



Introduction of Right Way

IATF 16949
ISO14001

Version: 2022.12

Milestones



Founded in Tainan, Taiwan

Technical Cooperation with Japan ART metal Ltd. for Pistons Technology

Technical Cooperation with Japan Yayoi Forging Co. for Steering & Suspension Parts

Publicly traded on the Taiwan Stock Exchange

Establishment of Right Way Industrial (Kuala Lumpur), Malaysia

ISO 9001 and ISO 14001 Certified

ISO TS16949 Certified

Licensed by NASA (USA) to use high performance materials

Celebrated our 50th Anniversary!

IATF 16949 Certified

Acquired by Ta Chen Stainless Pipe, Ltd



1964



1967



1973



1980



1989



2002



2004



2005



2014



2018

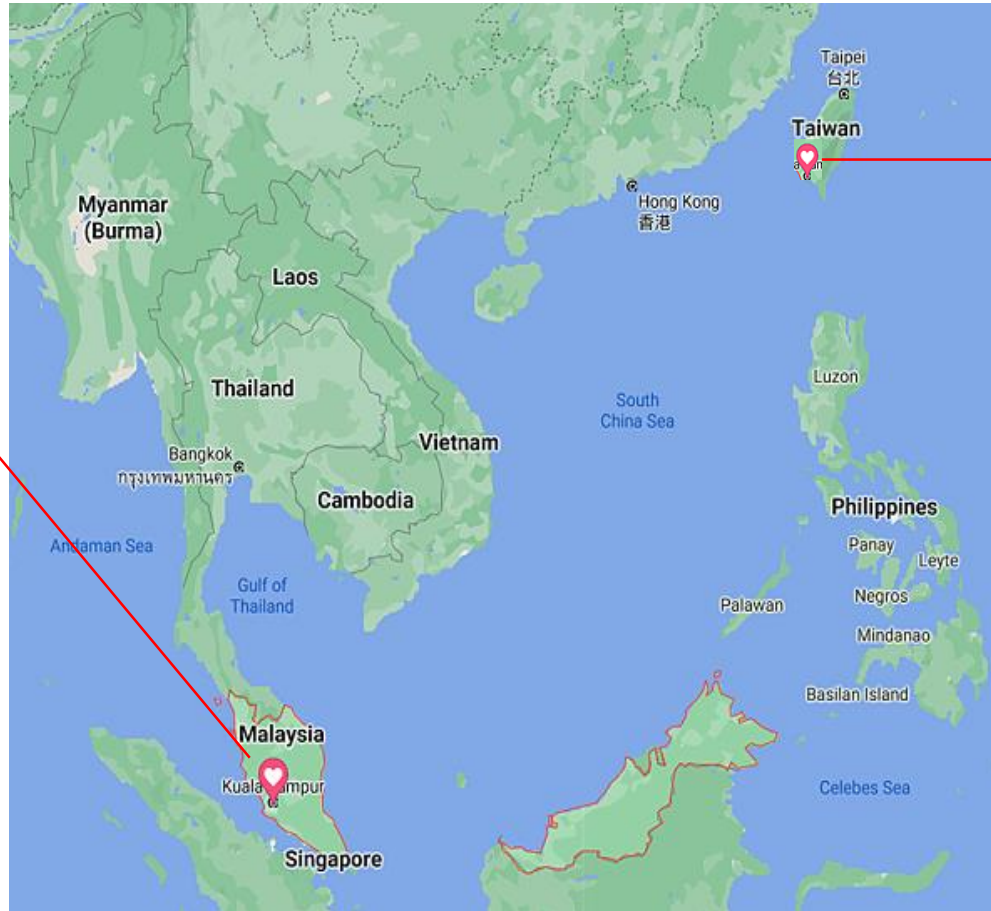


2022



RW Kuala Lumpur, Malaysia

- **Mfg abilities :**
Gravity casting/LPDC, machining
- **Products:**
 - Al casting parts
 - Al LPDC



RW Tainan, Taiwan

- **Mfg abilities :**
Gravity casting/Forging & Machining
- **Products:**
 - Pistons
 - Al gravity castings parts
 - Al forging parts
 - Suspension components (control arms, knuckles)



