

21. 3000
- 22.
23. 2018 6 19.2%
24. 80%
25. 7%

1. “ ”
- 2.
3. 2018
- 4.
5. 2018
6. 2018

1. Opteon XL41
2. “ ”
- 3.
4. 5 60
- 5.
6. 2019 " "
- 7.
- 8.
- 9.
- 10.
11. , &
- 12.
13. 2018 “ ”
14. .
15. Busch Pfeiffer Vacuum Technology

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2018

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166

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2020

12 1

G20

1 2000 10% 1 1 25% 2
90

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225 1% 1.5%
1% ASX200 1.5% A 2654.80
2.57% 7938.47 3.34%

3

10

IMF

11 28

G20

G20

2020

NFI

<http://news.ehvacr.com/news/2018/1204/105789.html>

2

2018

500

2018

2019

10

	10	4000	11	12	
3600		8	21		4320
	3800				
		“	”		
“		“	”		
		”	“		
			”		
			“	”	
“	”				
8-9					
	11	13			
3690		10	10	27	3990
8%					
		3700	10	29	4010 /
8%	8	21	4320	11	13
					3820
10%					
“					
”					
			11		
“					

	“	”
1-9	88665	9.9%
0.2	204.68	0.66%
10		12.99%
1-9		3.3%
19.8%		
2015		
2016		
2015	1500	8
166%		4000
	“	“
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2500m3

4 40m3/min

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421.14

394.27

33

300

1324.09

4.8

2.6

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10 30

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11 15

9	6	3	918				
	10	24		2018			
	147		117	30	6977		
				2603	102		
			55	39	16	1698	
						4.8	
2.6							

2017 8

9

7 31

10 31

11 14

1~10

5.7%

1~9

0.3

1~10

3.7%

0.4

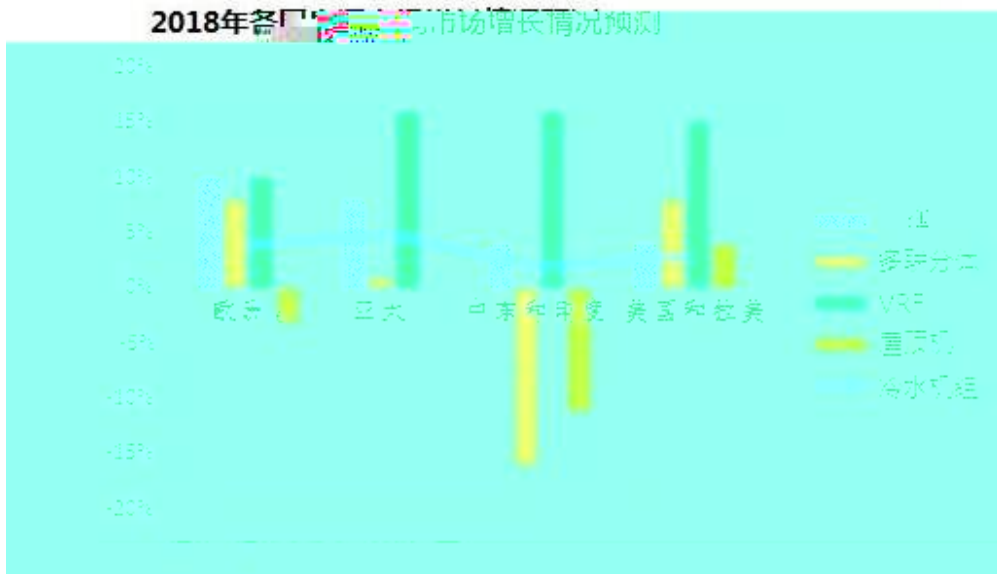
11 15

PPP

<http://news.ehvacr.com/news/2018/1122/105709.html>

5

BSRIA



2018

5

10%~25%

3

VRF

2018

50%

VRFs

VRF

VRF

2018 1

VRF

2018 3 4 5

5

6

2019

6

7

85%

2016

5-10

15-20

200 (

300)

25%

<http://cac.chinaiol.com/s/1127/43204467.html>

7

35

2019 1 21

200

12

35

2019

<https://www.hvacrhome.com/news/show.php?itemid=41639>

8

2030

20

					48%	33%
2016		69		34%	66%	
			59.8%		2007	29.2
2017	81.6	338				29.3%
		30%				
		40%				
2017						
2018			37.6%	2017-2018		25%
				2		18.5%
	35.9			41.2%		
		85%		6000		

2016

206 6.7 3.3%

19.4% 2017-2018 2.08

60%

67% 67%

7400 54.86 27.43

650 2030

20 , 400 PM2.5 1.9

<https://www.hvacrhome.com/news/show.php?itemid=41543>

9

2018



2018

2018

2018

<http://news.ehvacr.com/news/2019/0129/106235.html>

10

30

11 20

20

” 12.6 “ ” 2020 800 “ 30

— -60 100 50 “ ” 50 150 “ ”

<http://news.ehvacr.com/news/2018/1123/105710.html>

11 :

2018-2019

2017-2021

12 15

<http://cac.chinaiol.com/s/1218/39205512.html>

12

10 29

14

2018 190

2018 33

14

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2018 12 1

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12 1

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“ ”

2018 35

2018 12 1

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2018 12

010-82262225

2018 10 16

<http://www.compressoronline.cn/index.php?m=content&c=index&a=show&catid=5&id=8283>

13 “ ”

1-9

11 14 1-9

4.9% 9.59 14.8% 7121.0 45.2%

2.46 () 1.4% 2.2%

“ ”

		1-9		2.2%	1-8
1377.2		2.0%	3497.1	2.6%	1309.7
2.7%	1226.7		1.5%	6230.7	0.9%
2509.2	1.1%	1917.8	2.7%	6350.6	5.7%
()	5124.5		16.1%	6.47	1.4%
9		4.9%	()	(100%)	
	0.1%	9.4%		3.5%	
	1-9				
41.2%		1.6			7.0% 0.9
			3.8%		
1.0% 1-9			24.6%		7.2%
	1-9			7121.0	45.2%
			14.3%	100	81.56
1.05		18.4%		12.75	6.1%
54.19%		1.16	1-9		7.43%
1.56					
	9			599.2	
20.5%			1.59	3.6%	
93.87	31.4%		482.06	18.1%	1-9
		5216.6		22.8%	8.6
			10.5	12.9%	
962.9	99.8%		4087.7	13.7%	
				1-9	
	26.2%	22.8%	15.0%		

