Chunji

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Since 197

# 天池産業株式会社

21世紀におけるグローバル精密鋳造メーカーへの跳躍

「天池」という名前は、韓国で最も高い山である「白頭山」の火口湖の名に由来したものです。

# 会社沿革

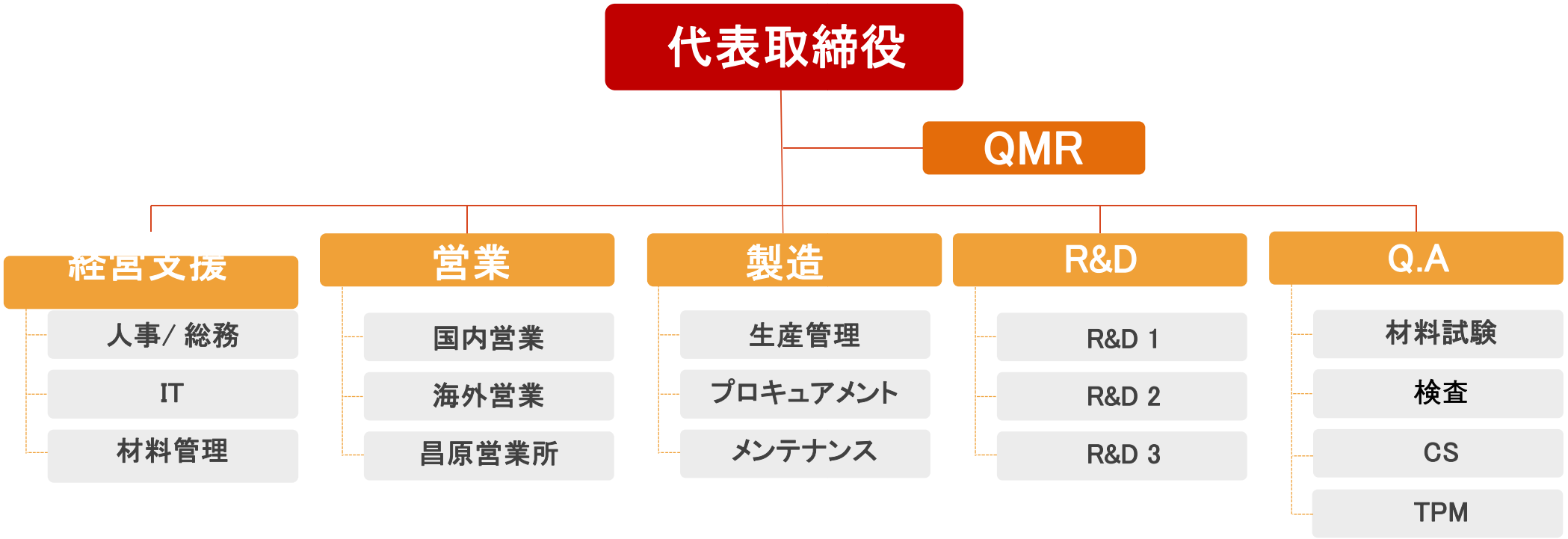
## 1974 - 1999

| | |
|---|---|
| 1974. 10 | 精密鋳造工場を設立 |
| 1978. 05 | 軍需企業に指定 |
| 1982. 04 | 国家機関の専門精密鋳造メーカーに指定 |
| 1988. 07 | 品質管理システムにおいて一等級鋳造メーカーに指定 |
| 1991. 03 | テュフ・ハノーバーよりAD2000-Merkblatt W0/TRD100を取得 |
| 1992. 11 | R & Dセンターを設立 |
| 1993. 03 | 韓電原子力燃料(株)のサプライヤーに指定 |
| 1993. 11 | ベル・ヘリコプター(アルミ合金及び17-4PHステンレス鋼鋳物)のサプライヤーに指定 |
| 1995. 12 | ロッキード・マーティンのサプライヤーに指定 |
| 1999. 07 | テュフ・ラインランドよりISO9002を取得 |

