UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Monica Bhattacharyya
Administrative Law Judge

In The Matter Of **CERTAIN HIGH-STRENGTH ALUMINUM OR ALUMINUM ALLOY-COATED STEEL, AND AUTOMOTIVE PRODUCTS AND AUTOMOBILES CONTAINING SAME**	**Investigation No. 337-TA-1402**

REBUTTAL EXPERT REPORT OF DIERK RAABE, PROFESSOR DR.-ING. REGARDING VALIDITY

I. INTRODUCTION 1
A. Qualifications 1
B. Compensation 4
C. Materials Considered 4
D. Summary of Opinions 4
II. LEGAL STANDARDS 4
A. Claim Construction 4
B. Presumption of Validity 5
C. Prior Art 6
D. Earlier Conception Date 7
E. Anticipation and Obviousness 7
F. Secondary Considerations of Non-Obviousness 9
G. Written Description 10
H. Enablement 10
I. Indefiniteness 10
J. Claiming the Subject Matter the Applicants Regards as Their Invention 11
K. Utility 11
III. LEVEL OF ORDINARY SKILL IN THE ART 11
IV. REBUTTAL TO DR. BROWN'S STATE OF THE ART 12
A. Overview of Hot-Stamping 13
B. History of Hot-Stamping 16
V. REBUTTAL TO DR. BROWN'S DESCRIPTION OF U.S. PATENT NOS. 10,961,602 AND 11,326,227 21
A. Overview of the '602 and '227 Patents 21
B. Prosecution Histories of the '602 and '227 Patents 25
1. '602 Patent Prosecution History 25
a. Information Disclosure Statements 25
b. Takagi 27
c. Laurent 28
d. Notice of Allowance 34
2. '227 Patent Prosecution History 34
a. Information Disclosure Statements 35
b. Cornette and Laurent 37

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 2 of 18

(1) Different Materials 37
(2) Mean Iron Composition 40
(3) Combination with Laurent 42
c. Notice of Allowance 44
VI. CLAIM CONSTRUCTION 45
VII. DR. BROWN FAILS TO ESTABLISH THAT CERTAIN PRIOR ART REFERENCES ARE PRIOR ART TO THE ASSERTED PATENTS 46
A. The Priority Date of the Asserted Patents 46
VIII. REBUTTAL TO DR. BROWN'S OVERVIEW OF THE PRIOR ART 50
A. 2006 Volkswagen Passat 50
B. Engels 53
C. Cornette 56
D. Vaissiere 62
E. Laurent 65
F. Takagi 66
G. Hein 67
H. GMW14400 68
I. Nishibata WO 69
J. Nishibata US 70
K. Suehiro II 71
L. Lachmann 71
IX. ASSERTED ANTICIPATION AND OBVIOUSNESS GROUNDS FOR THE '602 PATENT 72
A. Grounds Based on Takagi 72
1. There is no motivation to combine 72
a. Takagi in combination with Cornette 73
b. Takagi in combination with Cornette and Laurent 82
c. Takagi in combination with Cornette and Nishibata US 83
d. Takagi in combination with Hein and GMW14400 84
e. Takagi in combination with Hein, GMW14400, and Laurent 90
f. Takagi in combination with Hein, GMW14400, and Nishibata WO 90
2. General 90

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 3 of 18

3. Asserted Claims – Takagi in view of Cornette 91
a. Claim 1 91
b. Claim 2 92
c. Claim 5 92
d. Claim 6 92
e. Claim 9 92
f. Claim 10 93
g. Claim 12 95
h. Claim 18 97
i. Claim 20 97
j. Claim 21 97
k. Claim 22 97
l. Claim 24 97
m. Claim 25 98
n. Claim 26 99
o. Claim 28 99
4. Asserted Claims – Takagi in view of Cornette and Laurent 99
a. Claim 3 99
b. Claim 4 100
c. Claim 7 100
d. Claim 8 100
5. Asserted Claims – Takagi in view of Cornette and Nishibata US 100
a. Claim 3 100
b. Claim 4 101
c. Claim 5 101
d. Claim 6 101
6. Asserted Claims – Takagi in combination with Hein and GMW14400 101
a. Claim 1 101
b. Claim 2 102
c. Claim 3 102
d. Claim 4 103
e. Claim 5 103

