

d Ĩ ñ ±

® › Ü 2 2018 \$ P 2 ù ú è Ž

p:s Ô E 3 ì cKµ U0 œ Â ¶ e ‹?ú H4è?. ´ 2006¹ 2020

^a µ F=E8,73 D æ73\$Æ"³Eœ Ý P ‹?ú H´ 2012¹ 2020 ^a µ F

3 xL~ E © Ä Ö ! æ73\$Æ"³Eœ P µ Ê+^,° = 2 E?÷ F1• 0,° 1

x, 3 ìH & ï.J Ax H e P Ô ó æ73\$Æ"³Eœ H & ï IN¯ > o π

bH & ï IN¯ Ô ó ĩ ~,°G 5")æ 9 2018 ^a ÜN¯-\$+i Û = • >

bH & ï IN¯ q %o-\$ = e AE5 5#\$' L Ô ó æ73\$Æ"³Eœ 4â+kP\$

P ¶ eEç Á N+› Ç }4Ý æ73\$Æ"³Eœ P Ñ315 ¶ e © & Ç É ... æ

73\$Æ = æ † ĩ = ¥ L1•0 ¶ \,° æ73\$Æ"³Eœ æ 6Eπ ¶ e Mÿ

pF} ,C» fG 5".J A 6 ¶ e Çf 2020 ^a ,01 C- Â °,° æ73

\$Æ"³Eœ0 ¶ Q æ %o31 , e Ç]?ú W Ý P L ‹ >

bH & ï IN¯ ?'• P Ñ+k"- D+k"-1x* <315 =+k pP\$ P D+k Ñ

+k † =+k P"³Eœ °73 L =ù ĩ+k"- P Ñ315 = +k / Ô0A E\$- > P

Ñ315 Â4â+k P Ñ315 6 ` Q æK4 ´ ¶ e ĩ G µ , §G 5" 38 `H

& ï.J0- 1 x > IN¯ Ô ó ž U p 5 ^a ´ 2016-2020^a µ >

2016 ^a bH & ï IN¯ ^ 6 ` ¶ e ĩ G e P ¼ 18 ` .J0- 1 x,°

18 `N¯-\$, 2017 ^a bH & ï IN¯ ^ 6 ` ¶ e ĩ G e P ¼ 19 ` .J0-

1 x,° 20 `N-\$ > 2018 a, ^ 6 `¶ eïGeP 24 `J0-1 x,
e7 24-48

Gf , 6F {] Â %M-],°AôAx DPÂA÷ Ç 0 Ä'# 5-U W Á ='# g
Ý Â'# ÿ ™8*&´ < Æ W Á ,.J0-+k"-315 &j&';l , #¾Lh ç ž à
ó , 6 ‹+k"-315 ,° ç žAôAx Lh Ú315 =- Ý315 ,° 6 D
PÂA÷ Ç0.j+k"-315 ,°E±H L =3] L ¶ e , 01 +k"-315 ,°°
73 L IFV 8° , 6 Q ç ž =Kµ 5³ ØEœ Þ Ñ+k"-315

.i+k"-,°AôAx D l = ¶ e Ç 6 <K8 / .i+k"- ç ž] o ° ¶ e,°J
0- , 6 Q ç ž =Kµ 5³,°K8 / .i þ Ñ+k"- , Ô)æ>ûEœ69 n >
69 n = = Æ < %o+k"- 73H P 400Wh/kg, à)å 5³ P 500!W
´ 100% DODµ, ç ž]Eô f 3 =?."x >
1.4 Q " 73 0 7K8+k"- ¶ e 'H] §] ©Kd ¶ e2± µ
.J0- » ï Æ 6 < 0 76• >(ÿ+k@ C^ = p 0 %o+k@ C^,°AôAx
l = ¶ e,°J0- , 6 ó+k L œÓ l =Q Ú\$_/ñ †+k 2)½,° 0
7+k@ C^ %o31 Ç.J0-#q]Ní2È D+k@ C^ =+k · D+k@ C^ x,° 0
0+,M̄ °1‡ ¶ e Â0i Ð L ¶ e , 6 0 7+k · Â 0 7+k"-,° l =
¶ e Ç 6 < 0 7+k"-,°+U Ý 8° l+^>û =,°J0- , 6 Q ç ž =
Kµ 5³,° 0 7K8+k"- , Ô)æ>ûEœ/p99 >
69 n = = Æ Ú\$_ A , < %o+k"- 73H P 300Wh/kg, à)å 5³
P2000!W ´ 0.3C @ C)½ { t+k , 100% DODµ, ç ž]Eô f 3
=?."x , Ô)æ>ûEœ69 n >
1.5 þ Ñ+k"-#•B DAú - ¶ e 'H] §] ©Kd ¶ e2± µ
.J0- » ï Æ.J0- þ Ñ+k"- ©Kd † ï Â < %o,°]73Aú#• ï# ,
° 0 † ï -+k"--]73 L#)å6Š þAú - p l Ç.J0-+k"- ^ ž+U ³