		21.2%		5.8%
			1-9	
	1.7%			
	5.4%	1-8	1.0	
11		2000	/	
		7	23	
			100	
				100
				“ ”
				2017
		35%		
				2
		5		4000
	“ ”			280
			6000	
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2015

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2019-2020

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7400/3400/2000 /

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2018

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PTA

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20% 40%

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<http://www.compressoronline.cn/index.php?m=content&c=index&a=show&catid=5&id=8362>

14

2018 47

CGMA

033001-2018	2018	10	1	2019	1	1
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GB/T16665

5 1

10%

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<http://www.compressoronline.cn/index.php?m=content&c=index&a=show&catid=106&id=8308>

15

1.6

2008

39

1.6

2017

2050

20%

11.7%

28.6%

<http://www.compressoronline.cn/index.php?m=content&c=index&a=show&catid=108&id=8291>

16 2030

3100

“ ”

2018

2030

4 9275

3042

2017

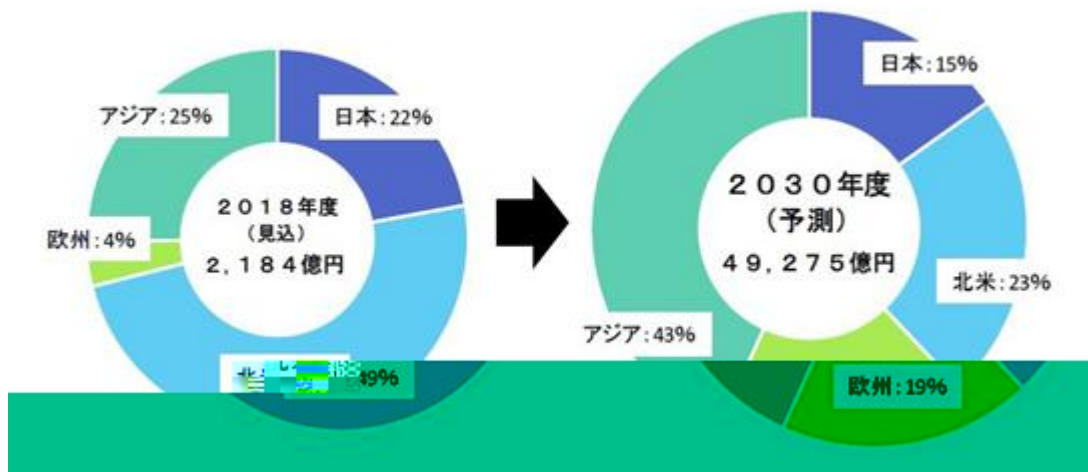
28

2 1301

1317

2017

49 8



2017

1757

FCV

2025

2030

2025 1

618 2030 4 9275 3042



2018

2018 “ NEXO ”

2030

PEFC

SOFC

20	1775	50	906	14
	691	2017		95
	277	7	5	54 9
	3	2 8		
2018		854		392
155	90		74 6	12329
	3 2	6000		3613
16				
2018		2059		
	47		2018	
1 84			27 9 “ ”	72 1
2018		3660	20	2095
147			2654	2587
2489	2333			
2018		277	142	
7	5		“ ”	
			14	
	5			
107	23		54	19
	72	10		
				2018
4426	2017			

	2330	2096			12		
1	74		12384		5061		
	2018		1775		50		1115
	37				1617		1523
	1460	1439					
	2018			18			2 8
		“ ”					
	21 4		16	6			10 3
	10	10					
	2018		305		1781		20 7
		906		14			
				258	180	167	164
					50	47	
42	24						135
	95	92	83				

<https://solar.ofweek.com/2019-01/ART-260009-8420-30301903.html>

18 2019 100GW

Wood Mackenzie 2019

100GW

Wood Mackenzie

2017 55 2018 43

30

PERC

36

41

20%

2020

32%

4

2019

2017

2.3

Lightsource BP

300

2019

40 /

51 /

2019

2-3

5

56%

2018

13%

15%

ERCOT

PJM

, 2018

25%

PPA

2.9

PPA

30%

ITC

2019

2019

2018

12

(Renewable Energy Directive)

6

2019

2018

2100

38%—

SunPower

470

;

47%

2018

ITC

7

+

Xcel Energy(30-32

/

)

NV Energy(31-37

/

)

PG&E(

567.5

) 2018

+

+

2019

7

262

1

78

/

1.4

2023

8.8

+

2018

82%

+

CCGT

+

CCGT

20

LCOE-LCOS

+

CCGT

OCGT

LCOE

2019 +

8 Mono PERC Bi-facial

2019 2019 41%

Mono Perc 2018 36%

2019 2019

0.25 /Wdc 0.95 /Wdc—

0.80

—
/Wdc

9

2018 :

(SECI) 1000 ; 2

2019 (RFP)

(500) 6300 84%

2019 1000

(

)

2019

2019

2018 11 12

2

2019 1

10% 15%

2019

2018

22%

15%

7%

2019

2019

1%

5%

2018

PC

2019

4

2019

2009

2018

2018

621

	2299	2270	2601	2018		3000
7	2014	2017		600	700	2018
	846.36					
	2018	1-9		4461.5		22.4
	22		1791.4		27.6	1147.3
		1522.8		19.1		

http://www.semi.org.cn/news/news_show.aspx?ID=55141&classid=117

22

		7				
		2019				
			NAND Flash	2018		
2018	4	DRAM				
					DRAM	
		DRAM				
				NAND		2019
					19.1	

2019 1

1 0.5 2

60% 50~53%

50%

12

90

10% 25%

90

25%

http://www.semi.org.cn/news/news_show.aspx?ID=54980&classid=117

23 2018 6 19.2%

2018 1990 2808.06

2.76%

2018 61.7% 125.6

100

2018年主流新能源汽车企业销量目标完成情况				
车企	目标销量(万辆)	实际销量(万辆)	完成率	
比亚迪	20	247,811	123.9%	
北汽新能源	15	158,012	105.3%	
上汽乘用车	10	96,000	96.0%	
奇瑞	10	90,537	90.5%	
长安	8	42,410	53.0%	
众泰	8	33,872	42.3%	
知豆	8	15,336	19.2%	
江铃新能源	4	近5万辆	125.0%	%
江淮	5	63,671	127.3%	%
广汽新能源	1.5	20,045	133.6%	%
蔚来	1	11,348	113.5%	%
数据来源：车企&乘联会 整理				