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 4 of 18

f. Claim 6 104
g. Claim 7 104
h. Claim 8 105
i. Claim 9 105
j. Claim 10 105
k. Claim 12 105
l. Claim 18 106
m. Claim 20 106
n. Claim 21 106
o. Claim 22 106
p. Claim 24 106
q. Claim 25 106
r. Claim 26 107
s. Claim 28 107
7. Asserted Claims – Takagi in combination with Hein, GMW14400, and Laurent 107
a. Claim 3 107
b. Claim 4 108
c. Claim 7 108
d. Claim 8 108
8. Asserted Claims – Takagi in combination with Hein, GMW14400, and Nishibata WO 108
a. Claim 3 108
b. Claim 4 109
c. Claim 5 109
d. Claim 6 109
B. Grounds Based on Cornette 109
1. There is no motivation to combine 110
a. Cornette in combination with Nishibata US 110
2. General 110
3. Asserted Claims – Cornette 111
a. Claim 1 111
b. Claim 2 115

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 5 of 18

c. Claim 3 116
d. Claim 4 116
e. Claim 5 116
f. Claim 6 117
g. Claim 7 117
h. Claim 8 117
i. Claim 9 117
j. Claim 10 117
k. Claim 18 118
l. Claim 20 118
m. Claim 21 118
n. Claim 22 118
o. Claim 24 118
p. Claim 25 119
q. Claim 26 119
r. Claim 28 119
4. Asserted Claims – Cornette in view of Nishibata US 119
a. Claim 3 119
b. Claim 4 120
c. Claim 5 120
d. Claim 6 121
C. Grounds Based on Suehiro II 121
1. There is no motivation to combine 121
a. Suehiro II in combination with Cornette 121
b. Suehiro II in combination with Cornette and GMW14400 125
c. Suehiro II in combination with Cornette and Laurent 125
d. Suehiro II in combination with Cornette and Nishibata US 126
2. General 127
3. Asserted Claims – Suehiro II in view of Cornette 127
a. Claim 1 127
b. Claim 2 128
c. Claim 3 128
d. Claim 4 128

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 6 of 18

e. Claim 5 128
f. Claim 6 129
g. Claim 9 129
h. Claim 10 129
i. Claim 12 132
j. Claim 18 133
k. Claim 20 133
l. Claim 21 134
m. Claim 22 134
n. Claim 24 134
o. Claim 25 134
p. Claim 26 135
q. Claim 28 135
4. Asserted Claims – Suehiro II in view of Cornette and GMW14400 135
a. Claim 3 135
b. Claim 4 136
5. Asserted Claims – Suehiro II in view of Cornette and Laurent 137
a. Claim 3 137
b. Claim 4 137
c. Claim 7 138
d. Claim 8 138
6. Asserted Claims – Suehiro II in view of Cornette and Nishibata US 138
a. Claim 3 138
b. Claim 4 138
c. Claim 5 138
d. Claim 6 139
D. Grounds Based on Engels 139
1. There is no motivation to combine 139
a. Engels in combination with Cornette 139
b. Engels in combination with Laurent 142
c. Engels in combination with Nishibata WO 142
d. Engels in combination with Cornette and Nishibata WO 142
e. Engels in combination with Cornette and Laurent 143