Being an affiliate of Ta Chen Stainless Pipe, Ltd in June, 2022

Product Applications



Applications	Engines	Steering components	Chassis/suspension	Refrigeration compressors	Industrial
Material	Aluminum/Steel	Aluminum/Steel	Aluminum/Steel	Aluminum/cast iron	Aluminum
Process	Castings/forgings	Castings/forgings	Castings/forgings	Castings	Castings/forgings
Products	piston  C/R  balance shaft  engine mount  nozzle bracket  manifold 	ball joint  link  tie rod  tie rod  link  valve housing  pinion housing 	subframe  knuckle  control arm  suspension arm  knuckle 	cylinder head  oil pump  throttle valve  pump cover  cam rotor  manifold 	actuator housing  flange  housing  pump housing  pump housing 

Main Customers



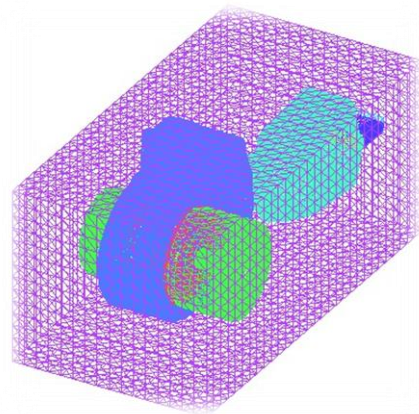
Automotive OE		
Automotive OE - Taiwan / Japan / Malaysia	Tier I	
   	  	
Industrial	Recreational Vehicles	Motorcycle (2 & 3 wheels)
       	     	         

Product Development Process-**Aluminum Casting**

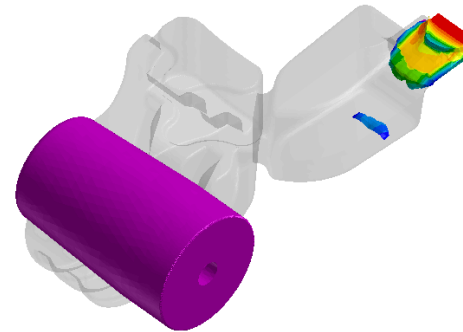
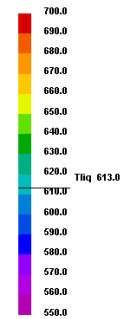


1.CAD model

**To achieve effective mold creation
and excellent blank quality**



2. Initial mold design
is created for analysis



QuikCAST

3.

Casting simulations (QuikCAST)
is used to evaluate the feasibility of mold design