247811

123.9%

2018 12

46,650

55.1%

247,811

118%

20

62,078

5

59,799

225,395

2018

84,327

2018

65,871

35,699

SUV

EV360

35,699

158,012

105.3%

2018

158,012

53.11%

15

EC

EC

2018

90,637

16.6%

57.36%

2019

22

		9.6		96%					
	2018					9.6			
	10		96%						
								5	
				2018					
		eRX5	ei6		Ei5				
		FCV80		3				300	
2019						Ei5			
		12.88	-15.88			2018	Ei5	5000	
		90,537			90.5%				
	2018								
		2018		90,537		146%		10	
90.5%									
		3xe		eQ1 400		5e 450			
		SUV					eQ		
	50%			eQ1		4.4		123%	
		5e	3xe						
		42,410			53%				
	2018			42,410		38.3%			
		8		53%					
	2019							2018	
2019									

		33,872		42.3%	
2018		8			33,872
		42.3%			
		E200pro	ET450	Z500EVPro	
		15,336		19.2%	
2018					
			2018	15,336	63.9%
	8				
		5		125%	
	2018		5	65%	4
	2019		3		
	3				
EV3		EV3		4	
EC3	R1			2	
		63,671		127.3%	
2018			63,671	125.28%	
			5		
2018	12	7			
		20,045		133.6%	
	2018		20,045	4	1.5

GS4 PHEV	10,922	486%
2019		

11,348	113.5%
2018	11,348 ES8

A00	2018
2019	

2019

160

<https://www.d1ev.com/news/shichang/86274>

150

2017

100

2016

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LG

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2017

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<https://libattery.ofweek.com/2018-12/ART-36001-8420-30294068.html>

25

7%

11 21 21 1 11 44 11GWh

79 87

5 109GWh 23 18 76 23

60 69 3 072GWh

63 01 16 05

11 27 03GWh 61 36

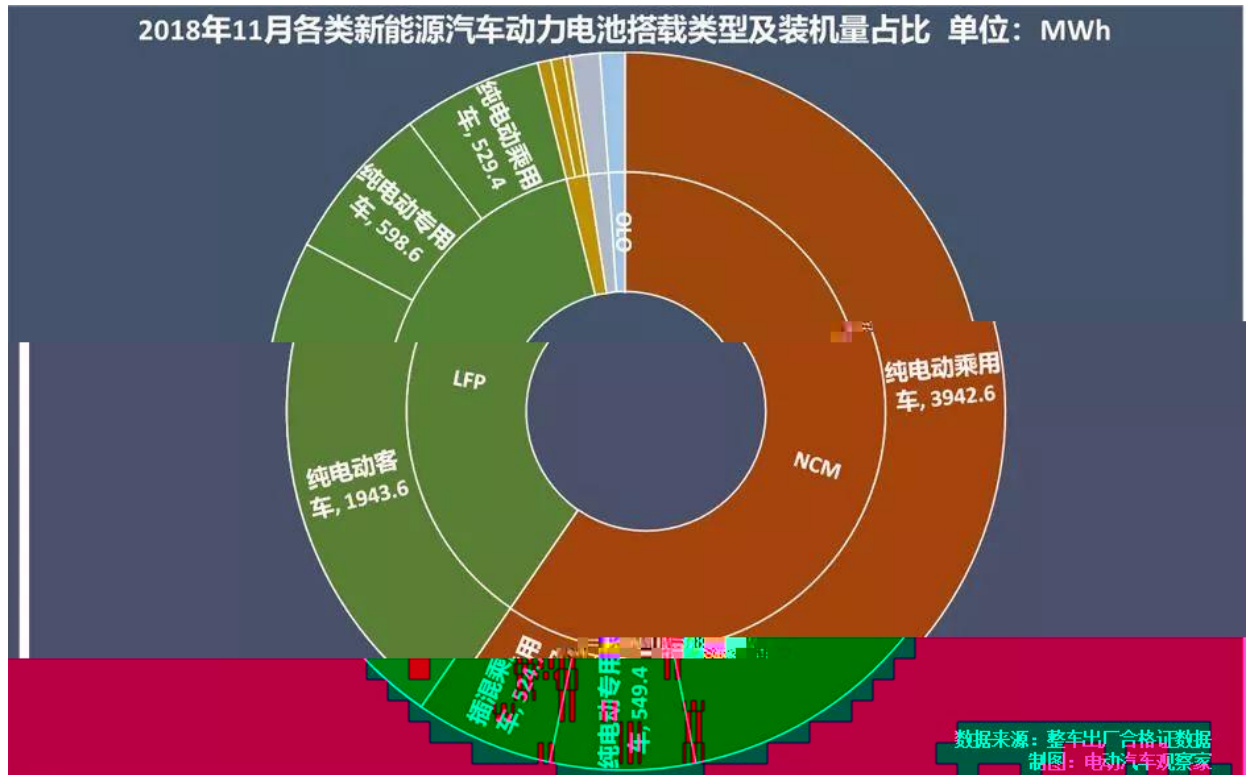
133

10 27

63 28

17 24

19 49



NCA

10

7 6MWh

11

92 5MWh

2 29

NCA

E100

142Wh kg

NCA

NCA

302Wh kg

OLO 11

852 5KWh

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2018 7 19 — 500

120 5 „D ì6v 126

120 53

500

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		2007	2017	300	
				2007	15.6%
2017	7%	7.8%	2.8%		
	2017	300		10	10
			1		100
				TPO5	
		“ ”	“ ”	“ ”	”
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“ ”

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<http://www.compressoronline.cn/index.php?m=content&c=index&a=show&catid=6&id=8350>

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[1]

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[2-3]

[4]