## 2000 - 現在

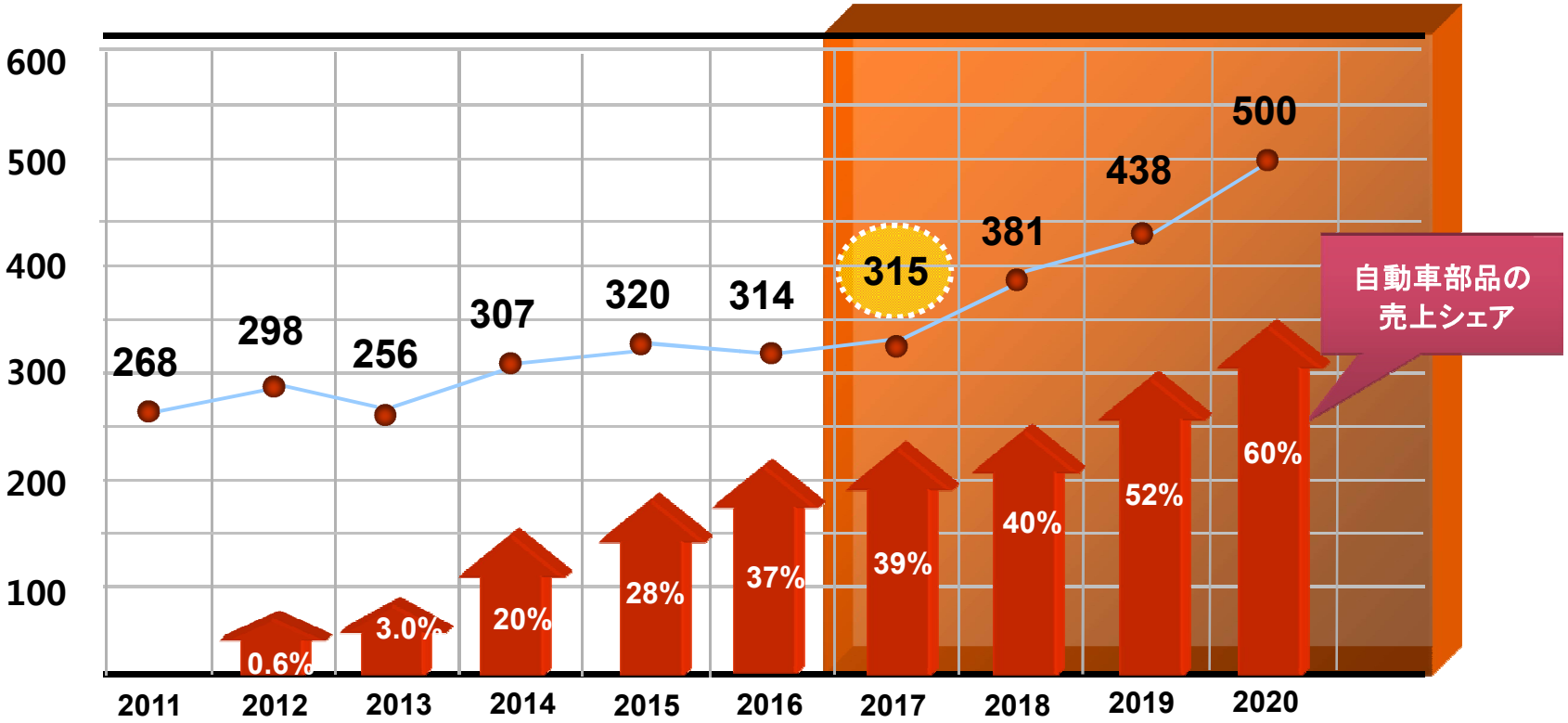
| | |
|---|---|
| 2000. 07 | ハンファ・テックウィンのサプライヤーに指定 |
| 2000. 11 | ボーイングDI9000を取得 |
| | ニューテック・コリアより国務総理賞を受賞 |
| 2001. 06 | 韓国航空産業の協力企業に認定 |
| 2001. 08 | 大韓航空ボーイングLBDの協力企業に認定 |
| 2003. 11 | BSIのAS9100 / ISO9001を取得 |
| 2007. 06 | ソウルから驪州へ工場を移転 |
| 2011. 10 | 7大船級認証を取得 |
| 2012. 06 | TS16949 / ISO14001を取得 |
| 2013 .04 | 現代/起亜自動車のSQを取得 |

# 組織図


代表取締役
QMR
経営支援
人事/ 総務
IT
材料管理
営業
国内営業
海外営業
昌原営業所
製造
生産管理
プロキュアメント
メンテナンス
R&D
R&D 1
R&D 2
R&D 3
Q.A
材料試験
検査
CS
TPM

# 間売上高

（単位: KRW）




**Outline**

- 2016年 売上 : 314 億ウォン
- 2017年 売上目標 : 315 億ウォン
- 従業員 : 188名（研究開発センター : 6%、品質管理 : 8%）