4. Mold fabrication



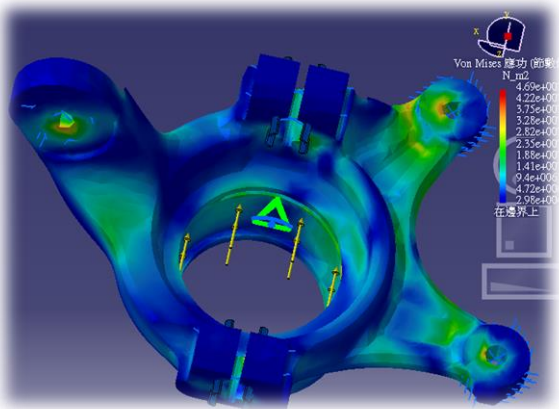
5. Casting trial

Product Development Process-**Aluminum Forging**



1. CAD model

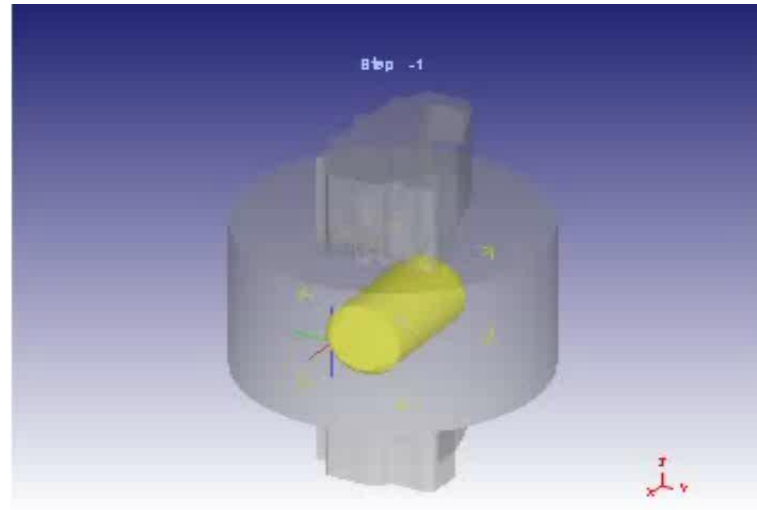
**To achieve effective mold creation
and excellent blank quality**



2.

FEA & Grain Flow simulations

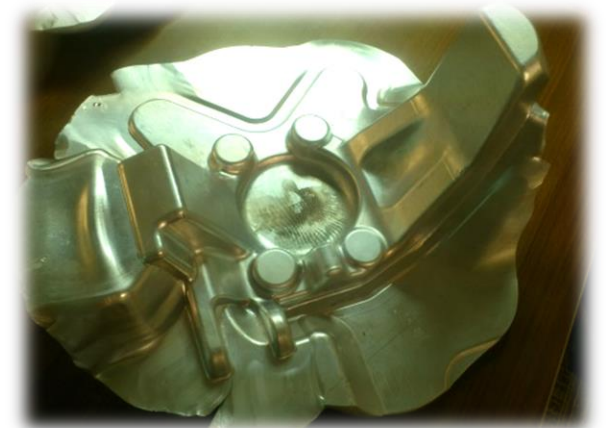
Analysis will be done if needed to
evaluate the stress distribution



3. Forging process CAE analysis
(3D DEFORM)



4. Mold fabrication



5. Blank production trial

Production Facilities- Light Weight Aluminum



Light Weight Solution Expert

■ Aluminum Casting, Forging, Suspension & Chassis Parts

- ✓ Lighter, stronger and more durable
- ✓ Excellent mechanical properties
- ✓ Fuel Economy

■ Aluminum Blank Facilities

Process Category	Max. Dimensions
Aluminum Gravity Casting	700mm x500mm x 300mm
Aluminum Forging	400 mm x 200mm

Gravity Casting Machines
RWT: 3
RWM: 22



Forging Press
3000T: 1 / 2500T: 2
1000T/600T: 5 each



Precision Machining

- State of the art CNC Lathes & CNC Machine Centers
- High capacity; operated by highly trained technicians



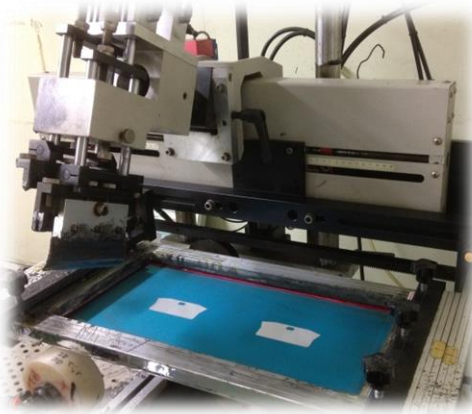
16 lines – for Engine Pistons (dedicated lines)

16 lines – Aluminum light machining
(2* dedicated + 14 multi – purpose)

10 lines – Carbon & Alloy Steel machining (2* engine
conrod + 3* transmission balance shaft + 5* CNC lathe)

Surface Treatments

- Available treatments include: ED coating, Hard chrome plating, Black anodizing, Powder coat and gloss.
- Piston surface treatments include:



Skirt Coating



Anodizing



Tin Plating



NDT Inspections



- Blanks are tested in various ways to validate mold design and manufacturing process
- Testing runs according the manufacturing method and material:

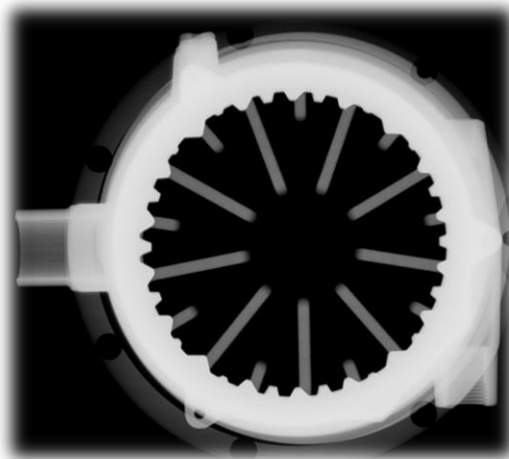
Aluminum Forging

Fluorescent liquid penetrant testing for crack detection



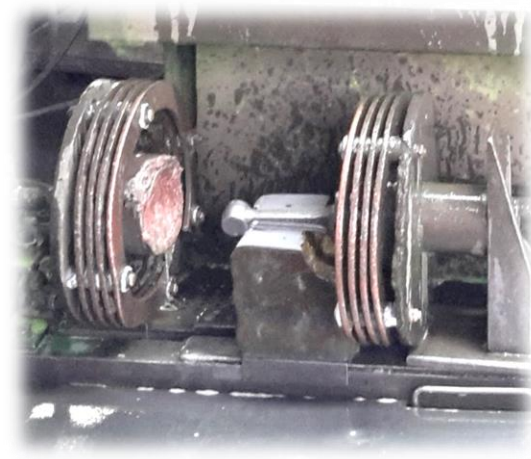
Aluminum Casting

X-ray analysis for internal porosity and structural integrity



Steel Forging

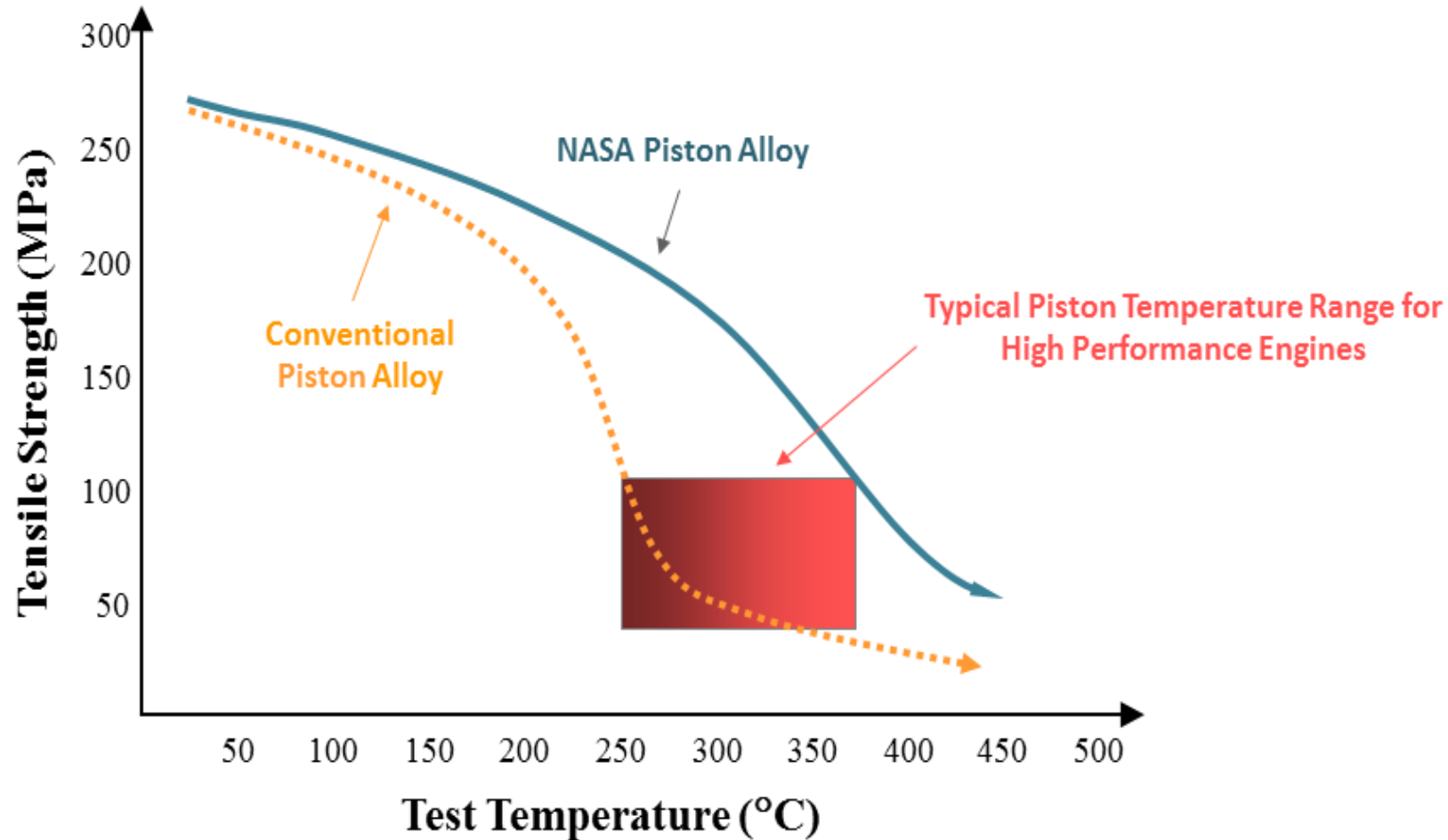
Magnetic particle inspection for grain flow dynamics