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1

2012 6

CPRS

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1998

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1993-1994

1996

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1997-2005

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2006

100%

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73.5%

25.5%

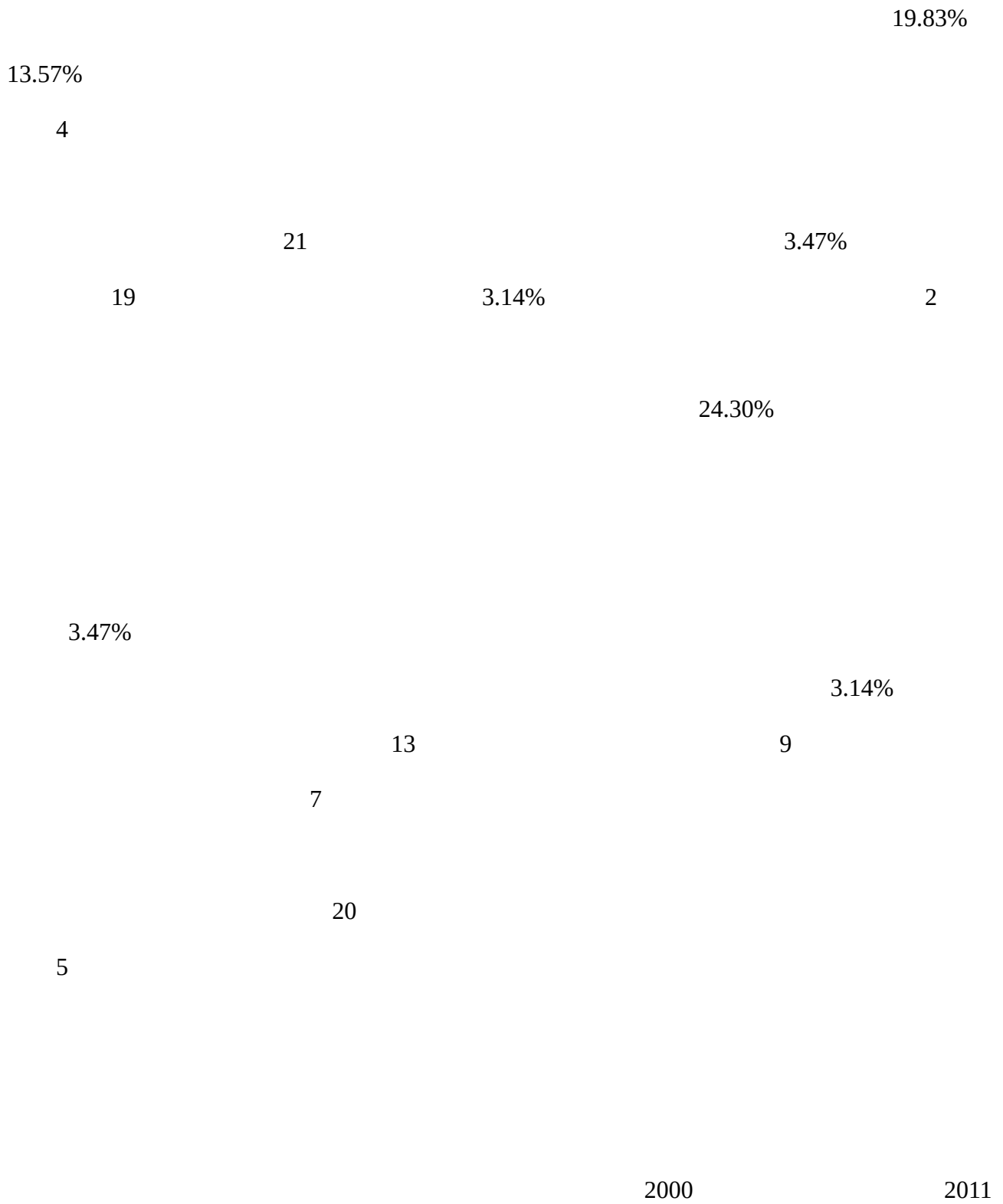
3

/

468

54.55%

50%



100%

0

73.5%

25.5%

3.40%

<http://www.compressoronline.cn/index.php?m=content&c=index&a=show&catid=6&id=8277>

3

2018

2018

2018

5 2018 3

6 2018 1

7 2018 1

8 2018 2

9 2018 4

6 1

10 2018 4

11 2018 5

2018 6

7

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2016 6 5

<http://www.compressoronline.cn/index.php?m=content&c=index&a=show&catid=106&id=8195>

5 2018

2018

2018

[illegible]

2019

			43GW	18%
170GW	23GW	31%	20GW	5%
531				

<https://solar.ofweek.com/2019-01/ART-260006-8480-30299367.html>

6 2018

2018 2 13

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2009 “ ”

2020 “ 200 500 ”

2018

2017 2018

2017 2018

333 532 622 811 NCM811

2020

SMM

<https://libattery.ofweek.com/2019-01/ART-36001-8420-30294755.html>

1 Opteon XL41

2019 1 10

CC

Opteon™ XL41 R-454B

Sindelfingen

BITZER

ORBIT

ORBIT

R-410A

GWP

ORBIT

ORBIT ORBIT + ORBIT FIT

O1

Teflon TM	TM	TM	Ti-Pure TM	TM	Krytox TM	Viton TM
TM	Opteon TM	TM	Freon TM	TM	Nafion TM	
35		7000			5000	

CC chemours.com
http://bao.hvacr.cn/201901_2080191.html

2 “ ”
11 30 2017-2018 “ ”

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1997

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<http://news.xjtu.edu.cn/info/1007/103781.htm>

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32.03%

7.18%

15% 2018

30%

2019

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13			
21.9%		7	

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G-IEMS

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2013

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2011 114

2018 222

<https://www.hvacrhome.com/news/show.php?itemid=41613>

2018

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PDT

SQE

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140

25

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2019

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<https://www.hvacrhome.com/news/show.php?itemid=41504>

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www.hvacrhome.com

30%

57%

2018

1000

2019

<https://www.hvacrhome.com/news/show.php?itemid=41670>

<http://cac.chinaiol.com/s/1220/27205627.html>

9

www.hvacrhome.com

700

ICU

1500kW

1550kW

<https://www.hvacrhome.com/news/show.php?itemid=41426>

10

www.hvacrhome.com 1 15

AHR

The Air-Conditioning, Heating, and Refrigeration Institute , AHRI Mr. Bill

Tritsis

AHR

1 0 3/4

-32

0

-20

-35

Ultra Heat GMV

Ulrra Heat Heat Pump Water Heater

AHRI

Mr. Bill Tritsi

AHRI

Mr. Bill Tritsis

AHRI

AHRI

AHRI

AHRI

AHRI

AHRI

2018

Wyndham

<https://www.hvacrhome.com/news/show.php?itemid=41509>

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IPV

Varisco

IPV 2017

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IPV “

” Andrew Walker

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<http://www.compressor.cn/c.php?id=555>

15

Busch

Pfeiffer Vacuum Technology

Busch Pfeiffer Vacuum Technology Pfeiffer Vacuum

IT Busch SE Pangea

GmbH Pfeiffer Vacuum 50%



Source: Busch Dienste GmbH

IT

Busch		Pfeiffer Vacuum	50
	Busch	Pfeiffer Vacuum	
Busch	Pfeiffer Vacuum		
	Busch		
Pfeiffer Vacuum			
"		Pfeiffer Vacuum	
"	Busch	Sami Busch	"
		Pfeiffer Vacuum	Busch
	50		Pfeiffer Vacuum
"			
"	Busch	IT	

"Pfeiffer Vacuum

Eric

Taberlet

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1.5

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<http://www.comvac.cn/qydt/qykx/2018/1203/53594.html>

16

2015

Edwards

Edwards

15,000

22,000

Edwards

Edwards

.