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 7 of 18

f. Engels in combination with Takagi 143
2. General 143
3. Asserted Claims – Engels 144
a. Claim 1 144
b. Claim 2 144
c. Claim 9 144
d. Claim 10 145
e. Claim 12 145
f. Claim 18 146
g. Claim 20 146
h. Claim 21 146
i. Claim 22 146
j. Claim 24 147
k. Claim 25 147
l. Claim 26 147
m. Claim 28 147
4. Asserted Claims – Engels in combination with Cornette 148
a. Claim 2 148
b. Claim 5 148
c. Claim 6 148
5. Asserted Claims – Engels in combination with Laurent 148
a. Claim 3 148
b. Claim 4 148
c. Claim 7 149
d. Claim 8 149
6. Asserted Claims – Engels in combination with Nishibata WO 149
a. Claim 3 149
b. Claim 4 149
c. Claim 5 149
d. Claim 6 150
7. Asserted Claims – Engels in combination with Cornette and Nishibata WO 150
a. Claim 6 150

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 8 of 18

8. Asserted Claims – Engels in combination with Cornette and Laurent 150
a. Claim 8 150
9. Asserted Claims – Engels in combination with Takagi 150
a. Claim 12 150
b. Claim 25 151
c. Claim 28 151
E. Grounds Based on Passat 151
1. Background 151
2. General 159
3. Asserted Claims – Passat 1049 160
a. Claim 1 160
b. Claim 2 162
c. Claim 3 162
d. Claim 4 162
e. Claim 5 162
f. Claim 6 163
g. Claim 7 163
h. Claim 8 163
i. Claim 9 163
j. Claim 10 163
k. Claim 12 163
l. Claim 18 164
m. Claim 20 164
n. Claim 21 164
o. Claim 22 164
p. Claim 24 164
q. Claim 25 164
r. Claim 26 164
s. Claim 28 165
F. Grounds Based on Lachmann 165
1. There is no motivation to combine 165
a. Lachmann in combination with Cornette 165

b. Lachmann in combination with Laurent 167
c. Lachmann in combination with Nishibata US 167
2. General 168
3. Asserted Claims – Lachmann 169
a. Claim 1 169
b. Claim 2 171
c. Claim 3 171
d. Claim 4 171
e. Claim 12 171
f. Claim 20 172
g. Claim 21 173
h. Claim 22 173
i. Claim 24 173
j. Claim 25 173
k. Claim 28 173
4. Asserted Claims – Lachmann in combination with Cornette 173
a. Claim 5 173
b. Claim 6 174
c. Claim 9 174
d. Claim 10 174
e. Claim 18 177
f. Claim 26 177
5. Asserted Claims – Lachmann in combination with Laurent 177
a. Claim 3 177
b. Claim 4 178
c. Claim 7 178
d. Claim 8 178
6. Asserted Claims – Lachmann in combination with Nishibata US 179
a. Claim 3 179
b. Claim 4 179
c. Claim 5 180
d. Claim 6 180