Innovation (1/3)- High Performance NASA Alloy Pistons



- Developed by NASA (USA) for greater strength at high temperatures
- Casted NASA alloy pistons are stronger than conventional forged pistons



Innovation (2/3)- Applications of NASA Alloy Pistons

- Right Way is the only authorized manufacturer outside of the United States; and the only manufacturer to successfully mass produce with the alloys
- Currently produce over 200,000 NASA alloy pistons each year in the following applications:



125cc Air-Cooled Scooter
Pistons



Turbo Charged SUV
Pistons



2-Stroke Outboard
Pistons



Watercraft Pistons
(Substitute for forged piston)



2-Stroke Snowmobile
Pistons



Sidecar
Pistons

Innovation (3/3)- High Performance NASA Alloy Pistons



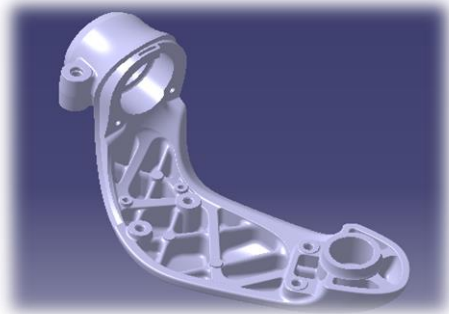
NASA398 Aluminum Alloy Inducted into Space Technology Hall of Fame



Product Development- Al Casting to Al Forging

CASE 1

- Original OEM design require light weight with excellent surface quality
 - Al Casting + Machining + Polishing + Powder Coating + Painting
- Surface quality defects were high due to casting problems
- Right Way successfully redesigned the part from Al Casting to Al Forging
 - Not only was the surface defect rate significantly reduced; overall weight was reduced by 7% and tensile strength saw a 20% increase