Geert Follens

Paul

Rawlings Edwards

Edwards

Bram Claes

Edwards



Geert

Follens

Paul Rawlings Edwards

Edwards

Sarah Goodwin

Geert Follens

Edwards

Bram Claes

Edwards

Geert Follens

Geert

Edwards

Edwards

Edwards

<http://www.comvac.cn/qydt/qykx/2018/1030/53495.html>

17

a10 25

70

Division

2018

2018

Koen

Lauwers

LRP VSD+



10 26

2018

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Koen Lauwers

2017

31

18

DHS DZS Ex LRP VSD+

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4.0

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10 26

<http://www.comvac.cn/qydt/qykx/2018/1218/53637.html>

18 ” “

2019 1 2 ” “

0 13MW Hi MO1 365W

2019 1 2 ” “

0 13MW Hi MO1 365W

SUNPOWERCo Ltd “ SUNPOWER ”

SUNPOWER 1998

34

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2015

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2030

115

2018

25 36

22 55

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2018

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26 61

27 61

25 36 22 55

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2018

24 44

25 44

29 47

26 58

2018

17 093 42

7 099 38

46 13 61 52

25 000

—35 000

46 13

61 52

2018

8

8 5

17

22

	2018		1	12		8	8	5	
	17	22							
			2018						
					5	2	5	3	
	1	31					2018		
				2	500		3	500	
	33	410		34	410				
				55	871				
		52	371		53	371		1	358
	2	358							
					70				
	100			25			30	304	
	9	8							
				51	01				
				21	362				
				0		10			
	1	18		2018			71	406	88
-78	547	57		0		10			

2018

1 UPS IDC

2018

2 2018 16 000

2018 22 65 41 99

2018 15 000 20 000

41 99 22 65

1

2 N N

TOPCon IBC

3 6 654 51

2018 2017

2018 10 31 5 34

609 450 000

2018 12 31

2017

<https://solar.ofweek.com/2019-02/ART-260006-8420-30302318.html>

20

166



保利协鑫能源控股有限公司
GCL-Poly Energy Holdings Limited



铸造单晶（鑫单晶G3）产品介绍

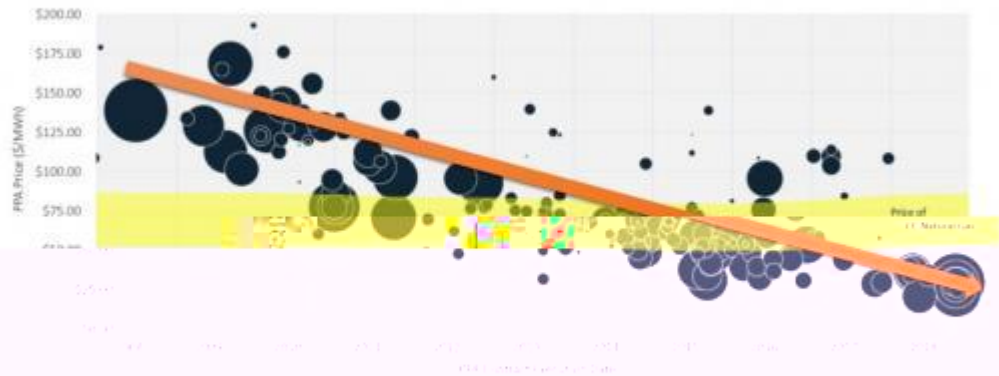
2019年1月

2018 531

531

光伏超低价时代来临

Utility PV PPA Prices by Contract Execution Date



• 2018年6月, **MimutEngy**签署了25年的电力合同在内华达州2.376美分/千瓦时

• 2017年11月, **Neoen**作保投标的墨西哥项目价格为19.18美金/千度

2018 6

25%

2.376

/

0.13

/

0.16

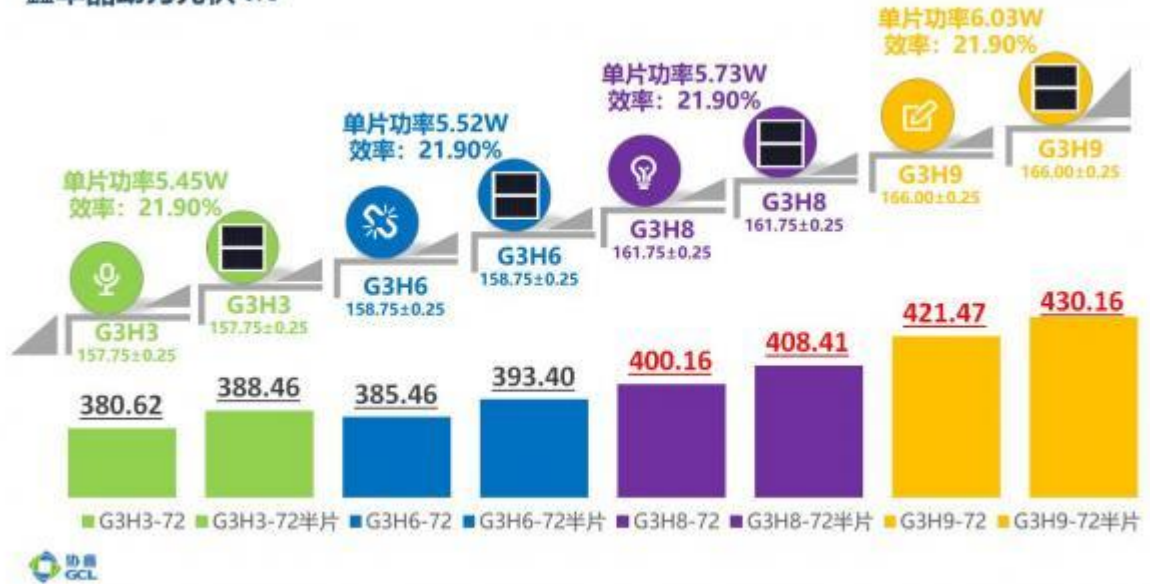
平价上网组件价格趋势预测



• 平价上网倒逼组件价格，3.0组件将无利可图，4.0组件将强势占领高端市场

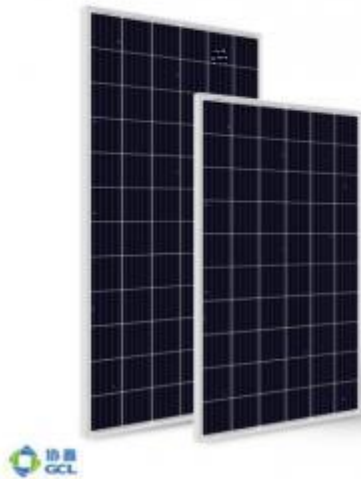
			300		3.0
400	4.0				
2018	2019		300	400	
0.3	2019		0.25		
2020			1.7		400
	1.9		2021		200
	300				400
		400			