# 主な取引先

TI Automotive
Kamtec
SIEMENS
amat
HYUNDAI
HEAVY INDUSTRIES GROUP
Hanwha
LIG Nex1
KAI
한국항공우주산업주식회사
S&T
HYUNDAI
Rotem
POONGSAN
CORPORATION
주식회사 코렌스
KORENS
HYUNDAI
Kubota
For Earth, For Life
MITSUBISHI
MITSUBISHI HITACHI
POWER SYSTEMS
EBARA
e-Front runners
IHI
DMW CORPORATION
VELAN
EMERSON
Process Management
EMERSON
Climate Technologies
CRANE

# 生産能力

| | |
|---|---|
| Capacity | 精密鋳造：13,500 モールド/月（約120トン、製品基準）<br>ワックス注入用の金型：一月当たり50セット以上 |
| 初回製品及び金型の製作期間 | 鋳造：約40日間、鋳造 + 機械加工：約60日間 |
| 量産品の製作期間 | 鋳造: 約30日間、鋳造 + 機械加工：約40日間 |

保証・責任：相互協議による

品質方針：素材を無償で交換

# 加工可能な材質

Aluminum Alloys (356, A356, A357 A201, etc.)

PPT Hardening Stainless Steels (15-5PH, 17-4PH)

Austenite Stainless Steels (304, 305, 306, 31 6)

Martensite Stainless Steels

Duplex and Super Duplex

Nickel & Cobalt Base Alloys (air melt)

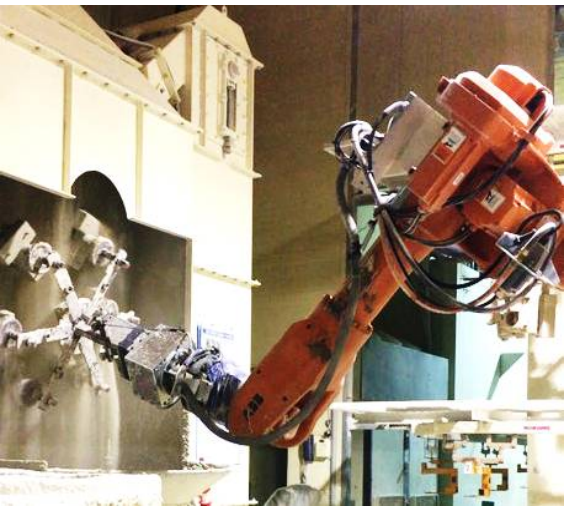
Nickel & Cobalt Base Super Alloys (for Vacuum Alloy)

Heat-resistance Alloys

Carbon & Low Alloy Steels

Cast Tool Steels

# 製造設備



マシニングセンター（5sets）、C.N.C旋盤（8sets）

自動ワックス射出成型機

ロボットによるシェル製作システム（2sets）

Rain Stuccoing Equipment

ワックス再生機

オートクレーブ

高周波誘導溶解炉（500Kgs：2sets, 350：3sets, 150Kgs：1sets）

自動ハンドル注入機

アルミ鋳物用減圧注湯装置

（GBF：Gas Bubbling Furnace－脱ガス処理装置）

超合金のための真空誘導溶解炉(VIM)

ウォータージェット機器

スピードファムグラインダ

油圧プレスM/C

# 協力会社にて対応

**熱処理** – 焼準/アニール、溶体化処理など

**精密加工**– CNC, MCTなど

**メッキ** – ENC、クロメート処理、アルマイト(陽極酸化処理)処理など

**塗装**

**研磨**

**含浸処理**

**HIP**

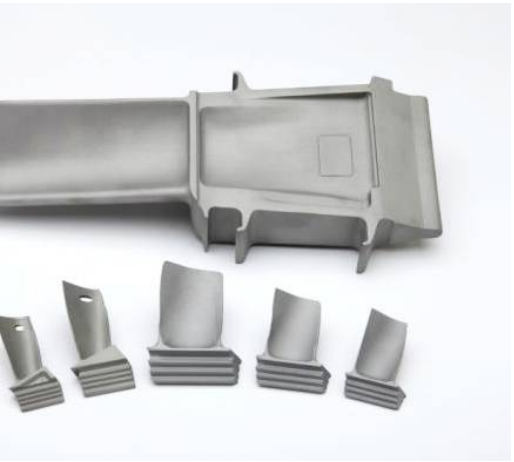
# 真空誘導溶解炉(VIM)

