

HIHO WHEEL CHINA CO., LTD.

连云港启创铝制品制造有限公司

Company Presentation

公司介绍



01. Introduction of HIHO Group / HIHO 集团介绍

02. Wheel Business / 铝轮毂事业

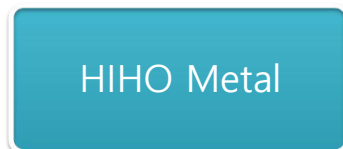
03. Latest Technology / 新的技术

04. Product Introduction / 产品介绍

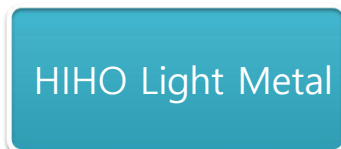


Comprehensive Organization / 集团结构

I. HIHO Group



No. 1 AL Trader in Korea
New Business for
Mining & Smelting
300K MT / Year



AL alloying
Billet
132K MT / Year

Overseas Corporation



AL WHEEL Biz.



Capacity:
1.8mil pcs / year



Capacity:
3.1mil pcs / year



Capacity :
1.5mil pcs / 2023
2.5mil pcs / 2024

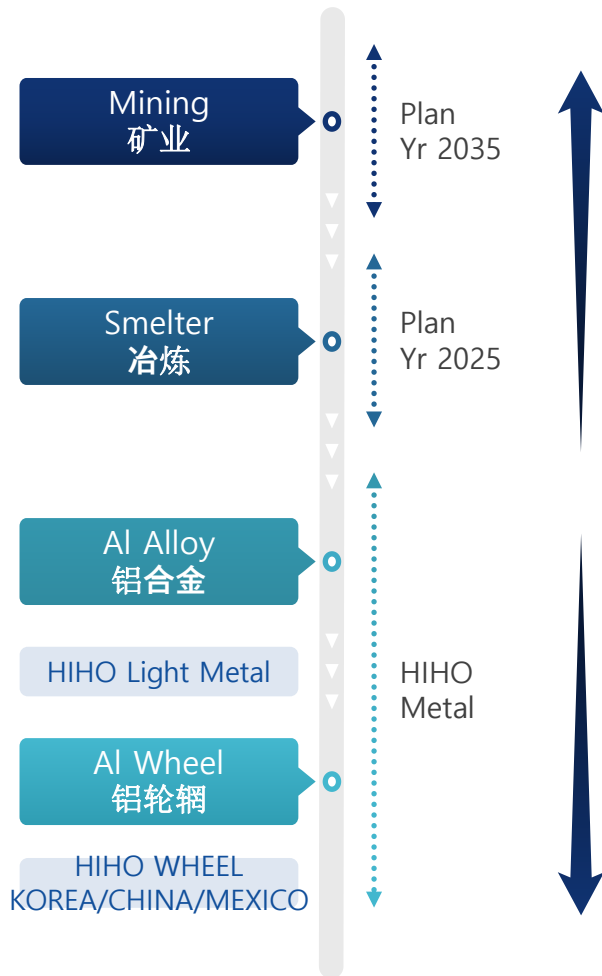


Capacity:
1.5mil pcs / year
3.0mil pcs / 2021

Confidential Information



Vertical Integration of Aluminum Business 铝事业的产业链整合



I. HIHO Group



Strives for the world's best.



Up-stream

Global Business Leader

▲ Enhanced competitiveness
▲ In the global stage

Strives for the world's best.

Raw material production

Import & Distribution (Hiho Metals)

Manufacturing (intermediate goods)

Manufacturing (end items)

▼ Maximization of
▼ the value creation

Down-stream

Globalization & Localization

Confidential Information



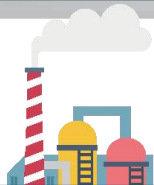
I. HIHO Group



- Hiho Head Quarter
- Factory(4)
- Office & Subsidiary(6)
- Warehouse(6)
- Engineering rep.(2)

* Estimated in 2023

Confidential Information



JUN. 2000

Korea plant
was
established

DEC. 2003 Registered as OEM Vendor of Chrysler

JAN. 2004 Korea Plant TS16949 / ISO9001

JUL. 2004 Korea Plant ISO 14001

DEC. 2007 Registered as OEM Vendor of NISSAN
(Japan, USA, UK)

OCT. 2008 China plant was established.
(Al alloy & wheel plant)

DEC. 2008 China plant TS16949 / ISO9001/ISO14001

JUN. 2020 Mexico Al Wheel Plant project

SEP. 2015 India Al Wheel Plant JV project

NOV. 2013 Start to supply to VW

DEC. 2012 Start to supply to SUBARU

DEC. 2011 China plant OHSAS

MAR. 2010 GM & PSA Audit pass

JUL. 2009 FIAT Audit pass

II. Wheel Biz.

Confidential Information



Capacity Expansion / 产能情况

II. Wheel Biz.

Korea Plant (HWK)		China Plant (HWC)	
Area	Workforce	Area	Workforce
Area : 25,192 m ²	Total : 275 Office: 51 Plant: 224	Area : 99,000 m ²	Total : 869 Office: 150 Plant: 719
Building: 14,022 m ²	R&D(Office): 7 Quality(Office): 5 Quality(Plant): 25	Building: 55,000 m ²	R&D(Office): 18 Quality(Office): 8 Quality(Plant): 101

Plant	2022	2023	2024
Korea	2,000,000	2,000,000	2,000,000
China	3,100,000	3,100,000	3,100,000
Mexico		1,250,000	2,500,000
India JV	3,000,000	3,000,000	3,000,000
Total	8,100,000	9,350,000	10,600,000

Confidential Information



India Expansion

II. Wheel Biz.

■ Location : Mehsana, Gujarat, India



■ 2nd phase expansion

■ SOP : YR 2021

■ Capacity

- 1.5 mil. (1st phase)

- 1.5 mil. (2nd phase)

Total : 3.0 mil.