鑫单晶助力光伏4.0



		G		157.75
158.75		161	166	157.75
			158.75	
161			161	166
			166	
157.75	21.9%		PERC	MBB
			158	

鑫单晶光伏4.0组件



未来高功率组件/72Pcs 420-430 W

未来高功率组件/60Pcs 350-360 W

超高组件功率

如多晶电池的直角结构，外观完美，适合半片和叠瓦组件

更低的光衰

光衰相比直拉单晶低

更低的组件成本

采用类似多晶的铸锭方式，成本相对直拉单晶更优

161	400	408	166	420
430	500			
PERC	2019			400

光伏4.0竞争分析



1/3

166

3

166

166

166

PERC

166

400

20.6%

400—405

166

166

166

5—7

166

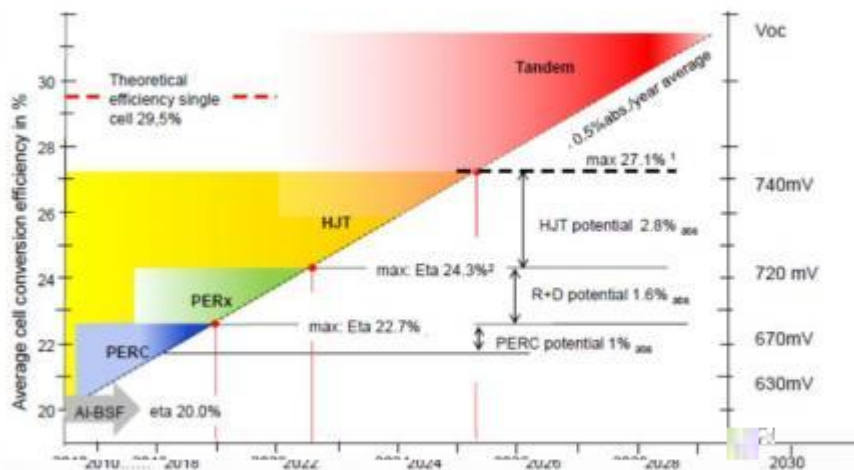
0.3%

166

G3H9

420

鑫单晶电池效率预测



鑫单晶可兼容所有电池和组件的高效技术

Source: Meyer Burger, June 2019

20%

PERC

22%

2019

PERC

22.19%

HJT

PERC

HJT

https://solar.ofweek.com/2019-01/ART-260018-8400-30298230_2.html

21

“ ”

20

2019

112

16

1

“ ”

2019

CEO

“

‘ ’

“ ”

”

EPC

13

“ ”

“ ”

1GW

<https://solar.ofweek.com/2019-01/ART-260009-8460-30299449.html>

22

“ ” “ ”

17 2

PERC 19 60 285W 315W

“

98

”

200MW

<https://solar.ofweek.com/2019-01/ART-260008-8460-30301283.html>

23 13.5

28

100%

13.5

10

2

6

12

7.3

2 14

11

IC

IC

IC

http://www.semi.org.cn/news/news_show.aspx?ID=55268&classid=117

24

1 30

2000

CFO 10

http://www.semi.org.cn/news/news_show.aspx?ID=55281&classid=117

25

19

110 480 300mm

300mm

480 300mm

110

60

56

139

300mm

2 25

2021 2

480 300mm

35

2018

)

http://www.semi.org.cn/news/news_show.aspx?ID=55170&classid=117

26

LG

LG

80

LG

2020

5

LG

50

LG

SDI

2020

2017

50

2020

30

<https://libattery.ofweek.com/2019-01/ART-36001-8420-30294571.html>

27

40

1 4

“ ” 40

LCK6105FCEVG1

“ ”

40

7500

2018 3 23

80 2018 12 31 247 623 641 32

1 406 318 18 246 217 323°

7500

1994

2014

Vision

SENRY

Euroba

600 KVAH

11 Wh

<https://libattery.ofweek.com/2019-01/ART-36008-8460-30295634.html>

28

2018 12 20

1.17

“ 1.17 ”

2018 12 25

631.25

3.03

25

2022

“ ”

2004

2016

“ ”

10kW 30kW 60kW 200kW

“ ”

“ 2018

”

XchShF8.4

8.5 100

2018

74

14 250

2.5 60

5 UNDP “

”

400

1
3 150
20 6000 1500

“ ”