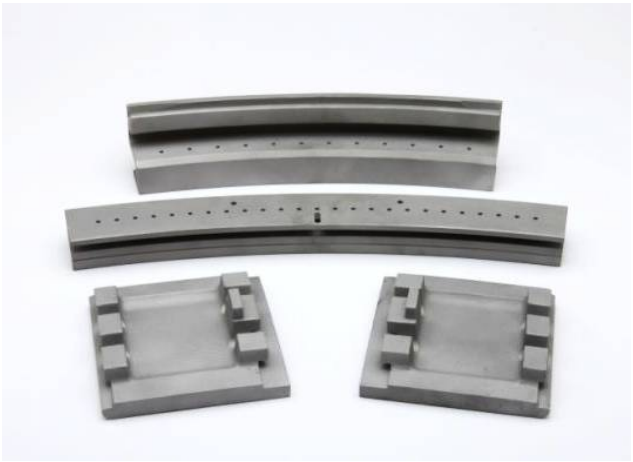
# 真空誘導溶解炉(VIM)

## 鋳造溶解炉の仕様

| Consarc社製 | |
|---|---|
| 鋳造システム | 2-チャンバー(2-zone)システム(溶解チャンバー、モルドチャンバー) |
| 電力容量 | 225 kW, 3000Hz’ |
| 一次電圧 | 460 volts / 3 phase / 60Hz |
| 最高温度 | 1,650℃ |
| 真空容量 | 1200㎥ /hr (blower), 250㎥/hr (回転式ポンプ) - 溶解チャンバー<br>4,200㎥/hr (blower), 500㎥/hr (回転式ポンプ) - モルドチャンバー |
| 対応可能容量 | 75Kg |
| 製作可能な金型のサイズ(mm) | 1) 直径 : Φ600, 2) 高さ : 700 |
| 最高真空度(溶解チャンバー) | 4.5 $\times 10^{-5}$ ~ $10^{-6}$ Torr (拡散ポンプ) |
| 生産能力 | 7.5トン/月、400モルド/月 |

# 製品開発(ソリッド型EQX)

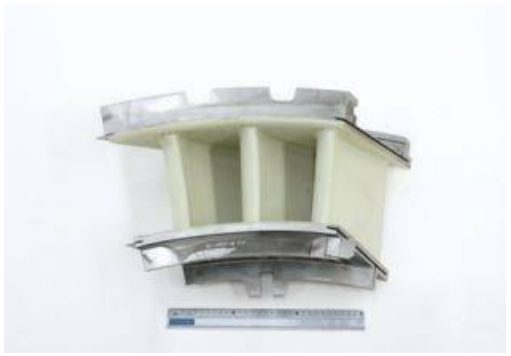


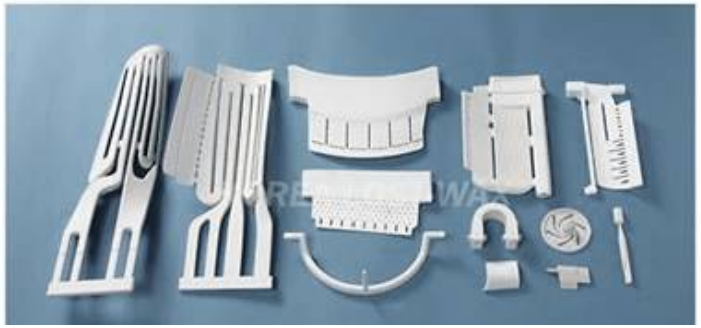


**EQX(equiaxed crystal structure)**
**(等軸晶構造)**

- 電流生産アイテム
- 主に、Ni及びCo系合金
- 利用分野 : 医療部門(移植)、船舶・自動車用ターボチャージャー、ガスタービン用ステーター
- 結晶粒微細化による機械的性質の向上

# 製品開発（空洞型EQX）





**空洞型EQX**
**（等軸結晶構造）**

- セラミックコアの開発技術は必須
- セラミックコアの開発日程

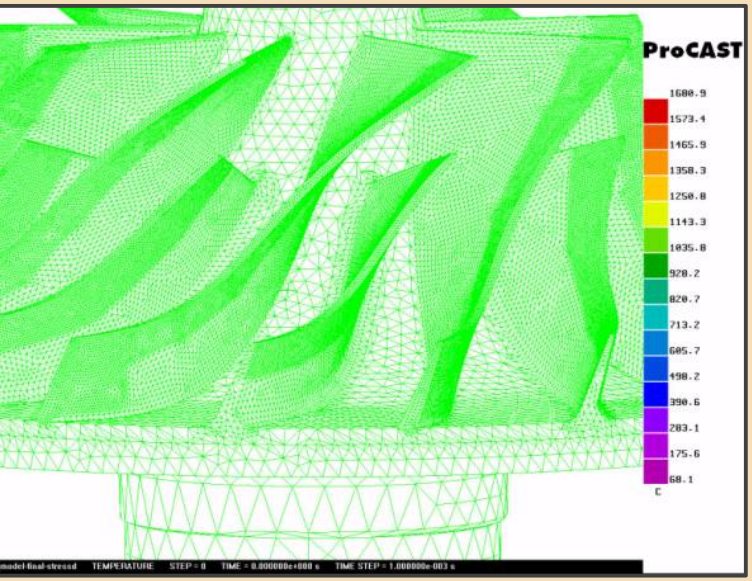
  エンジニアリソース：完成 => 2016年からセラミックコアの製造施設を設置、稼働