Before

Casting 1.916kg

A356 T6

Material Tensile Strength

284Mpa



After

Forging 1.782kg

6061 T6

Material Tensile Strength

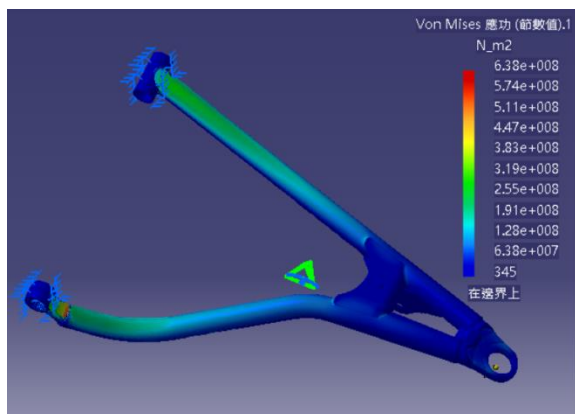
310Mpa

Product Development- Welded Steel Structure to Al Forging

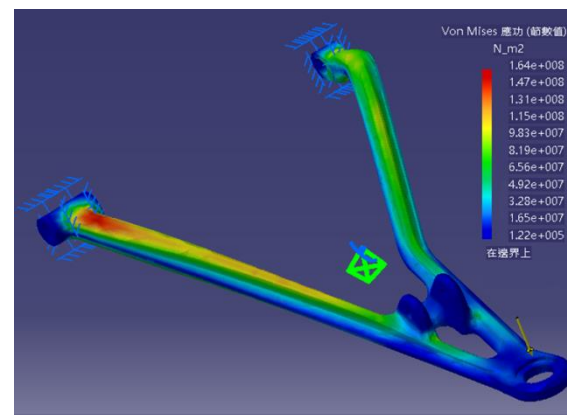
CASE 2

- Original OEM called for a welded steel structure
- Right Way successfully re-engineered the part to Al Forging
 - As a result, there was a 10% weight reduction with a 36% strength increase