■ Target market

- India domestic

- Europe

- ASIA



Mexico Expansion

Hiho
HIHO WHEEL CHINA

II. Wheel Biz.

■ Location : Guanajuato, Mexico



- HIHO WHEEL MEXICO
- Location : Guanajuato, Mexico
- SOP : YR 2023
- Capacity
 - 1.25 mil. (1st phase)
 - 1.25 mil. (2nd phase)
 - Total : 2.5 mil.
- Target market : Mexico & USA
- Strategic customer



■ Other potential customers



Confidential Information

HIHO WHEEL



II. Wheel Biz.

Car Maker	Programs	Remarks
	JAPAN	INFINITI, SKYLINE, X-TRAIL, SERENA, JUKE, LEAF, NOTE, PATROL, ARMADA
	USA	ALTIMA, X-TEERA, LEAF, ROGUE, MURANO
	UK	QASHQAI, JUKE, LEAF, NOTE, MICRA(Renault)
	CHINA	QASHQAI, LEAF, ROGUE, MURANO
	SPAIN	PATHFINDER, NAVARA, PULSAR, ALASKAN(Renault), X-Class(Benz)
	MEXICO	LEAF, SENTRA
	RUSSIA	QASHQAI
	FRANCE	MICRA
	GERMANY	GOLF, PASSAT, TIGUAN
	USA	B-SUV
	MEXICO	GOLF
	BRAZIL	FOX
	GERMANY	A3
	JAPAN	FORESTER, EXIGA(CROSS OVER 7)
	USA	LEGACY, IMPREZA
	USA	200, PACIFICA
	CANADA	TOWN & COUNTRY, ROUTAN (VW)
	USA	GRAND CHEROKEE
	USA	DART, AVENGER, DURANGO, RAM 1500
	CANADA	CARAVAN, JOURNEY



Manufacturer Image

II. Wheel Biz.

Gimje, Jeonbuk in Korea



- ✓ Korea Plant found in 2000
- ✓ Mainly export to USA & Europe
- ✓ Stable Quality Provided

Lianyungang, Jiangsu in China



- ✓ China Plant found in 2008
- ✓ Covered domestic & overseas market
- ✓ Alloy Wheel Manufacturer No.7 in China

MEHSANA, GUJARAT in India

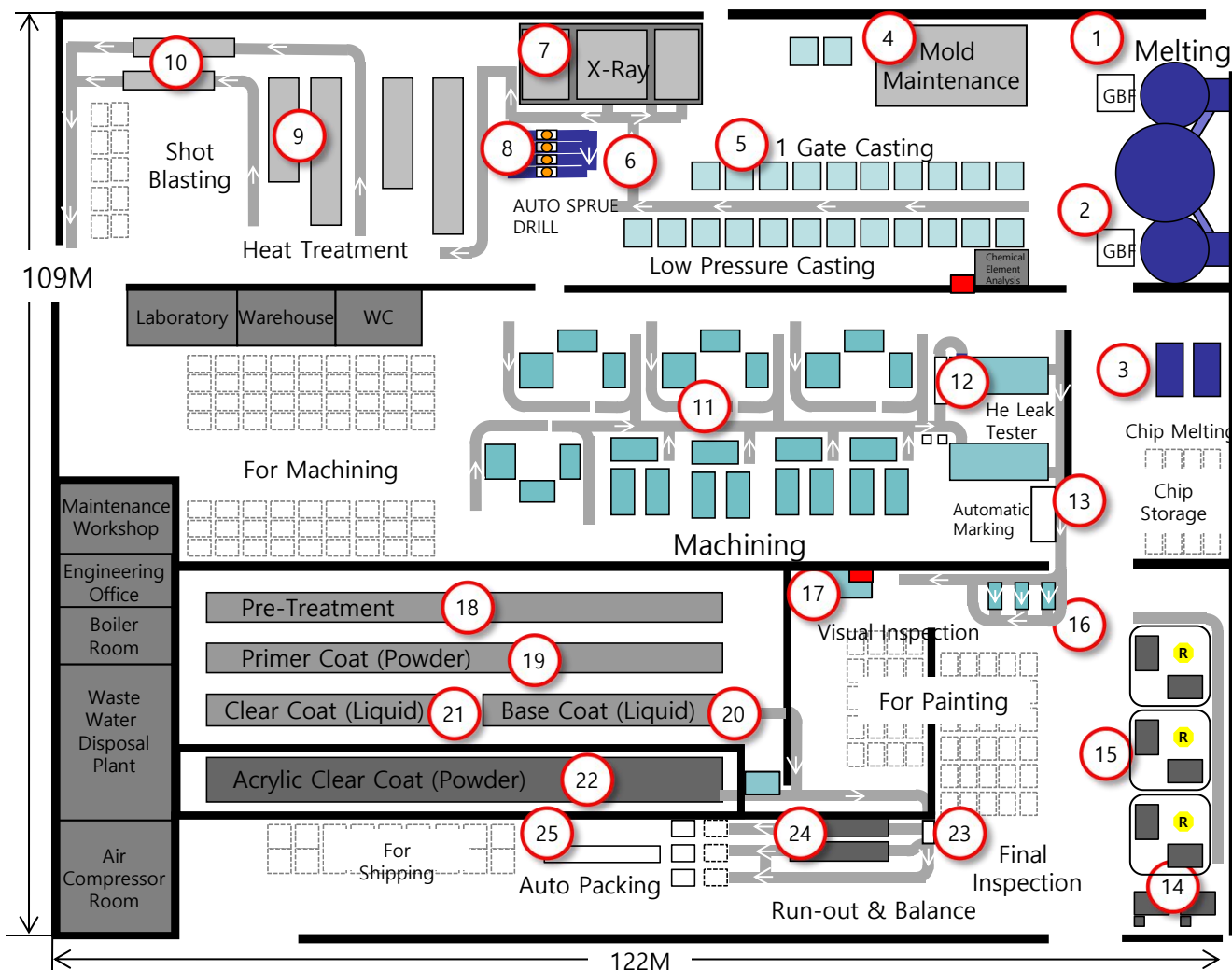


- ✓ Kalink & SSWL cooperated in 2017
- ✓ SSWL supplies to KIA in India
- ✓ Kalink provides T/A regularly