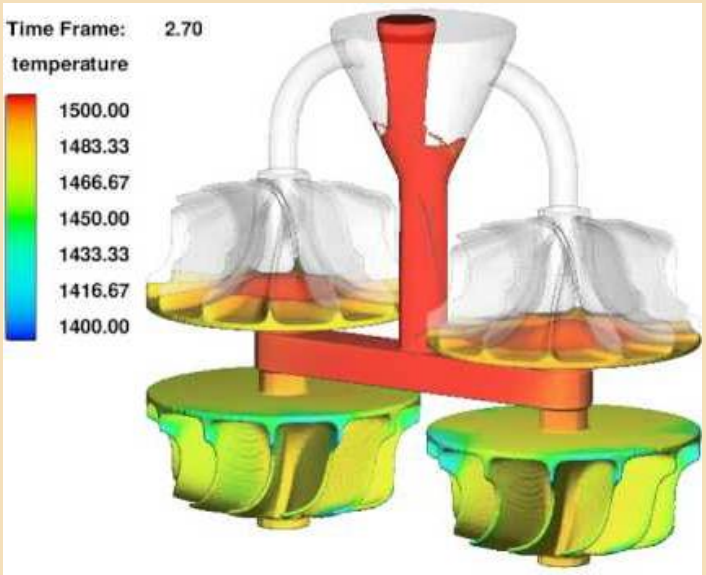
# セラミックコアの製造技術

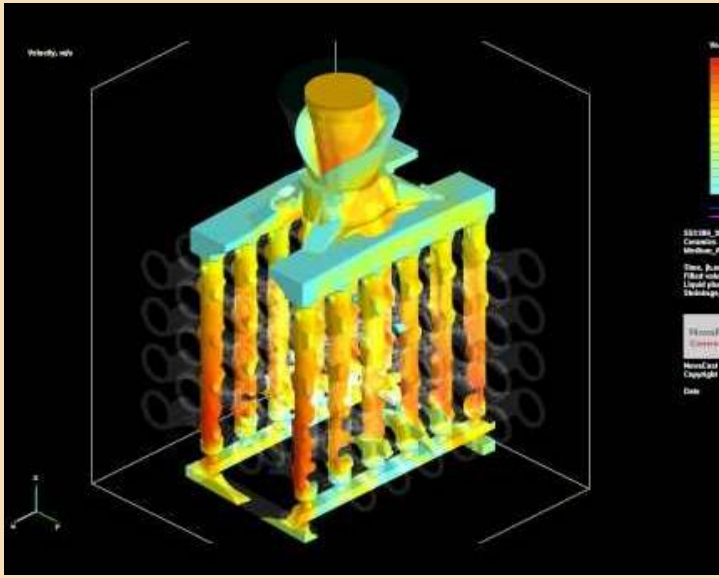
セラミック射出機

セラミック焼結炉

# デザインプログラム



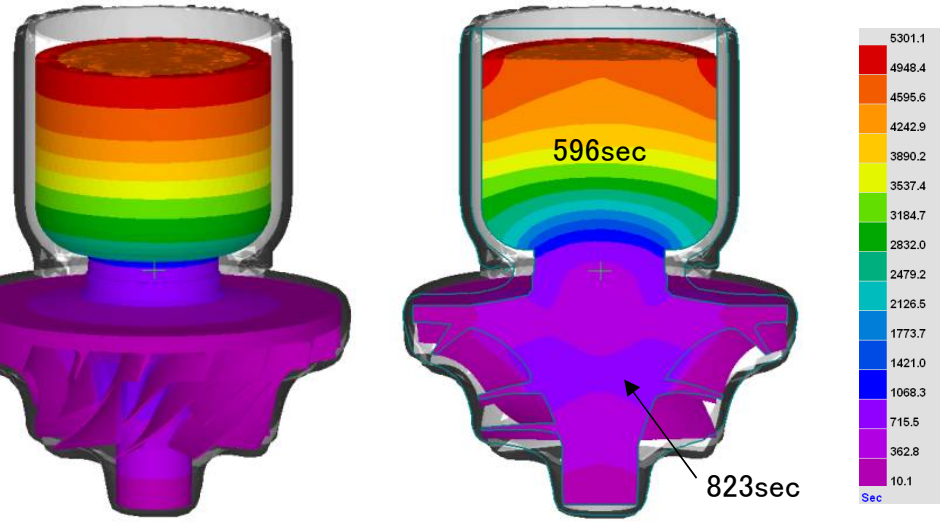



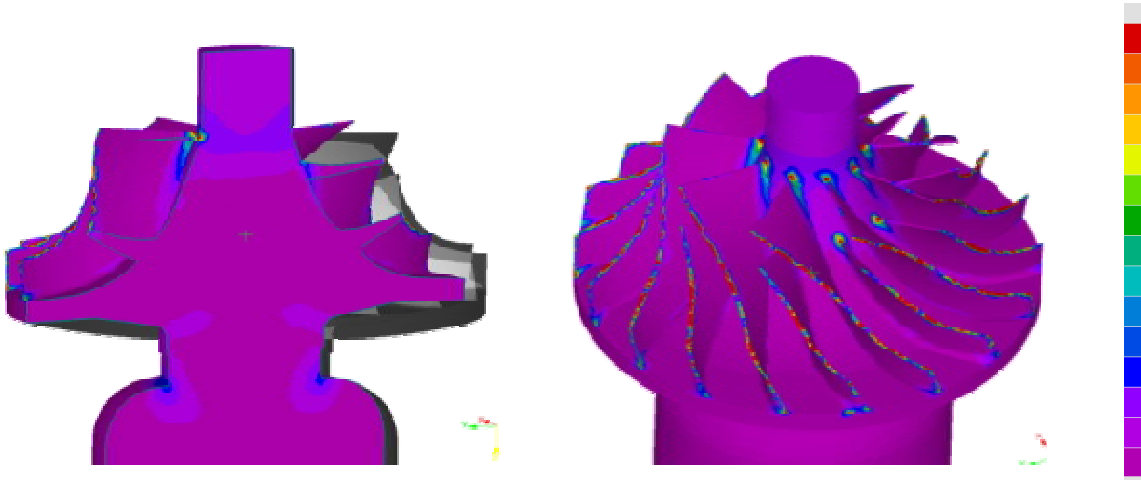
| プログラム | モデル |
|---|---|
| CAD | AUTO CAD 2015 (2D) |
| CAM | TOP SOLID CAM Ver.1 |
| UG | NX 10 (3D) |
| Simulation | PROCAST |

# 凝固シミュレーション

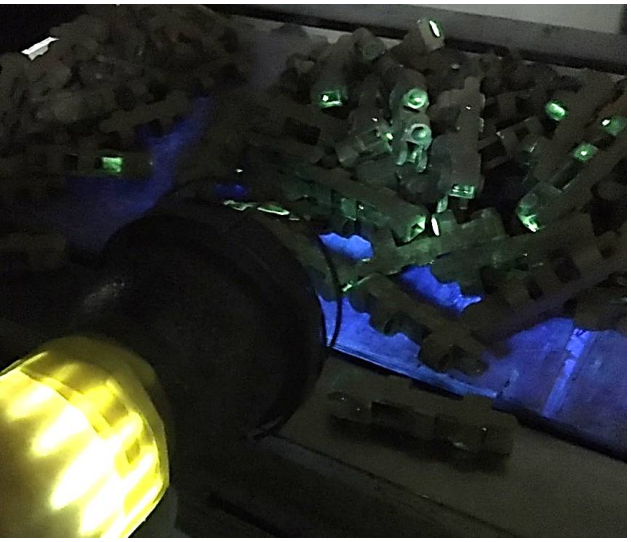
## インの変形




## 効果的な塑性ひずみ



# 検査・試験装置



発光分析装置

三次元座標測定機(3sets)

投影検査機

金属顕微鏡

硬度計 - ブリネル、ロックウェル

万能材料試験機

放射線透過試験機

蛍光浸透探傷検査機

磁粉探傷試験機

シャルピー衝撃試験機

高温引張試験機

超音波探傷試験機

疲労試験機(クリープ、応力破裂試験)

# 認証書(品質経営システム)

## AS9100&ISO9001

SGS

Certificate GB13/87622
Certification Structure : Single

The management system of

**Chunji Corporation**

Central Office: 1022 Gyeongchung-daero Garam-eup Yeoju-si Gyeonggi-do, 12663, Korea

has been assessed and certified as meeting the requirements of

**AS9100C / ISO 9001:2008**

SGS Systems and Services Certification performed this in accordance with the requirements of EN 9104-001:2013 and is accredited under the Industry Controlled Other Party

The scope of registration is as follows:

**The manufacture and sales of metal products such as investment casting metal parts and components of the aerospace industry**

Further clarifications regarding the scope of this certificate and the applicability of AS9100:2009 / ISO 9001:2008 requirements may be obtained by consulting the organisation.

