

Increase mode: stop testing when throttle range reaches 100%.

Cycle mode: hold up the "Keep time" when throttle reaches 100%, and then decrease to 0% and stop testing.

Custom mode: "Increment" and "Keep Time" are invalid. User can set the throttle and keep time of each period. Additionally, use can define the settings in custom mode.

6. Data Analysis

The log(CSV file) will be saved in "My computer/Document/MET Chart/Log" after test finished and the tool unlocked.

(1) Data Analysis (Chart):



Fig.15 Data Analysis (chart view) Interface

The system will automatically open and load the last record after running the program.

Data Analysis displays in Chart.

User can drag the graph by pressing your Mouse. Press "Ctrl"+ Mouse to zoom in and out the curves.

User will see the detailed parameters of a specific point when move your mouse there.

Click " data view " to view the specific test data, as shown in Fig. 16 below:

ple settings pling period 0. ampling mode AV	G V	App	ly	Motor	le 🗌 Vol Power 🗌 M	otor Rate [☐ Thrus ☑ Torq ☑ Fropeller Effect	SysEff		r Consumed(irSpeed	er
Ambient Temp: Ambient humidity: barometric:	O %HR	Run Mod Test Ti Test	me: 2021-0	潮试(10%, 12-26 09:43	3 1	otor Model: Cole Pairs: Blade Num:		Elec	opeller Model : otric Control Model: 'ower Model:			SoftVersion: 5	19175 33 255
AVGTime	Throttle	Vol	Current	Thrus	Torque	RSpeed	Photoelectric RFM	Motor TEMT	Sys Power	Motor Power	Motor Rate	Propeller Effect	SysEff
09:43:49.677	10	12.31	0.28	-16	0.002	2891	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:49.783	10	12.31	0.28	-16	0.002	2891	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:49.888	10	12.31	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:49.995	10	12.31	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.102	10	12.33	0.28	-16	0.002	2892	0	26.5	3.5	0.6	17.5	26.4	4.6
09:43:50.210	10	12.33	0.28	-16	0.002	2892	0	26.5	3.5	0.6	17.5	26.4	4.6
09:43:50.319	10	12.32	0.28	-16	0.002	2893	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.430	10	12.32	0.28	-16	0.002	2893	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.543	10	12.32	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.656	20	12.32	0.28	-16	0.002	2892	0	26.5	3.4	0.6	17.6	26.4	4.6
09:43:50.768	20	12.31	0.28	-16	0.002	3109	0	26.5	3.4	0.7	18.9	24.6	4.6
09:43:50.882	20	12.31	0.28	-16	0.004	4031	0	26.5	3.4	1.7	49	9.5	4.6
09:43:50.994	20	12.27	0.53	-20	0.009	4446	0	26.5	6.5	4.2	64.4	4.8	3.1
09:43:51.107	20	12.27	0.53	-31	0.009	4609	0	26.5	6.5	4.3	66.8	7.1	4.8
09:43:51.219	20	12.29	0.64	-39	0.007	4679	0	26.4	7.9	3.4	43.6	11.4	5
09:43:51.332	20	12.29	0.64	-45	0.006	4710	0	26.4	7.9	3	37.6	15.2	5.7

Fig. 16 Data Analysis (data view)

Click "File" and select a log, it will be displayed in data sheet or chart.

(3) Throttle Average

The software records the test data and eliminates unstable data by Filter setting. It calculates

the average of each throttle and forms a file.

Click "Throttle AVG", the throttle average can be saved in Excel, as shown in Fig. 17.

METDataAnalyse V2.0.1		– 🗆 🗙
File(F) Output(0)		
Sample sett Throttle AVG	Displayed Items	
Sampling per Filter setting		_ Motor TEMT _ Sys Power _ Motor Power _ Motor Rate ∨ Propeller Effect
Sampling mode XVO Apply	SysEffect Power Consumed(mAh) AirSpeed	
Ambient Temp: 23.3 °C Run Model:	筆循环號試(10%, 5s Motor Model: Propeller Model)	DeviceID: 19175
Ambient 0 %MR Test Time: humidity:	Role1 -	SoftVersion: 53
barometric: 0 kPa Tester:	Elade Mun: 2 Power Model:	MardVersion: 255
▶ • II <u>+</u> & Q Q <u>}</u> I + @	🖻 👻 🔜 🔞 🗠 测试现象文件保存	×
	← → · · ↑ → 此規稿 > 軟件(D) ∨ δ ○ 約束"软件(D).	
4 1 14000 - 1 1	·····································	Throttle
65 120 120.00 120		☆ ^ ESpeed
	武事 2022/3/20 10:25 文事 2022/3/20 10:25	→ Tropeller Effect 文: → Power Consumed(ath)
12000 -	kngsoft 2023/*/13 16:15	x
55 100 11000 100.00 100	→ 青毎 Program Fles (x85) 2023/6/20 16:05 ■ 期面 ■ project 2021/ /12 8:58	· 文 文
50 90 10000 90.00 90		0.4
45 80 9000 80.00 80		,
40 70 8000 70.00 70	文林名(M) (((((((((((((((((((
35 - 60 - 7000 - 60.00 - 60	(###天型()) #36456(#XIT(-MO))	
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25 50 5000 5000 50		
20 40 40.00 40.00 40		
10 20 2000 20.00 20		. 🛏
0 0 0 0 0 0 0 0		
-5 -101000 -10.0010		
-10 -20 -2000 -20.00 -20		
-15 - 1 -3000 - 1	1	
:40.	002 09:43:49.999 09:44:00.004 09:44:10.000 09:44:19.997 09:44:30.002 09:44	:39.998 09:44:50.004 09:45:00.000 09:45:09.996 09:4
(Chart View 🔿 Data View		
Status: File Loading complet	ted C:\Users\wlz\Documents\MET Chart\log\single0226094342.csv Data record: 13 -	997 Sampling period: 0.1 S 0.2789
Internet and a second sec		

Fig.17 Throttle Average

Note: user can adjust the filter setting according his own propulsion system to optimize the test data.

7. Other Settings

"System Setting" contains the software and test bench configuration.

"Safeguard", it will alarm and throttle off when reaches the limits, as shown in Fig. 10 below:

For safety, the software will monitor some main parameters such as voltage, current,

temperature, speed and power consumption. The software will alarm or shut off the throttle when these parameters exceed their limits, as shown in Fig. 18 below:

System Settings Safeguard	AFEGUARD	
Auto Test Test Info	Protection mode: Warning and closi- +	Enable
	Vol Lower Limit: 10.5 V	Current Upper Limit: 100 A
	Motor TEMP Upper Limit: 70 °C	Thrust Upper Limit: 20000 gf
	Power Upper Limit: 50000 W	RPM Upper Limit: 40000 RPM
	Power Consumed Upper Limit: 40000 mAh	RPM Lower Limit: 100 RPM
	Note: 1.If the lower speed limit is triggered, but th 2.Setting the decimal is only valid for the voltage	

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Fig. 18 Safeguard Settings

"Test Information", set the information of the motor, propeller, etc so that the system can

generate the test report automatically.