Korea Plant Lay-out

II. Wheel Biz.

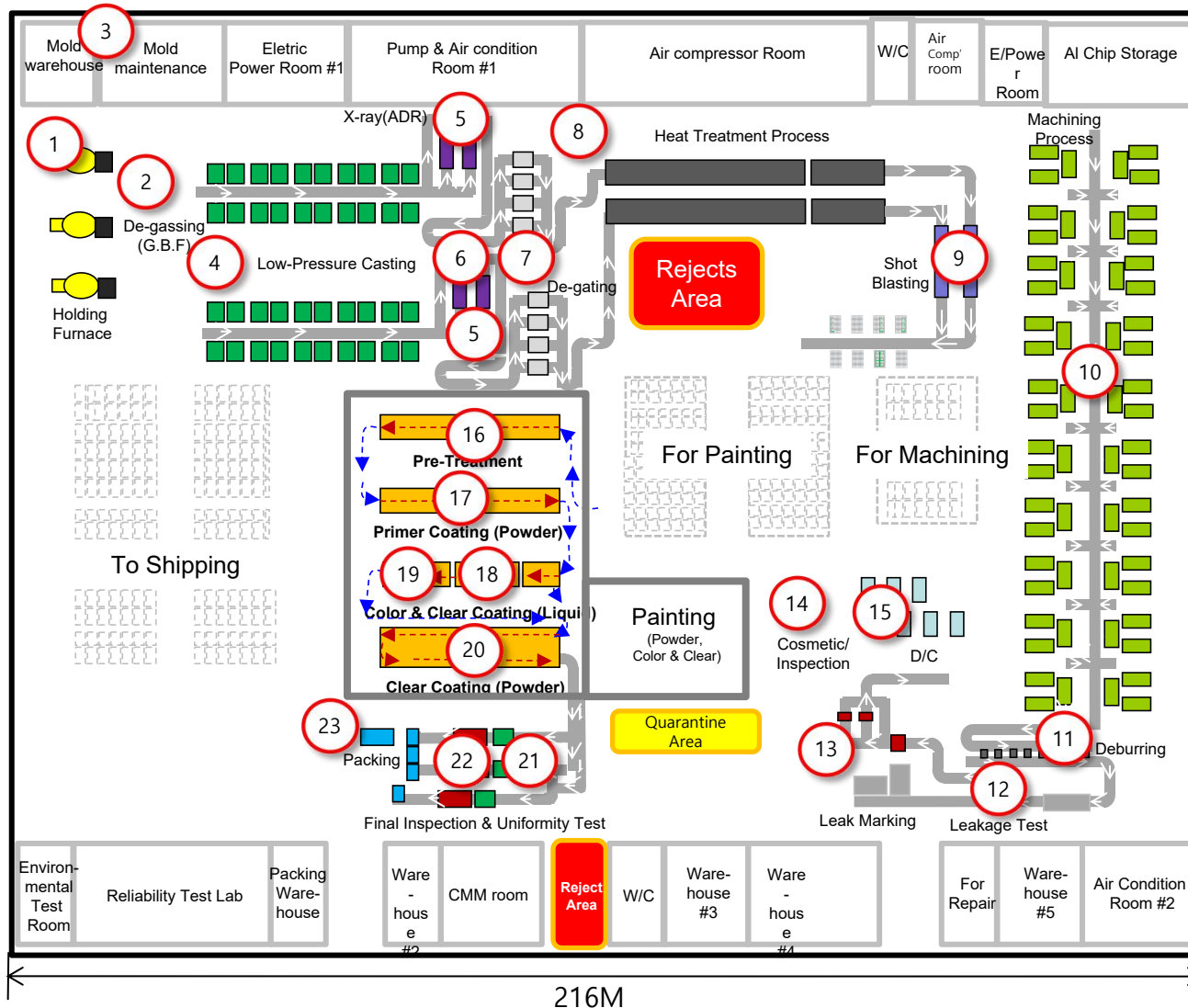


1. Melting Furnace
2. Degassing Treatment
3. Chip Melting
4. Mold Maintenance
5. 1 Gate Casting
6. Vision System
7. X-Ray (ADR)
8. De-gating
9. Heat Treatment
10. Shot Blasting
11. Machining Line
12. He Leak Tester
13. Auto Marking M/C
14. D/C Line(manual)
15. D/C Line(auto)
16. Auto De-burring M/C
17. Visual Inspection
18. Pre-treatment
19. Primer Coat (Powder)
20. Base Coat (Liquid)
21. Clear Coat (Liquid)
22. Acrylic Clear Coat (Powder)
23. Final Inspection
24. Run-out & Balance
25. Automatic Packing



China Plant Lay-out

II. Wheel Biz.



1. Holding Furnace
2. De-gassing Treatment
3. Mold Maintenance
4. Casting
5. X-Ray (ADR)
6. Vision System
7. De-gating
8. Heat Treatment
9. Shot Blasting
10. Machining Line
11. De-burring
12. Leak Tester
13. Automatic Marking M/C
14. Visual Inspection
15. D/C Line
16. Pre-treatment
17. Primer Coat (Powder)
18. Base Coat (Liquid)
19. Clear Coat (Liquid)
20. Acrylic Clear Coat (Powder)
21. Final Inspection
22. Runout & Balance
23. Automatic Packing

II. Wheel Biz.

营业执照

统一社会信用代码
91320700668965400N

营 业 执 照

名称 连云港启创铝制品制造有限公司
类 型 有限责任公司(外商合资)
法定代表人 PYO KYOUNGCHEON
经营范围 汽车用轮毂、铝合金铸锻件及夹具设计、制造;从事自产产品同类商品以及有色金属、氧化铝的进出口和批发业务。(依法须经批准的项目,经相关部门批准后方可开展经营活动)

注册 资 本 6800万美元
成 立 日 期 2007年11月13日
营 业 期 限 2007年11月13日至2057年11月11日
住 所 连云港经济技术开发区临港产业区大浦路109号

登记机关
2019年03月09日

国家企业信用信息公示系统网址: <http://www.gsxt.gov.cn>

国家市场监督管理总局监制

IATF 16949

afaq
AFNOR CERTIFICATION

Certificate

No : 69029 No IATF : 0437725
AFNOR Certification certifies that the management system implemented by:

ALINK WHEEL (LYG) CO., LTD.
连云港启创铝制品制造有限公司

for the following activities:

DESIGN AND PRODUCTION OF ALUMINUM ALLOY WHEELS
铝轮毂的设计和生

has been assessed and found to meet the requirements of:

IATF 16949: 2016

Without the evaluation of chapter 8.3,
and is developed on the following locations:

**NO. 109, DAPU ROAD, LINGANG INDUSTRIAL ZONE, ECONOMIC/TECHNOLOGICAL DEVELOPMENT ZONE, LIANYUNGANG CITY,
JIANGSU PROVINCE, P. R. CHINA**
中国江苏省连云港经济技术开发区临港产业区大浦路109号

This certificate is valid for (year/month/day) 2021-12-12 UNIT 2024-12-11

IATF

Julien NIZRI
Director General of AFNOR Certification

Certificate Version: 3

11 rue Francis de Pressensac - 93571 La Plaine Saint-Denis Cedex - France - T: +33 (0)1 41 15 50 00 - F: +33 (0)1 40 11 10 10
Société au capital de 10 107 000 € - 41 rue de la Gare 93500 La Plaine Saint-Denis - France

This certificate is based on an audit conducted by AFNOR Certification (France) Ltd. (AFNOR Certification) in accordance with the requirements of the IATF 16949:2016 standard.

afnor
CERTIFICATION

II. Wheel Biz.

ISO 9001

ISO 14001

ISO 45001



Certificat
Certificate

N° 2015/69026.3

AFNOR Certification certifies that the management system implemented by:
AFNOR Certification certifie que le système de management mis en place par:

ALINK WHEEL (LYG) CO., LTD.
连云港启创铝制品制造有限公司

Unified Social Credit Code / Code Crédit Social Unifié / 统一社会信用代码 : 91320700668965400N

for the following activities:
pour les activités suivantes :

DESIGN AND PRODUCTION OF ALUMINUM ALLOY WHEELS
铝轮毂的设计和生

has been assessed and found to meet the requirements of:
a été évalué et jugé conforme aux exigences requises par:

ISO 9001 : 2015

and is developed on the following locations:
et est développé sur les sites suivants :

NO.109, DAFU ROAD, LINGANG INDUSTRIAL ZONE, ECONOMIC AND TECHNOLOGICAL DEVELOPMENT ZONE, LIANYUNGANG CITY,
JIANGSU PROVINCE, P.R. CHINA
中国江苏省连云港经济技术开发区大浦路109号

This certificate is valid from (validité jusqu'à): 2021-12-12
CE certificat est valide à compter du (validité jusqu'à): 2024-12-11


Julien NIZRI
Managing Director of AFNOR Certification
Directeur Général d'AFNOR Certification





11 rue Francis Poulenc - 93587 La Plaine Saint Denis Cedex - France - T: +33 (0)1 41 62 60 00 - F: +33 (0)1 40 17 81 00
SAS capital de 10 507 000 € - RCS 552 063 589 - www.afnor.org



CERTIFICATE

**Environmental Management System
Certificate**

Certificate Number: 00222E34040R2M

CQM hereby certifies that

ALINK WHEEL (LYG) CO.,LTD.

Unified Social Credit Identifier: 91320700668965400N
Domicile: No.109, Dafu Road, Lingang Industrial Zone, Lianyungang Economic and Technological Development Zone, Lianyungang City, Jiangsu, P.R.China
Certification Add: No.109, Dafu Road, Lingang Industrial Zone, Lianyungang Economic and Technological Development Zone, Lianyungang City, Jiangsu, P.R.China

the management system conform to

GB/T 24001-2016/ISO 14001:2015

This certificate is valid to the following scope:
Design, production, sales of aluminum wheel for automobile and related management activities

(The information of this certificate can be queried on www.cqmc.com.cn or website of CQM. The continual validity of the certificate can be checked by Certificate Confirmation of surveillance.)


Issued on: 2022-11-10
Expires on: 2025-11-15




中国认可
管理体系
认证委员会
MANAGEMENT SYSTEM
CERTIFICATION
CNAS C002-M



中国质量认证委员会
China Quality Mark Certification Group
Address: No.33, Zhongguang Road, Haidian District, Beijing, P.R.China (100088)
http://www.cqmc.com.cn



CERTIFICATE

**Occupational Health and Safety
Management Systems Certificate**

Certificate Number: 00221S20149R1M

CQM hereby certifies that

ALINK WHEEL (LYG) CO.,LTD.

Unified Social Credit Code: 91320700668965400N
Domicile: No.109, Dafu Road, Lingang Industrial Zone, Lianyungang Economic and Technological Development Zone, Lianyungang City, Jiangsu, P.R.China
Certification Add: No.109, Dafu Road, Lingang Industrial Zone, Lianyungang Economic and Technological Development Zone, Lianyungang City, Jiangsu, P.R.China (222000)

has implemented and maintains a Occupational Health and Safety Management System which fulfils the requirements of the following standards

GB/T 45001-2020/ISO 45001:2018

Occupational health and safety management systems -- Requirements with guidance for use

This certificate is valid to the following product(s)/service:
Design, production, sales of aluminum wheel for automobile and related management activities

Issued on: 2021-01-12
Effective date: 2021-01-12
Validity date: 2023-12-06
Registration Number: CQM-32-2016-0712-0002

The validity of the certificate can be checked on www.cqmc.com.cn, Certificate Confirmation and CQM website





中国认可
管理体系
认证委员会
MANAGEMENT SYSTEM
CERTIFICATION
CNAS C002-M



中国质量认证委员会
China Quality Mark Certification Group
Address: No.33, Zhongguang Road, Haidian District, Beijing, 100088, P.R. China
http://www.cqmc.com.cn