8*&' < Æ ,J0¬ Þ Ñ+k"- ě ž1•4Ý <2± = ü Ç 6 < 3 » L Þ Ñ+k
"-315 ,°/ = < Æ , 01 Þ Ñ +k"-y 7#•B Aú - © & Â ! ¢ É >
69 n = = Æ 01 Þ Ñ+k"- ,° žM~Aú - %031 , ; " † Ī f31
5 ,°+k]73#•B i# , < %0+k"- ^ ž+U 3 ž U ,° ě ž]>ž • i# ,
1x* < 315 ,° Ō73 D]73Aú#• i# , Þ Ñ+k"-315 M~ G ÔL{ ë ,°
%M-] = '# ě ž D Ō73 ě ž1•Aú f i# Ç 01 - ? 3L{ ~F "j ©
,° Þ Ñ+k"-#•B Aú - © & Ç ^#•B Aú - Â Þ Ñ+k"- ě ž1•4Ý <2±
iM~ ~F 10N @ = ü ~ Ç 01 Ý ÷ ! ¢ É , ¬ c+k"-315 m
b ! C G Ä 200 ` >

2. +k pP§ Þ D+k Ñ+k †

2.1 |+^EœQ %M-]EœE³+k Ñ+k †Lü F315 6 'H] §]

©Kd ¶ e2± µ

.J0¬ » ĩ Æ.J0¬ 0 Ä Ō)½ ž ,4ÝLü F ,° P #w ž †5 ° Â

5 5N ; • Á ¬ %01x ´

Éα!ø+k p b %o LEα »+k p D FU ž,° q F μ & r Õ)½ ü Ü P
2.5kW/kg´ P 30 0 μ, & rEç. ü Ü P 18Nm/kg,F 5#" Õ)½ P
1.8kW/kg, 6Q ~)½ P 94%, & O

69 n = = Æ Ô)æEœE¼ žE0.1 2©150 2©99 *,⁰ -(p)å¹ U
. ,%ö •M-Eô ,-*?ü@ P 30

(i 7 A,° ÔA÷#•B Ç ~ F C G Ä 6 N 3 i#•B = ü /?ú999• ~ >

3.3 8 bP´P¬+k b"³EœLü F D/p99 ´ Ê+^/p992± µ

.J0¬ » i ÆFPEý p /p99F >, „J0¬8 bP´P¬+k b"³Eœ 7L#

4ñ# = Š¬+\$ Äê•,`D-. © = •£““ — ½Å´q\$pL@

] §] ©Kd ¶ e2± μ

.J0¬ » ï ÆE0·j 0 Ä] Ö)½'ù Ì+k"– Þ p,°ªEœ Þ Ñ315

Lü F ¶ e Ç ÂªEœ73H 1x* < =736M N L = Þ 7 Ê =ªEœ'# ©

>— = {LÒB ã D ïKO Ý I1•©KdLü F ¶ e Ç·j 70MPaEœE³Q Á

Ñ"X "X -+k ĺ ž ¶ e Ç Â Þ Ñ315 ©KdM,G ,F? Á ï# , Â

¬AôAxÉy0A =+U Ý 8° #w0A Ç 01 'ù Ì+k"–"³Eœ Þ Ñ315 ©

+k"- ç Ú ØEœ ¯H +U Ý73 Ñ ,9í Í ç € 1 !t @ , 6 < E ¯H /p

99F > , /p99EœE¼ P10 E¼ >

4.4

315 D^aEœ,°Lü F Â oGf = Ð ¶ e = ^aEœLü F D 6 % L 6 N Ý I

¶ e , 6 +k E\$- > Þ Ñ Ž+[^]Eœ >

69 n = = Æ p+k6\ >315 p æ V Þ ~)½ P 93%Ç ^aEœ ÖFU ,
L* 0-100km/hO80 , 0-50km/hO3.80 ´4å+k W E µ Ç52 > ë4å