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 10 of 18

X. ASSERTED ANTICIPATION AND OBVIOUSNESS GROUNDS FOR THE ’227 PATENT 180

A. Grounds Based on Takagi 180

1. There is no motivation to combine 180

a. Takagi in combination with Cornette 180

b. Takagi in combination with Cornette and Vaissiere 181

c. Takagi in combination with Cornette and Laurent 182

d. Takagi in combination with Hein and GMW14400 182

e. Takagi in combination with Hein, GMW14400, and Vaissiere 182

f. Takagi in combination with Hein, GMW14400, and Laurent 182

2. General 183

3. Asserted Claims – Takagi in view of Cornette 183

a. Claim 1 183

b. Claim 2 184

c. Claim 4 184

d. Claim 5 184

e. Claim 6 184

f. Claim 7 184

g. Claim 8 185

h. Claim 9 185

i. Claim 10 185

j. Claim 11 185

k. Claim 13 186

l. Claim 15 186

m. Claim 22 186

n. Claim 24 187

o. Claim 25 188

4. Asserted Claims – Takagi in combination with Cornette and Vaissiere 188

a. Claim 15 188

5. Asserted Claims – Takagi in combination with Cornette and Laurent 188

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 11 of 18

a. Claim 16 188
b. Claim 17 188
6. Asserted Claims – Takagi in combination with Hein and GMW14400 189
a. Claim 1 189
b. Claim 2 189
c. Claim 4 189
d. Claim 5 189
e. Claim 6 189
f. Claim 7 190
g. Claim 8 190
h. Claim 9 190
i. Claim 10 190
j. Claim 11 191
k. Claim 13 191
l. Claim 15 191
m. Claim 16 192
n. Claim 17 192
o. Claim 22 192
p. Claim 24 192
q. Claim 25 193
7. Asserted Claims – Takagi in combination with Hein, GMW14400, and Vaissiere 193
a. Claim 15 193
8. Asserted Claims – Takagi in combination with Hein, GMW14400, and Laurent 194
a. Claim 16 194
b. Claim 17 194
B. Grounds Based on Cornette 194
1. There is no motivation to combine 194
a. Cornette in combination with Nishibata US 194
2. General 195
3. Asserted Claims – Cornette 195

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 12 of 18

a. Claim 1 195
b. Claim 2 196
c. Claim 4 196
d. Claim 5 196
e. Claim 6 196
f. Claim 7 196
g. Claim 8 197
h. Claim 9 197
i. Claim 10 197
j. Claim 11 197
k. Claim 13 197
l. Claim 15 198
m. Claim 16 198
n. Claim 17 199
o. Claim 24 199
p. Claim 25 199
4. Asserted Claims – Cornette in view of Nishibata US 199
a. Claim 16 199
b. Claim 17 200
C. Grounds Based on Suehiro II 200
1. There is no motivation to combine 200
a. Suehiro II in combination with Cornette 200
b. Suehiro II in combination with Cornette and Vaissiere 200
c. Suehiro II in combination with Cornette and Laurent 201
d. Suehiro II in combination with Cornette and Nishibata US 202
2. General 202
3. Asserted Claims – Suehiro II in combination with Cornette 202
a. Claim 1 202
b. Claim 2 203
c. Claim 4 203
d. Claim 5 203
e. Claim 6 203
f. Claim 7 203

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 13 of 18

g. Claim 8 204
h. Claim 9 204
i. Claim 10 204
j. Claim 11 204
k. Claim 13 204
l. Claim 15 204
m. Claim 22 205
n. Claim 24 205
o. Claim 25 206
4. Asserted Claims – Suehiro II in combination with Cornette and Vaissiere 206
a. Claim 15 206
5. Asserted Claims – Suehiro II in combination with Cornette and Laurent 207
a. Claim 16 207
b. Claim 17 207
D. Grounds Based on Engels 207
1. There is no motivation to combine 207
a. Engels in combination with Cornette 207
b. Engels in combination with Takagi 208
c. Engels in combination with Hein 208
d. Engels in combination with Vaissiere 209
e. Engels in combination with Laurent 209
2. General 209
3. Asserted Claims – Engels 210
a. Claim 1 210
b. Claim 2 210
c. Claim 4 210
d. Claim 5 210
e. Claim 6 211
f. Claim 7 211
g. Claim 9 211
h. Claim 10 211

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 14 of 18

i. Claim 15 ... 211
j. Claim 22 ... 212
k. Claim 24 ... 212
l. Claim 25 ... 212
4. Asserted Claims – Engels in combination with Cornette ... 212
a. Claim 8 ... 212
b. Claim 11 ... 213
c. Claim 13 ... 213
d. Claim 24 ... 213
e. Claim 25 ... 213
5. Asserted Claims – Engels in combination with Takagi ... 213
a. Claim 8 ... 213
b. Claim 9 ... 214
c. Claim 10 ... 214
d. Claim 11 ... 214
e. Claim 22 ... 214
6. Asserted Claims – Engels in combination with Hein ... 214
a. Claim 15 ... 214
b. Claim 16 ... 215
c. Claim 17 ... 215
7. Asserted Claims – Engels in combination with Vaissiere ... 215
a. Claim 15 ... 215
8. Asserted Claims – Engels in combination with Laurent ... 215
a. Claim 16 ... 215
b. Claim 17 ... 216
E. Grounds Based on Passat ... 216
1. Background ... 216
2. General ... 216
3. Asserted Claims – Passat 1049 ... 217
a. Claim 1 ... 217
b. Claim 2 ... 217
c. Claim 4 ... 217
d. Claim 5 ... 218