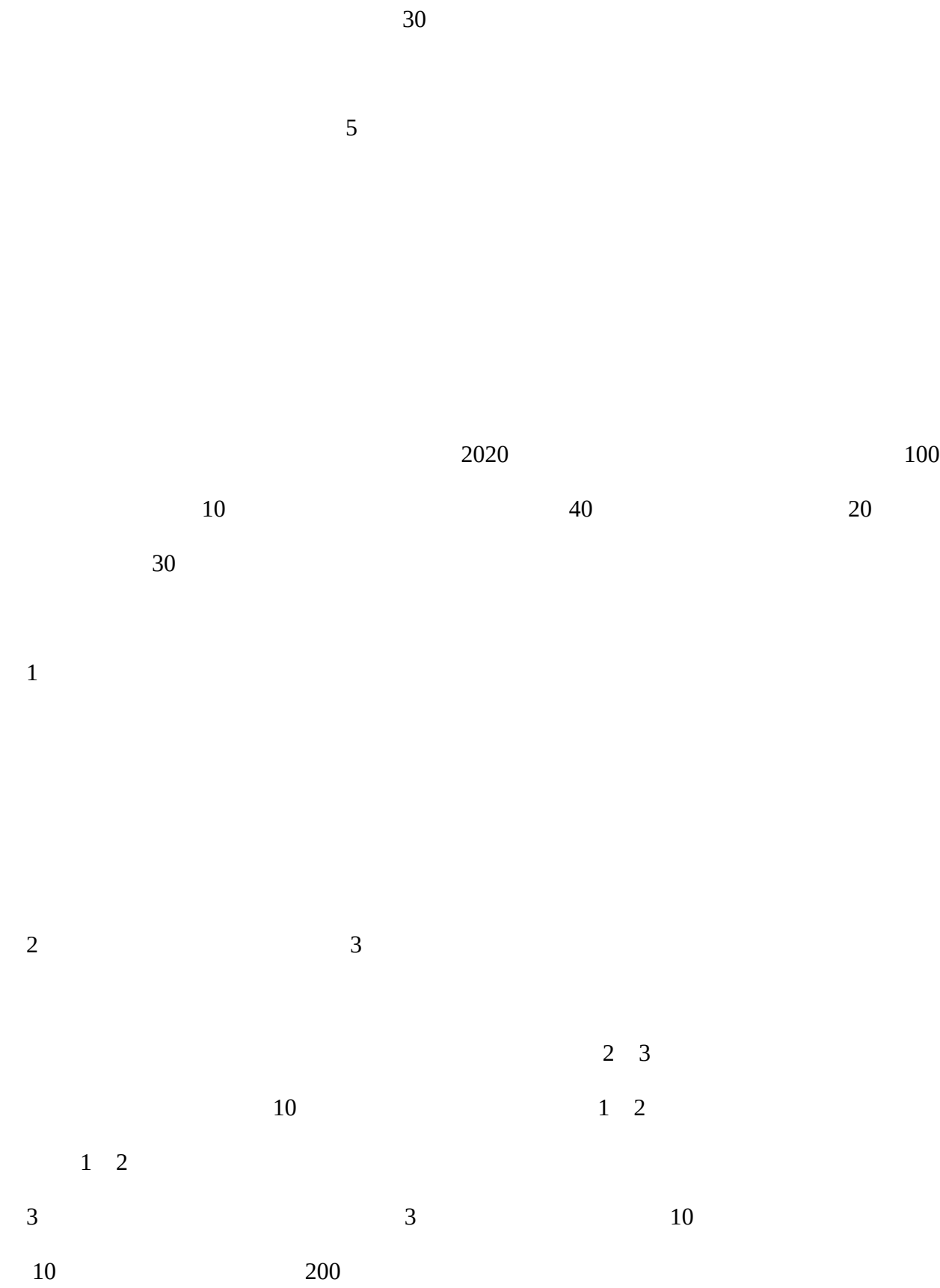
“

”

“ ”

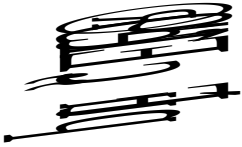
<http://china-hydrogen.org/hydrogen/mix/2019-01-02/8948.html>

2018—2020



1		500kg/d	35MPa		200kg/d	70MPa
		30%		300		1000kg/d
35MPa		400kg/d	70MPa			30%
	500					
2						
3						
					“	”
				10%		100
						10%
	500					
1						20%
	500					
2						
					“	”

30



“ 2018 ”

11 19

”

2007 9

800

6

20

“

”

‘ ’