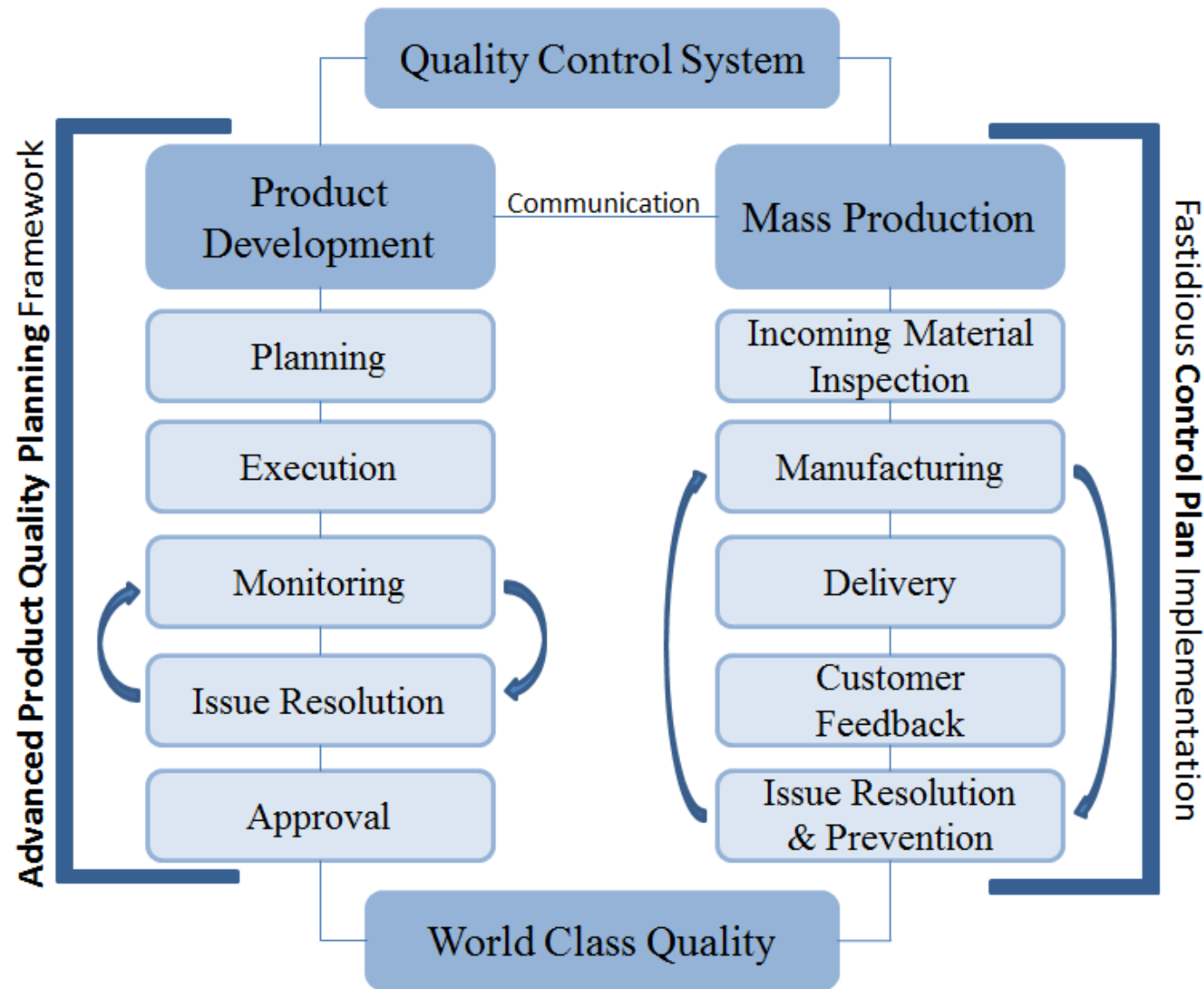
Welded Steel Structure



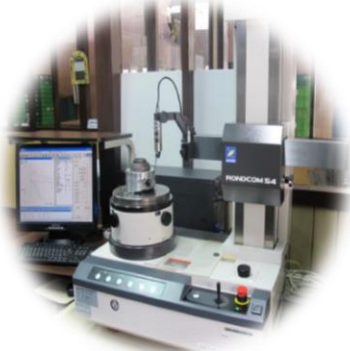
Aluminum Forging



Quality Control Process



Quality Control Facilities

Spectrometer	X ray	CMM	Microscope
 SPECTROLAB (Germany)	 YXLON MU 2000 (Germany)	 MITSUTOYO (Japan)	 OLYMPUS (Japan)
Projector	Surface Roughness	Piston Profile Machine	Hardness Tester
 MITSUTOYO (Japan)	 MITSUTOYO (Japan)	 TOKYO SEIMITSU (Japan)	 MITSUTOYO (Japan)

Certificate & Quality Awards



IATF 16949

ZERTIFIKAT
◆
CERTIFICATE
◆
CERTIFICADO
◆
СЕРТИФИКАТ
◆
認證證書
◆
CERTIFICATE
◆
ZERTIFIKAT

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Right Way Industrial Co., Ltd.
No. 1015, Chung Cheng West Rd.,
Ta-Chia Village, Jeng-Der District
Tainan City
Taiwan
Post Code: 717

has established and applies
a Quality Management System for

Manufacturing of Covering Piston,
Connecting Rod and Steering & Suspension System Parts,
Bracket / Clamp and Balance Shaft
(without Product Design as per Chapter 8.3).

An audit was performed and has furnished proof
that the requirements according to

IATF 16949
First Edition 2016-10-01
are fulfilled.
Issue date: 2021-08-10
Expiry date: 2024-08-09
Certificate Registration No.: 12 111 23483 TMS
IATF Certificate No.: 0416373

Head of Certification Body
Munich, 2021-08-12

Page 1 of 1

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
www.tuvsud.com/de/certificate-validity-check

TÜV SÜD
Management Service

ISO 14001

ZERTIFIKAT
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認證證書
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CERTIFICATE
◆
ZERTIFIKAT

CERTIFICATE

The Certification Body
of TÜV SÜD Asia Pacific TÜV SÜD Group
certifies that

Right Way Industrial Co., Ltd.
No. 1015, Chung Cheng West Rd., Ta-Chia Village,
Jeng-Der District, Tainan City 717, Taiwan, R.O.C.

has established and applies
an Environmental Management System for

Manufacture of Covering Piston, Connecting Rod, Steering and
Suspension System Parts, KLCS Casters, Hub and Clamp/Bracket for
Commercial Vehicle and Motorcycle for OEM and Aftermarket

An audit was performed, Report No. 718849406.
Proof has been furnished that the requirements according to

ISO 14001:2015
are fulfilled. The certificate is valid from 2020-07-11 until 2023-07-10.
Certificate Registration No.: TUV104 02 1919
2020-06-22