+k5#P-H OA F70km,4å+k Þ W E A+k6M O15kWh/100kmÇù"i#¾

6MH ´ C a+k73Eç L,°ù İ#¾ 6MH µE11b LI!ë"i6ML† r ´ GB

19578-2014µLf „, Á P 40%Ç,´ çH 52 >"i6M O 1.3LÇ6 1-2

!t]73t:• },° +k / ÔOA E\$- > Þ Ñ Ž+[^]Eœ , ^aEœ Ý I315 Õ

73 ; ž1•4Ý ISO 26262ASIL-C4Ý , ^aEœ Ô)æK6 d P3000 & >

5.2 Q]-" |[^]Eœ\$- > Þ Ñ315 6 D^aEœLü F ´H]§

]©Kd ¶ e2± µ

.J0- » i Æ Â p+k6\ > ©Kd ¶ e =Q ~Q Õ)½ ü Ü+kP§ Þ

315 ¶ e = \$- > Þ Ñ315 Lü F ¶ e.J0- , 6 Q ~)½ =Q]-"

,° |[^]Eœ\$- > Þ Ñ q F Ç Â +k"-4ú +k"-1x*<315 = ^aEœLü F

D 6 % L 6 N Ý I ¶ e =Q ~+kLz ,315 ¶ e , 6 +k E / ÔOA

E |[^]Eœ >

69 n = = Æ ^aEœ\$- > Þ Ñ W E A"i6M O 16L/100km´ 12m

ØEœ p Á , c 3® Á 8 ë µ Ç 6FU ë4å+k Þ W E A+k6M O

43kWh/100km,4å+k5#P-H OA P50km, È tEô f 3 £ = ü >^aEœ

7 P(« j , 6 C G Ä 2!t +k E / ÔOA E |[^]Eœ , ^aEœ Ô)æK6 d

P1000 & >

5.3 $\hat{O}A \check{z}315 \ 6 \ D^a E_{\infty} L \ddot{u} F \acute{H}] \S] \textcircled{K} d \uparrow e_{2 \pm} \mu$
 $.J \gg \ddot{i} \text{Æ} .J0 \neg \check{Z} + ^{\wedge} E_{\infty} \hat{O}A \check{z} I + ^{\wedge} \text{P} p A \hat{O} A \times D \acute{Y} I = Q \sim$
 $+k p315 = \hat{O}A \check{z}315 L \ddot{u} F 1 \bullet \uparrow e \text{Ç} 6 \ \%0\% E = " \text{"i6M} \text{,,} =$
 $52 > \sim) \frac{1}{2} Q , ^{\circ} \hat{O}A \check{z} I + ^{\wedge} \text{P} p \hat{A} \hat{O}A \check{z}315 \ \text{Ç} 6 \ \langle ^a E_{\infty} L \ddot{u} F \uparrow$
 $e D 6 \ \% L 6 N \acute{Y} I \uparrow e .J0 \neg >$
 $69 n = = \text{Æ} \hat{O}A \check{z}315 " \ \ddot{O}) \frac{1}{2} P \ 0.65 \text{kW/kg} , \ \hat{O}A \check{z} \ \text{P} p "$
 $"i6M \ O220 \text{g/kWh} , \ \hat{O}A \check{z} \ +k p315 \ 6Q \ \sim) \frac{1}{2} P \ \ 96\% > v c E^3 a$
 $E_{\infty} \acute{E} t \hat{E} \hat{o} f 3 \ \text{£} = \ddot{u} , \ \ B \ (i \ 7 \acute{u} \ \ddot{i} \# \frac{3}{4} 6MH \acute{C} a + k73 E \phi L , ^{\circ} \ddot{u} \ \ddot{I}$
 $\# \frac{3}{4} 6MH \ \mu E^{11} b \ L ! \ddot{e} " i6M L \dagger r L f \text{,,} \ \acute{A} P \ \ 40\% > \hat{O}A \check{z}315 \ c E^3$
 $^a E_{\infty} , \ \hat{O}) \text{æ} K 6 \ d P 1000 \bullet >$

6. 4å+k Þ Ñ315

6.1 $Q] 734 \text{å+k} \text{P} F \text{P} \acute{A} P \ \ddot{O} 73 " ^3 E_{\infty} \acute{C} \ \text{SUV} \ \mu 6 \acute{H}] \S$
 $] \textcircled{K} d \uparrow e_{2 \pm} \mu$