Plant Production Equipment

II. Wheel Biz.

Process	Equipment	Type / Manufacturer	Korea Plant	China Plant	Total	Remark
Casting	Continuous Melting Furnace	Tower Type	2	4	6	5MT/hr
	Holding Furnace	Gas Fueled Type	1	4	5	8MT
	G.B.F (Degassing System)	Automatic	2	6	8	
	Low Pressure Die Casting Machine	Automatic / Kalink	24	54	78	
	Continuous Heat Treatment Furnace	T4 / T6	2	3	5	
	Shot Blast Machine		2	3	5	
	Sand Blast Machine		1	2	3	
	Gate Cutting Machine		-	1	1	
Machining	CNC Machining Line	Doosan , Tongtai	8	28	36	
	Automatic Brush Machine	Kalink	3	8	11	
	Ultra Bright Machine	Doosan, Tongtai, Taichung	8	11	19	
	Gate & Sprue Machine		-	1	1	
	N/C Machine	Doosan	-	8	8	
	Pre-Heating Furnace		-	2	2	
	Flow Forming Machine	Leifeld	1	2	3	40mil/year
	Automatic Deburring Machine			7	7	
Painting	Surface Pretreatment Equipment	Vertical Conveyor	1	1	2	
	Powder Primer Coating Equipment	Horizontal Conveyor	1	2	3	
	Acrylic Powder Coating Equipment	Horizontal Conveyor	1	1	2	
	Liquid Color Painting Equipment	Horizontal Conveyor	1	2	3	
	Liquid Clear Coating Equipment	Horizontal Conveyor	1	2	3	
Packing	Wrapping Machine	Automatic	1	1	2	
	Banding Machine	Automatic	1	2	3	



Plant Test Equipment

II. Wheel Biz.

Section	Equipment	Korea Plant	China Plant	Total	Manufacturer	Country
Material	Emission Spectrometer	1	2	3	Spectro	Germany
Property	Brinell Hardness Tester	1	1	2	Instron	USA
	Universal Material Test Machine	1	1	2	Instron	USA
	Furnace Temperature Tracker	1	2	3	Datapaq	U.K
	Bending moment fatigue tester	1	1	2	Oriental	Korea
	Digital Charpy Impact tester	1	-	1	Deakyong	Korea
	ADR X-Ray Test Machine	3	5	8	YXLON VJT	Germany USA
Durability test	Impact Test Machine	1	2	3	Makra	Germany
	Radial Impact Test Machine	-	1	1	Makra	Germany
	Rotary Fatigue Test Machine	3	5	8	Makra	Germany
	Radial Fatigue Test Machine	3	2	5	Jinwon	Korea
	Multi-axial Test Machine (Bi-axial Test)	-	1	1	Makra	Germany
Performance	Coordinate Measuring Machine	2	3	5	Mitutoyo Hexagon	Japan Germany
	Automatic Run-out & Balance Test Machine (Low Point Marker)	2	3	5	Kokkusai	Korea
	He Gas Air Leakage Tester	2 (3 chamber)	3 (5 chamber)	5	Yamaha VDH	Japan Germany
	Universal Surface Roughness Tester	1	1	2	Mitutoyo	Japan
Surface	Salt Spray Test Machine	1	1	2	Hanyoung	Korea
	Gravelometer	1	1	2	Q-PANEL	USA
	Humidity Chamber	2	2	4	Hanyoung	Korea
	Cass Test Machine	1	1	2	Hanyoung	Korea
	Warm Water Bath	1	1	2	Hanyoung	Korea
	Coat Thickness Test Machine	2	4	6	Elcometer	UK
	Cycle Corrosion Tester	1	1	2	Astech	Korea
	Xenon Light Accelerated Weatherometer	1	-	1	Q-lab	USA
	Metallic Color Spectrometer	1	1	2	Minolta	Japan



II. Wheel Biz.

Test machine	Manufacturer	Specification	Quantity	Test fulfilled
Cornering fatigue test machine	MAKRA (Germany)	12kNm	4	Cornering fatigue test Nut looseness test
Cornering fatigue test machine	JINWON (Korea)	12kNm	1	Cornering fatigue test Nut looseness test
Radial fatigue test machine	JINWON (Korea)	5000kgf	2 (2 work stations)	Radial fatigue test
Impact test machine	MAKRA (Germany)	1025kg	1	13°, 30° impact test 90° impact test(Japan) 90° impact test(Ford)
Impact test machine	JINWON	1035kg	1	13°, 30° impact test 90° impact test(Japan)
Radial impact test machine	MAKRA (Germany)	150-315kg	1	Radial impact test
Bi-axial test machine(outer drum)	MAKRA (Germany)	50kN	1 (2 work stations)	Pre-damage test ZWARP test Rim yield test
Universal telemetry(DAU)	RTM (JAPAN)	8 channels	1	Telemetry measurement
Material rotary fatigue test	HANGIL (Germany)	100.7kg	1	Material rotary fatigue test
Universal tensile test	Daeyung (Germany)	100kN	1	Tensile test Compression test
NSRT test bech	Self-made	850Nm	1	Nut seat rigidity test
DAU & strain gauge	KOYWA (Japan)	8 channels	1	Nut looseness test
Ultrasonics bolting equipment	DAKOTA (Japan)	MAX II	1	Nut looseness test



Test Capability

C.F.T Room



I.T Room



II. Wheel Biz.

R.F.T Room



Bi-axial test Room

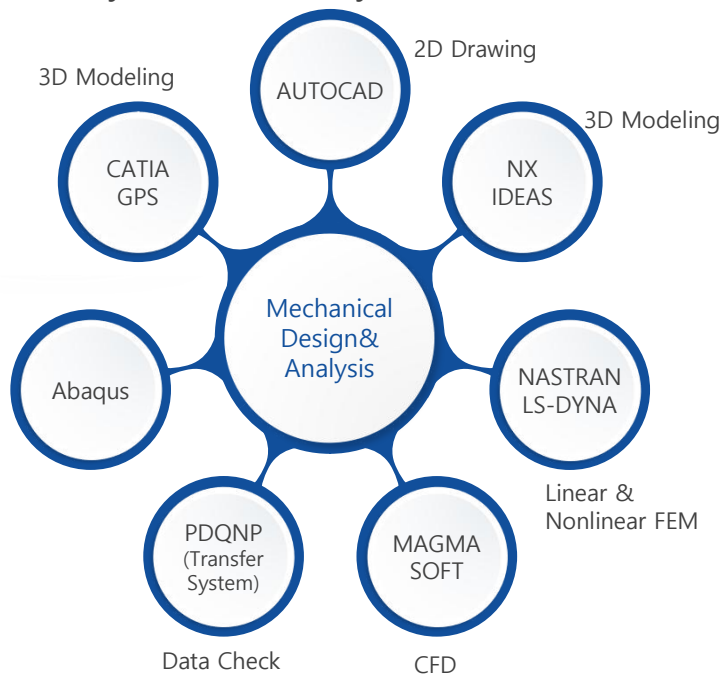




II. Wheel Biz.

Development System

Design & verify by using tool of design & CAE.
Through an analysis tool of floating & solidification,
review alloy wheel's castability in advance.