Certification Body
of TÜV SÜD Asia Pacific
TÜV SÜD Group

Accreditation by the Joint Accreditation System
of Australia and New Zealand, JAS
www.jas-anz.com/australia

TÜV SÜD Korea Ltd. • 23F, Two B/C, 10 Gukjegeunghui-ro, Yeongdeung-gu • Seoul, 07325 • Korea

TÜV SÜD



Arctic Cat Zero Defect Status



BRP Supplier Quality Award

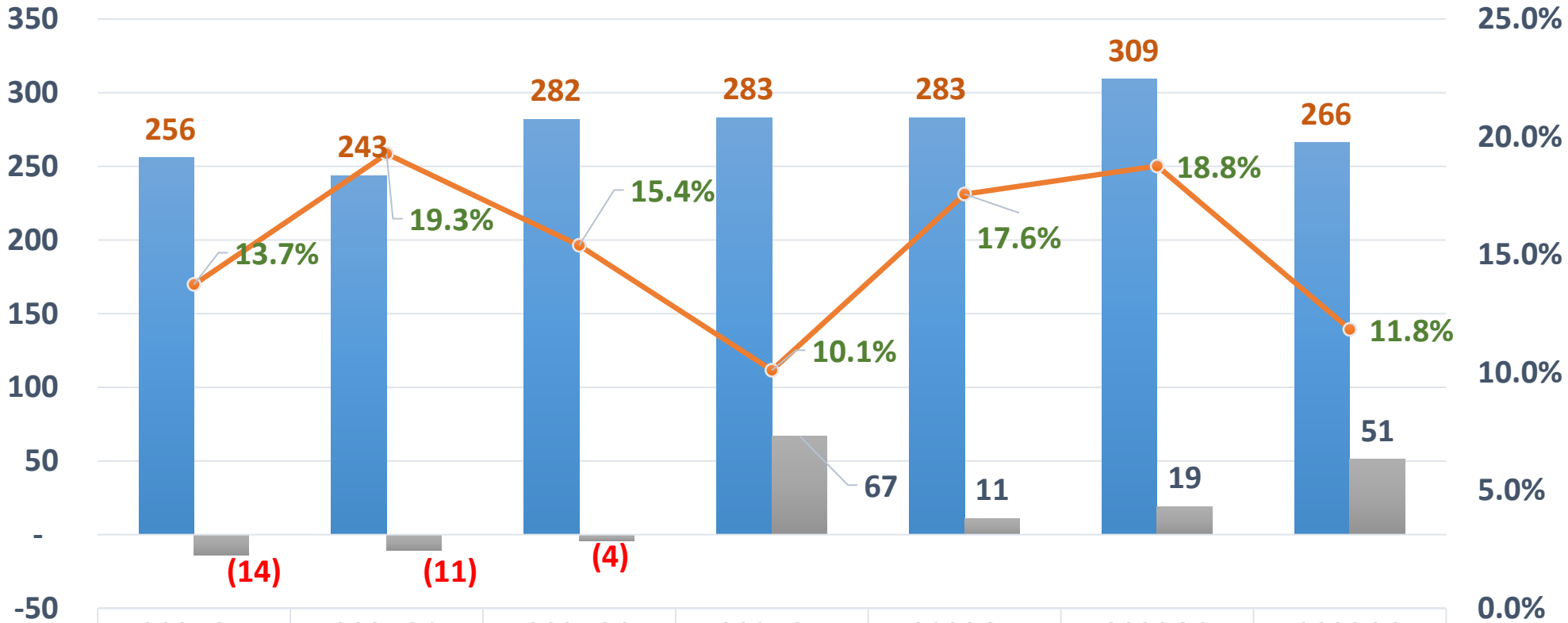


Ford World Excellence Award

Financial Results



UNIT:NT\$M;%



Revenue	256	243	282	283	283	309	266
Profit Before Tax	(14)	(11)	(4)	67	11	19	51
Gross Margin	13.7%	19.3%	15.4%	10.1%	17.6%	18.8%	11.8%



Thank you