<http://china-hydrogen.org/hydrogen/mix/2018-12-06/8810.html>

2018-11-20

4

2

2018-11-12

11 9

000811 9.94% 5.31 6814 2.06%

10.14% 2.75

0.4% 300464 ,

300257

5 1035.9

1031.49

2018 11 08 34552.48

0.48 453.53 72.22

2018 24.43 1.96

0.30 10.83

3.34 1.41%

2018-11-12

10 12 2018

6 AMOLED

2015 OLED

6

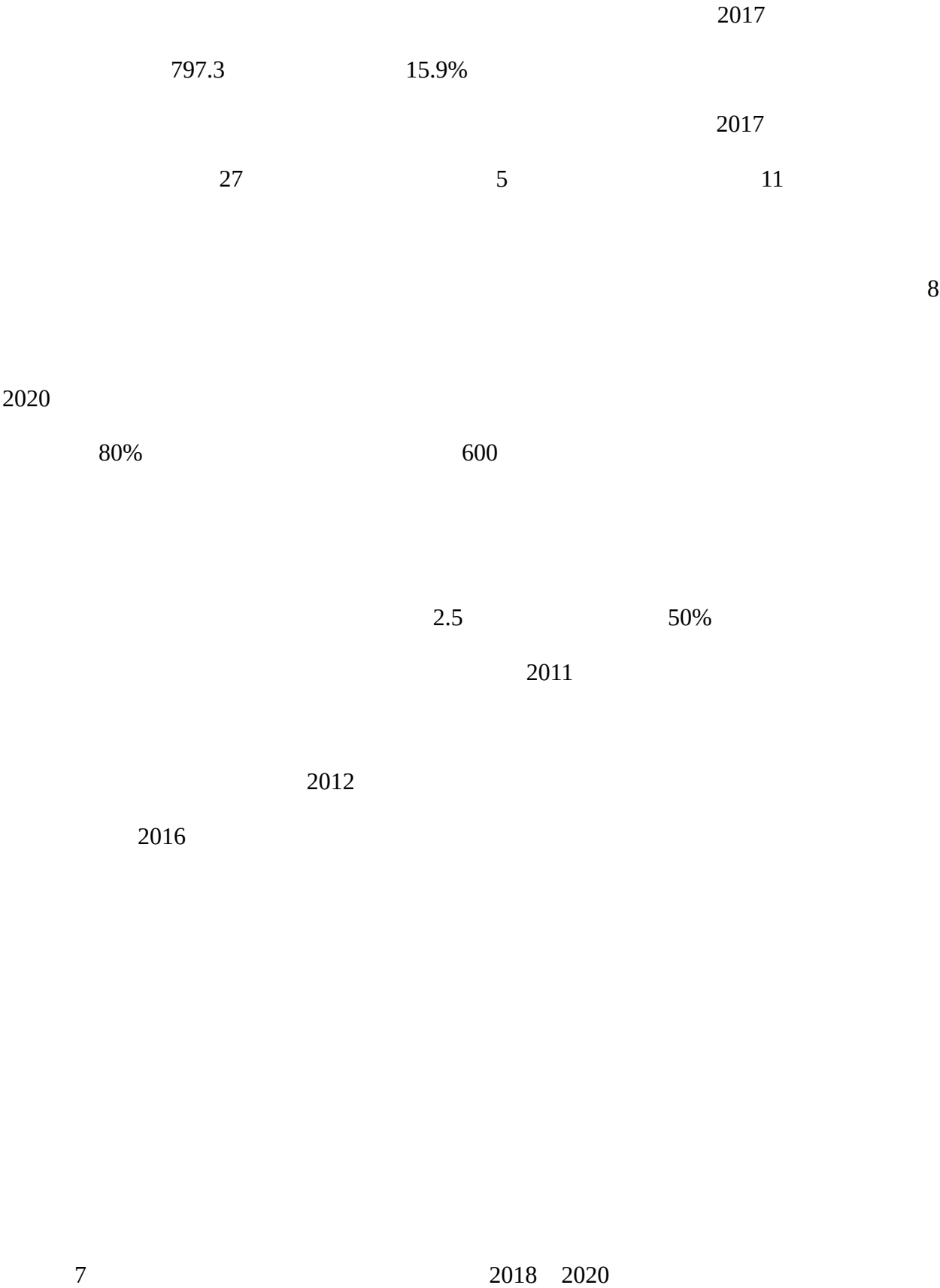
OLED

2018

OLED



C919



15

10

30-50

8 30

58

1

800

30

0 1

9

Sand River

Sand River

6

2003

22

6504

25.65

30

21 66

30

180

7 25

5

2017

23

23

423

397

94%

383

355

372

263



50

2017

413

59.4%

484.7

44%

14.2%

2.2

4

“ ”

2018-11-12

5.16%

2018

2135

27%

10.4

28%(2017 24%)

GMV

6.06% 4.73%

4.59% 4.55% 4.12% 3.54%

3.53% 3.04% 3.02% 3.02% 3.00%

28%

20%

20%

CR8

10%

;

2500 2020 4700 20%

5

2018-11-13

5.16%

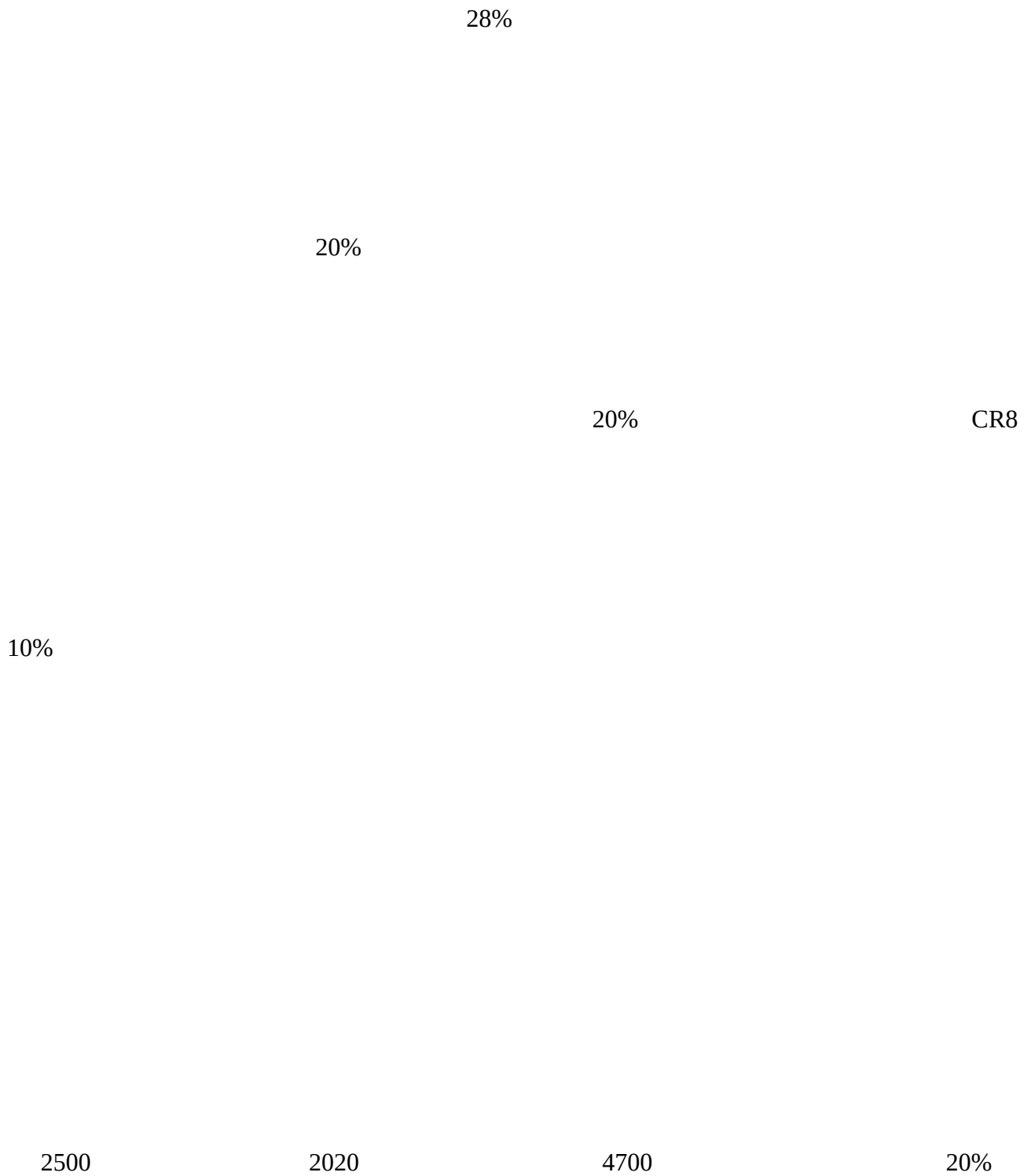
2018

2135 27%

10.4 28%(2017 24%)

GMV

3.02% 3.02% 3.00% 6.06% 4.73% 4.59% 4.55% 4.12% 3.54% 3.53% 3.04%



7

2018-11-29

() 11 220

92%

()

8

2018-12-06

12 4

“

”





9 “ ”

2018-12-25

“

.....

out

12 21

“ ”

“ ”

“ ”

~

10 10 64

2018-12-03

10 64 4585.30 4.06

10 11 19 ~11 30

176 64 4585.30 4.06

80 1.50 12.95

10

10

1050.00 8465.00

805.70 6477.83 10 5328.36

10 13

10 8

10 9

7

10 26 24

14

10 6 6

10 7.35%

3.39%

10

13.95%

5.95% 4.08%

42.68% 18.48%

10

13

5357.57

14.49

6.00

11

2

2018-12-29

20%

90%

2003-2012

10.25%

2013

126.7

2018

1948

72.7%

2008

CR3

45%

(1)

(2)

(3)