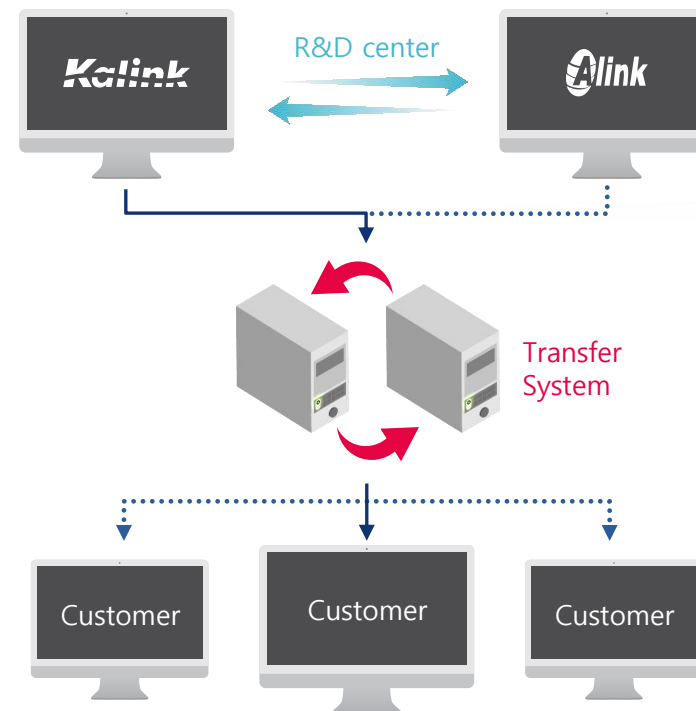


Design & Process Optimization / Reliability improvement

Data transfer system

Data transfer System

- | | |
|---------------------------|-----------------------------------|
| 1) VW/Audi: KVS System | 3) Subaru: URL System(one by one) |
| 2) Nissan: G2B&TCP System | 4) FCA: Trubiquity System |



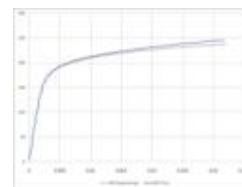
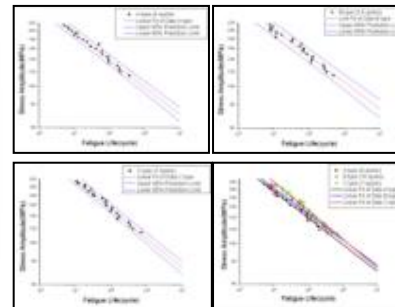
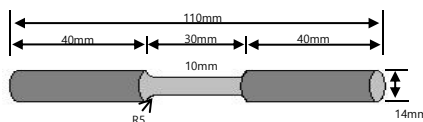


Study for Material Property

- True Stress-True Strain
- S-N Curve



$$r = \frac{Mc}{I} = \frac{\frac{\pi d^3}{32} L}{\pi d^3} = \frac{16 WL}{\pi d^3}$$

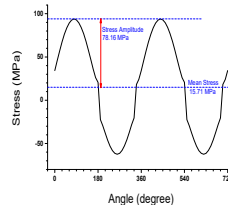
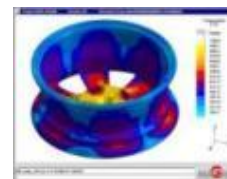
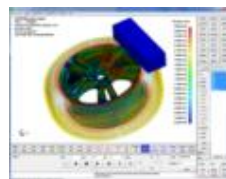
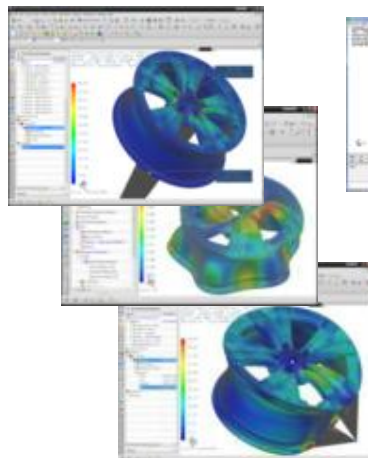