$.J0 \neg \gg \ddot{i} \text{Æ} \hat{A} \ 4 \text{å+k} \text{P} \ \ \text{SUV} \ ^a E_{\infty} L \ddot{u} F \uparrow e = ^a E_{\infty} E \pm H \ L \uparrow$
 $e = ^a E_{\infty} \ \check{z}] D + k . \div ^2 \ \ddot{i}] \uparrow e = ^a E_{\infty}) \acute{a} \ ^1 F 8 \acute{E}] \uparrow e 1 \bullet ^a E_{\infty}$
 $\textcircled{K} d \uparrow e \ \text{Ç} . J \ 6 \ \% LP \S \text{P} D V \text{P} 315 = Q \ L h \acute{U} \check{z} " J O \text{P} \check{N} + k " -$
 $315 = ^{\circ} 73 \ L ^a E_{\infty} \acute{Y} I 315 = q 4 \ddot{o} + k \acute{A} \ \ 800 \ E \) , ^{\circ} Q \acute{A} + k " J 31$
 $5 = +k \text{P} E \phi \ G D \ O \frac{3}{4} I \text{P} 315 = Q 73 \sim " +k \text{P} \acute{i} \grave{I} 6 \ \% L 0 ^{\circ} B 931$
 $5 1 \bullet \textcircled{K} d \dagger 315 \ \text{Ç} 6 \ \check{z} \text{æ} \ \ \text{SUV} +k \text{P} L \ddot{E} - \ ^a E_{\infty} >$

$69 n = = \text{Æ} 4 \text{å+k} \ \text{SUV} \acute{E} \text{æ} K \mu \ 4 P . 5 m \ \mu \ ^a E_{\infty} + k 6 M \ O$
 $13 \text{kWh/100km} \acute{C} \ \ddot{e} \# \ \mu \ , 4 \text{å+k} 5 \# P \neg H \ O A \ \text{R} 400 \text{km} \acute{C} \ \ddot{e} \# \ \mu \ \ \text{Ç}$

0-100km/h ÖFU ,L* O 6 0 , 6Q EœFU P150km/hÇ 6](b — Ü P
 45%Gk l PLf „+k73#³/₄6M" Á P 25%]#h p ë ´ ECE ë µ Ç
 {+k ,L* O 20 <JÕ ´ 30%-80%SOQµÇEœDá D Ë- 5 °E±H LEô
 10% @ ´ B" JØ5 °Eœ Á µ Ç ç ž]Eô f c 3 æEœAú -?ú0A
 ´ C-NCAPµ Ê U?."x Ç I Ð q4õ+k Á 800 E),°Q Á+k"J31
 5 AôAx?ú99 >

6.2 N2/N32±Q]734å+k Þ |+^Eœ Þ Ñ © & ¶ e ´ H] §] ©
 Kd ¶ e2± µ

.J0→ » ï Æ Â 4å+k Þ |+^EœQ ~P§ Þ ¶ e =+k"-315 Lü F
 ¶ e = °Eœ °73 L D Ý I ¶ e =Q ÁLü F Ý I ¶ e = @>û315 °
 73 Ý I ¶ e = °EœE±H L ¶ e1• ©Kd ¶ e Ç 6 W • L =31 M L
 ,°4å+k Þ |+^Eœ °73 L Ë- , → Ê+^ ÄF EÉ2± = ´ P2± Z0 Eœ Á Ç
 } °Eœ ç ž] = %M-] =6F {] Â)å 1F8 Ê] Ç Â °Eœ,°-
 H L+U Ý 8° , ~ F?ú W L+U Ý73 Ñ >

69 n = = Æ4å+k Þ |+^Eœ °Eœ 0-50km/h ÖFU ,L* O 15 0 ,
 30 <JÕ 6Q EœFU P00km/h, 6](b — Ü P 30%,+k l PLf „+k
 73#³/₄6M" Á P25%´ GB/T 18386 6 æ ë µ Ç ° =C^H D B2±'ù
 "iEœ-." CQ 0 30%ÇN2 F EÉ2± |+^Eœ ž"J O)å 1\$ _ Ü99 *
 ?¼- -20 f 40 µ5#P→H 0A P250km´ GB/T 18386 6 æ ë µ ,
 E_{kg} 00.3kWh/´ km·t µÇN3 ´ P2± |+^Eœ ž"J O)å 1\$ _ Ü99 *
 ?¼- -20 f 40 µF 5# ´ P ,L* P 8hÇ ~ F °+U Ý73 Ñ P 5000