This certificate is valid from 21 January 2016 until 14 September 2018
and remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 90 days before the expiration date.
Issue 2,Reissue 21/12/2015
ISO Certified Since Data 21 January 2013
ASCS Certified Since Data 21 January 2013

aerospace sector certification scheme

UKAS MANAGEMENT SYSTEMS 0005

Authorised by

J Saunders
Systems and Services Business Manager

SGS United Kingdom Ltd Systems & Services Certification
Rossmore Business Park Ellesmere Port CH65 3EN
t +44(0)151 350-6666 f +44(0)151 350-6600

This certificate remains the property of SGS and shall be returned upon request

SGS 9001-8 27 0614

Page 1 of 1

SGS SGS SGS

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## TS16949

KQA Q.Assurance

IATF

**품질경영시스템 인증서**

KQA인증번호 : KQA-TS120178 IATF인증번호 : 0214881
회 사 명 : 천 지 산 업 (주) 대 표 자 : 한 두 욱
사업자등록번호 : 220-81-14655
소 재 지 : 경기도 여주시 가남읍 경충대로 1022

위 업체에 대하여 아래와 같이 품질경영시스템을 인증합니다.

적용표준 : ISO/TS 16949:2009 (적용제외사항 : 7.3 제품설계개발)
인증범위 : 정밀주조품(E.G.R(Exhaust Gas Recirculation) 쿨러부품 및 엔진연료부품)에 대한 제조

발 행 일 자 : 2015 년 7 월 18 일
만 료 일 자 : 2018 년 7 월 17 일
변 경 일 자 : 2016 년 9 월 3 일

한국품질보증원장

한국품질보증원 소재지 : 14034 경기도 안양시 만안구 만안로 49, 2층 (안양동, 호정타워)

## ISO 14001

KQA Q.Assurance

IAF

**환경경영시스템 인증서**

환경경영시스템에 대한 IAF의 국제다자간상호인정협정(MLA)가입 인정기관에 의한 인정

인증번호 : KQA-E15752
회 사 명 : 천 지 산 업 (주) 대 표 자 : 한 두 욱
사업자등록번호 : 220-81-14655
소 재 지 : 경기도 여주시 가남읍 경충대로 1022

위 업체에 대하여 아래와 같이 환경경영시스템을 인증합니다.

적용표준 : ISO 14001:2004 / KS I ISO 14001:2009
인증범위 : 정밀주조품(E.G.R(Exhaust Gas Recirculation) 쿨러부품 및 엔진연료부품)에 대한 제조

최초인증 : 2012 년 7 월 6 일
유효기간 : 2015 년 7 월 3 일 ~ 2018 년 7 월 2 일
발행일자 : 2016 년 8 월 22 일 (대표자 및 인증범위표기변경)

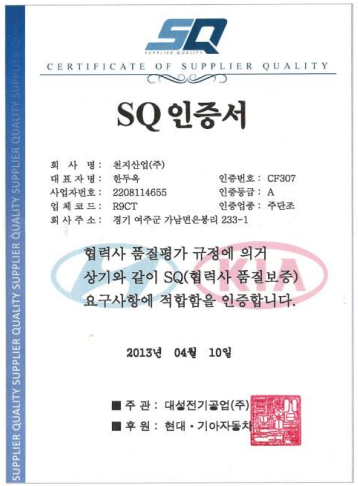
한국품질보증원장

이 인증서는 전환기간 종료일인 2018.09.14.일까지만 유효합니다.

한국품질보증원 소재지 : 14034 경기도 안양시 만안구 만안로 49, 2층 (안양동, 호정타워)

# 認証書(顧客からの承認)

## 現代/起亜自動車 SQ



CERTIFICATE OF SUPPLIER QUALITY

SQ 인증서

회 사 명 : 천지산업(주)
대 표 자 명 : 한두욱 인증번호 : CF307
사업자번호 : 2208114655 인증등급 : A
업 체 코 드 : R9CT 인증업종 : 주단조
회 사 주 소 : 경기 여주군 가남면은봉리 233-1

협력사 품질평가 규정에 의거
상기와 같이 SQ(협력사 품질보증)
요구사항에 적합함을 인증합니다.

2013년 04월 10일

■ 주 관 : 대성전기공업(주)
■ 후 원 : 현대·기아자동차

## AD 2000, TUV

Certificate

Inspection
according AD 2000-Merkblatt W0

TÜVRheinland®
Precisely Right.