II. Wheel Biz.

Design
Optimization

Reliability Test & Analysis

- Non-linear FEA
- Linear FEA
- Fatigue
- CFD



CAE



Real Test



FEA & TEST
Correlation

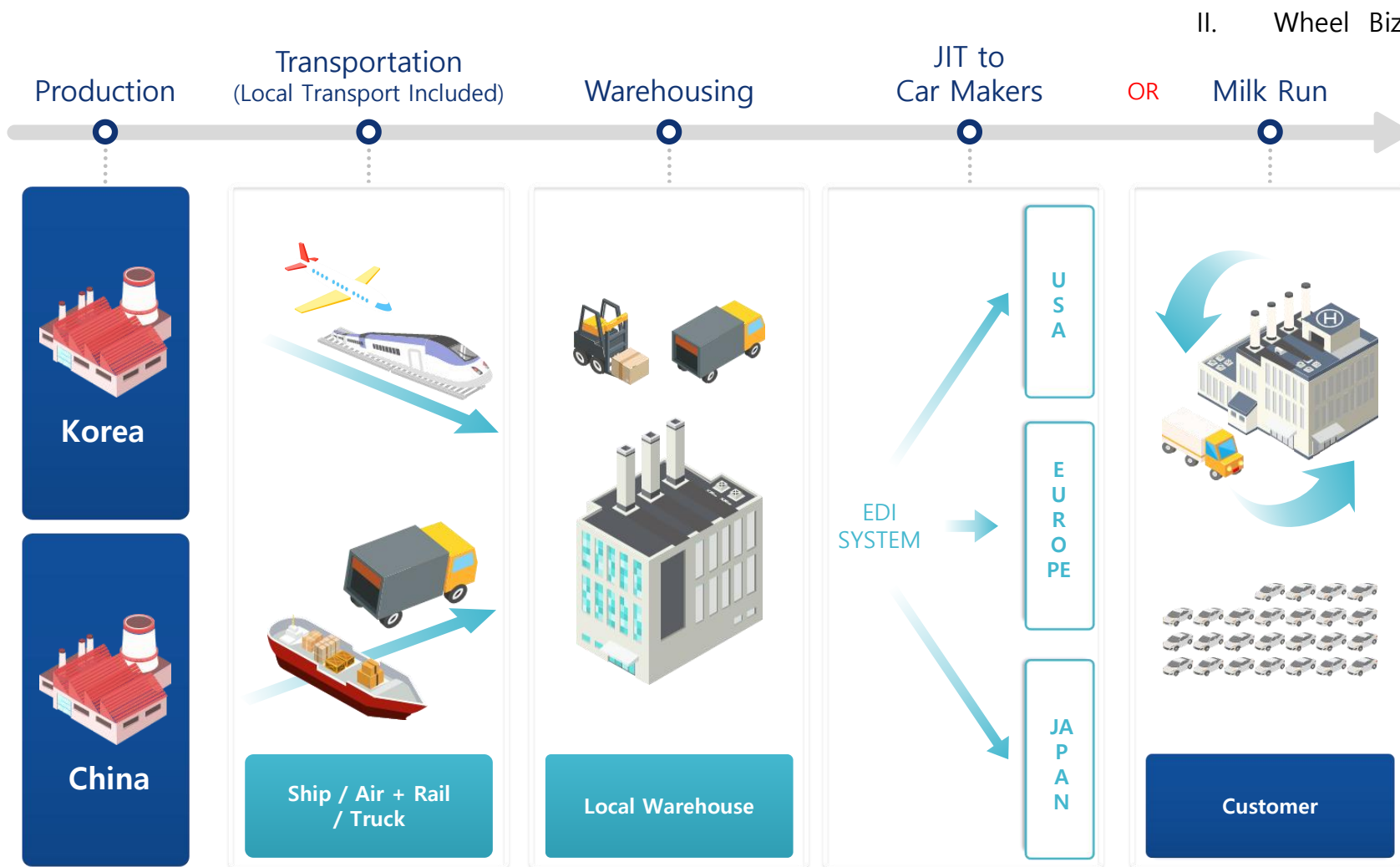


II. Wheel Biz.

Normal Paint/普通涂装	Premium Paint /高级涂装	Diamond Cutting / 金刚石切割
		
In - House	In - House	In - House
Chrome Plating / 镀铬	Polishing / 抛光	PVD (Sputtering) / 电镀
		
Outsourcing	Outsourcing	Under Development



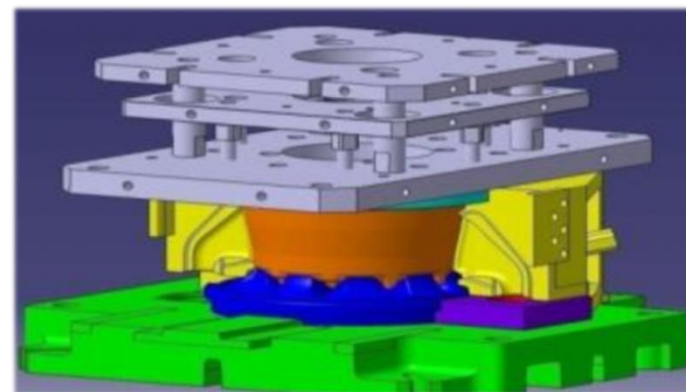
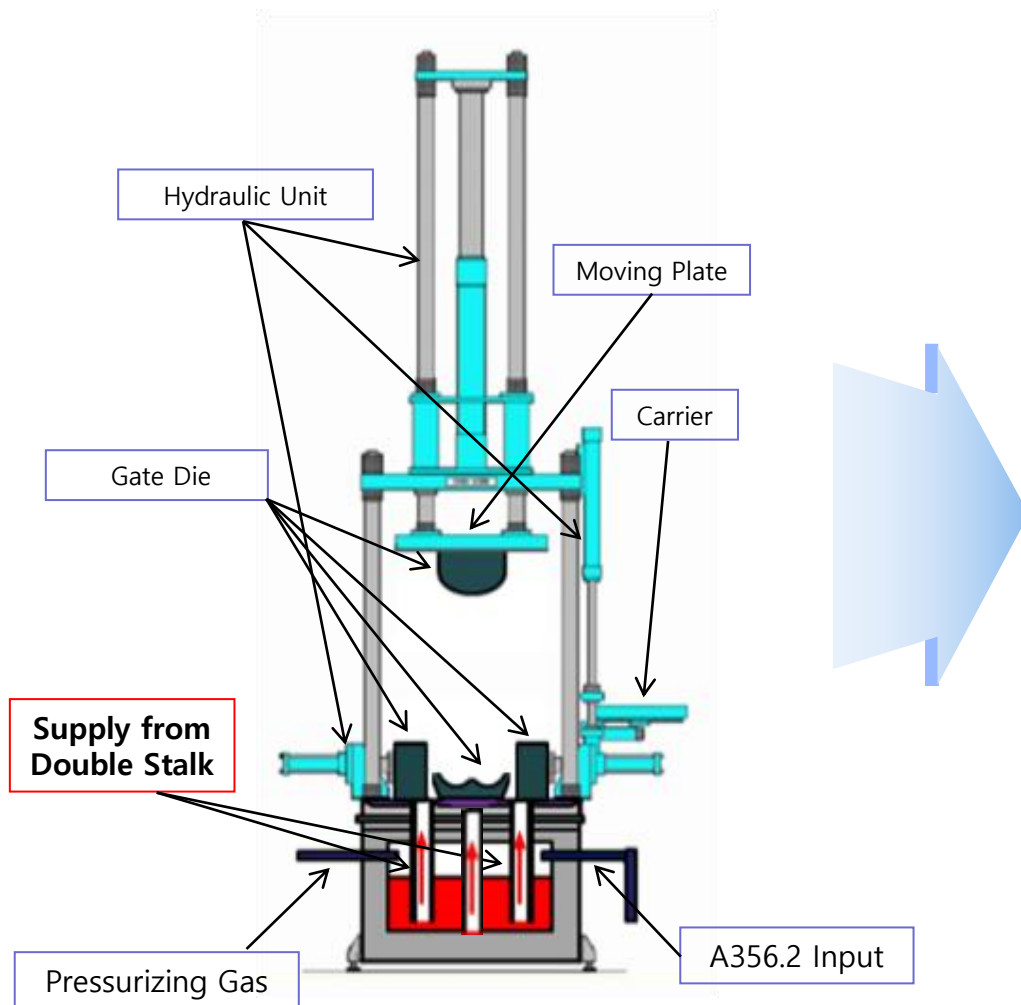
Logistic Flow