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 15 of 18

e. Claim 6 218
f. Claim 7 218
g. Claim 8 218
h. Claim 9 218
i. Claim 10 218
j. Claim 11 218
k. Claim 13 219
l. Claim 15 219
m. Claim 16 219
n. Claim 17 219
o. Claim 22 219
p. Claim 24 220
F. Grounds Based on Lachmann 220
1. There is no motivation to combine 220
a. Lachmann in combination with Cornette 220
b. Lachmann in combination with Vaissiere 220
c. Lachmann in combination with Laurent 221
2. General 221
3. Asserted Claims – Lachmann 222
a. Claim 1 222
b. Claim 2 222
c. Claim 6 222
d. Claim 7 222
e. Claim 8 222
f. Claim 9 222
g. Claim 10 223
h. Claim 11 223
i. Claim 13 223
j. Claim 15 223
k. Claim 22 224
l. Claim 24 224
m. Claim 25 225
4. Asserted Claims – Lachmann in combination with Cornette 225

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 16 of 18

a. Claim 4 225
b. Claim 5 226
5. Asserted Claims – Lachmann in combination with Vaissiere 226
a. Claim 15 226
6. Asserted Claims – Lachmann in combination with Laurent 226
a. Claim 16 226
b. Claim 17 226
XI. THE ASSERTED PATENTS ARE NOT INVALID BASED ON A "PREFERRED HOT STAMPING PROCESS" OR "TECHNICAL DOMESTIC INDUSTRY" 227
XII. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS 231
XIII. THE CLAIMS COVER WHAT THE INVENTOR REGARDS AS THE INVENTION 235
XIV. DEFINITENESS 238
A. The Asserted Patents Inform a POSITA About the Scope of the Term "Layer" with Reasonable Certainty 239
B. The Asserted Patents Inform a POSITA About the Scope of the Term "Level" with Reasonable Certainty 246
XV. THE ASSERTED PATENTS CLAIM A USEFUL INVENTION 248
XVI. RESERVATION OF RIGHTS 250

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 17 of 18

TABLE OF ABBREVIATIONS

Abbreviation	Description
’227	U.S. Patent No. 11,326,227
’602	U.S. Patent No. 10,961,602
Cornette	Cornette et al., “High Strength Steels for Automotive Safety Parts,” SAE Technical Paper Series 2001-01-0078 (2001)
Engels	Engels et al., “Controlling and monitoring of the Hot-Stamping Process of Boron-Alloyed Heat-Treated Steels” (May 9, 2006)
GMW14400	GMW14400 Material Specification
Hein	Hein et al., “Hot Stamping of USIBOR 1500 P: Part and Process Analysis Based on Numerical Simulation” (May 9, 2006)
Lachmann	Carsten Lachmann, “Developments of High-Strength Sheet Steel Qualities and Joining Technology Aspects for Use in Automobiles” (2005)
Laurent	U.S. Patent No. 6,296,805
Maki	Japanese Patent Publication No. JP/2004/244704
Nishibata	U.S. Patent Publication No. 2006/0185774
POSITA	Person of ordinary skill in the art
Suehiro II	Suehiro et al., “Properties of Aluminum-Coated Steels for Hot-Forming” (2003)
Takagi	U.S. Patent Application Publication No. 2004/0009366
Vaissiere	Vaissiere et al., “Development of Pre-Coated Boron Steel for Applications on PSA Peugeot Citroën and RENAULT Bodies in White,” SAE Technical Paper Series 2002-01-2048, reprinted from the Proceedings of the 2002 SAE International Body Engineering Conference and Automotive & Transportation Technology Conference (2002)
VW Passat	2006 Volkswagen Passat VIN# WVWAK73C66P041049

ArcelorMittal Ex. 2004
Posco Co. LTD. v. ArcelorMittal
IPR2024-01376
Page 18 of 18