III. Latest Technology

Decreasing Weight by 5%~7%

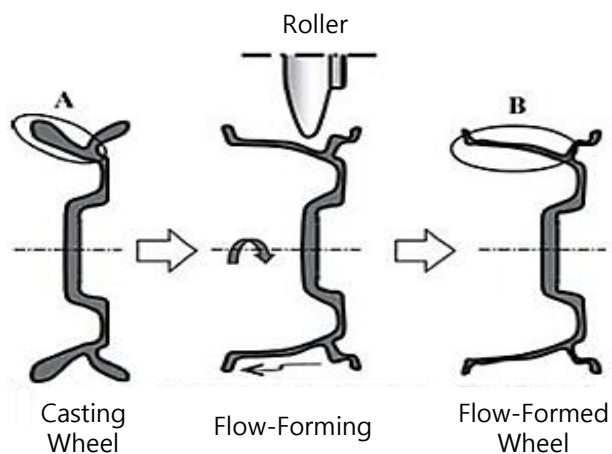
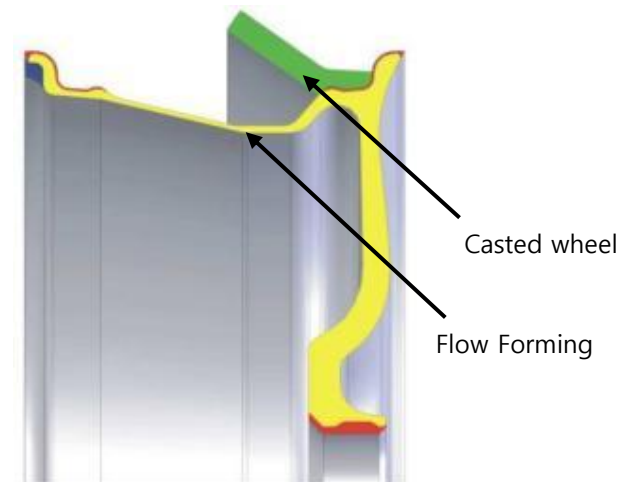


- ✓ Reducing Cycle Time
- ✓ Decreasing Failure Rate
- ✓ Enhancing Hub & PCD Strength
- ✓ Reducing Weight of Wheel



III. Latest Technology

Decrease Weight by 10%



- Reduce Weight of Wheel
- Improve Material Property
- Material Cost Saving
- Decrease Energy Consumption / Exhaust
- Enhance Safety / Stability



Nissan Programs

IV. Product Introduction

LEAF / KICKS	NEW NOTE (AURA, AUTECH)	ARIYA	NEW X-TRAIL ROGUE, QASHQAI	INFINITI SKYLINE / CIMA	PATROL アルマーダ
					
JAPAN	JAPAN	JAPAN / CHINA	JAPAN / UK / USA / CHINA	JAPAN	JAPAN
					
Diamond Cut with Gun Metal	Diamond Cut with Black Color	Aero Parts	Diamond Cut with Gun Metal	Hyper Dark Silver	Diamond Cut with Gun Metal
17" X 6.5	16", 17"	19"~20"	17"~ 19"	19" X 9.0	20" X 8.0
CY2012~	CY2021~	CY2021~	CY2020~	CY2019~	CY2021~



Subaru Programs

IV. Product Introduction

FORESTER	IMPREZA	Crosstrek(XV)	NEW LEVORG	WRX STI & S4	New BRZ / GR86
					
JAPAN	USA(SIA)	JAPAN	JAPAN	JAPAN	JAPAN
					
Diamond Cut with Gunmetal	Diamond Cut with Gunmetal	Diamond Cut with Gunmetal	Diamond Cut with Gunmetal	Diamond Cut with Gunmetal	Full Paint Matt High-luster Black
17" X 7.0	16" X 6.5	18" X 7.0	18" X 7.5	19" X 8.5	18" X 7.5
CY2012~	CY2016~	CY2019~	CY2020~	CY2020/21~	CY2021~



Volkswagen Programs

IV. Product Introduction

GOLF	PASSAT	GOLF A7 GP	ATLAS COUPE	TAREK	JETTA
					
GERMANY	GERMANY	USA	USA	Mexico	Mexico
					
Premium Paint	Premium Paint	Diamond Cut Under Cut	Diamond Cut	Diamond Cut with Black	Diamond Cut Under Cut
17" X 7.0	19" X 7.0	18" X 7.5	20" X 8.0	18" X 7.0	18" X 7.5
CY2014~	CY2016~	CY2017~	CY2019~	CY2020~	CY2020~



Chrysler Programs

IV. Product Introduction

AVENGER	DURANGO	GRAND CHEROKEE	DODGE RAM	JEEP GLADIATOR	DODGE CHARGER
					
USA	USA	USA	USA	USA 	USA
					
Premium Paint	Chrome Clad	Premium Paint	Full Paint	Full Paint Pad Print	Full Paint
18" X 7.0	20" X 8.0	20" X 8.0	18" X 8.0	17" X 7.5	20" X 8.0
CY2010~	CY2010~	CY2010~	CY2017~	CY2018~	CY2018~



Thank you !