## 韓国東西発電株式会社

정비적격업체 인증서

상 호 : 천지산업(주)
대표자 : 한두욱 업체코드 : I167
주 소 : 경기 여주군 가남면 은봉리경충대로 1022

출입책임자
1

상기 업체를 정비적격업체로 인증함
2012. 12. 11

한국동서발전주식회사

대표이사 이 길 우

## 三菱重工業

Certificate of Qualification

This is to certify that
Chunji Corporation
is a qualified partner of Mitsubishi Heavy Industries Power Systems Headquarters (MHI) Yokohama Machinery Works, Takasago Machinery Works and Nagasaki Shipyard & Machinery Works for supplying the below stated item(s) produced in accordance with the quality assurance system which passed the evaluation on quality assurance ability performed by MHI ( excluding the items for nuclear power ).

Effective Period : From 29 April 2011 To 30 April 2014

Date: 29 April 2011

Authorized by:
Masaaki Kimura
General Manager
Nagasaki Machinery Quality Assurance Department
Power Systems
Mitsubishi Heavy Industries, Ltd.

## ベル・ヘリコプター

APPROVED SUPPLIER

This is To Certify That
Chunji Ind., Co. LTD.
Has met all requirements of applicable Bell Helicopter Textron Specifications and has been approved as a manufacturing source for PH Steel Alloy and Aluminum Investment Castings

Bell Helicopter TEXTRON

Bell Helicopter TEXTRON
AN AEROSPACE INDUSTRY

EXCEPTIONAL ACHIEVEMENT AWARD

CHUNJI IND. CO., LTD.

FOR HIGH QUALITY WORKMANSHIP AND CONTRIBUTION IN PARTICIPATION IN THE DEVELOPMENT OF THE REPUBLIC OF KOREA'S AEROSPACE METALS INDUSTRY

## ロッキード・マーティン

LOCKHEED MARTIN
Tactical Aircraft Systems

Chunji Corporation,
Metal & Machine Division

MIL-I-45208A
MIL-STD-1535 (Tailored)
FPS 1001
NDTS 1500/1501

and is Approved as a Qualified Supplier to LMTAS

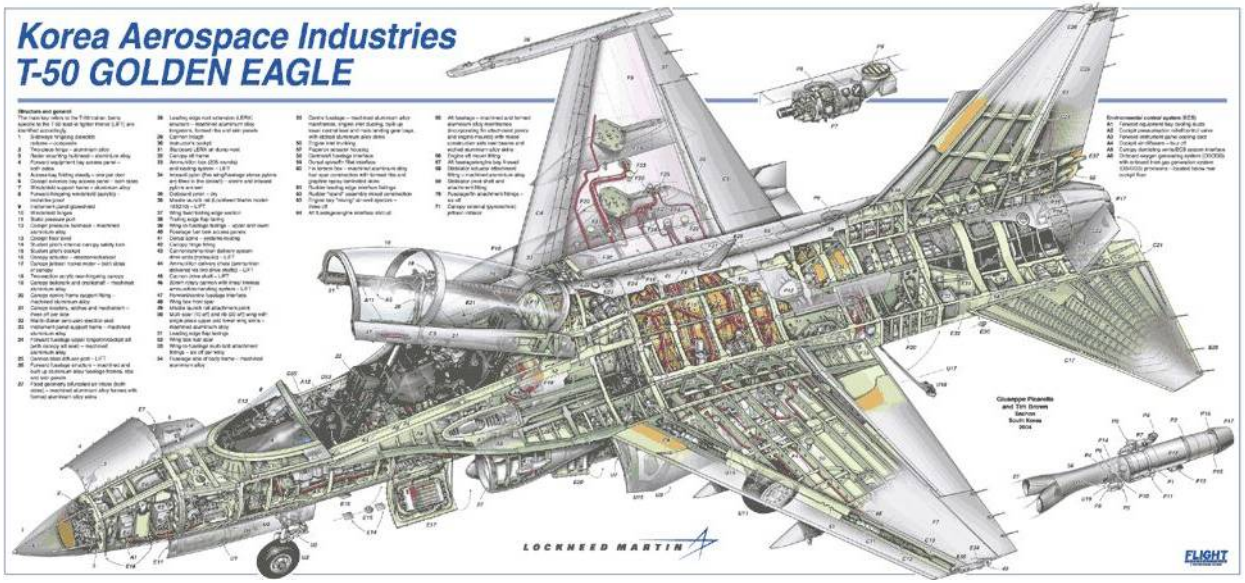
SPC
Statistical Process Control
Certification Award

Presented to
Chunji Corporation

Certified by
Tactical Aircraft Systems
&
Aeronautical Systems

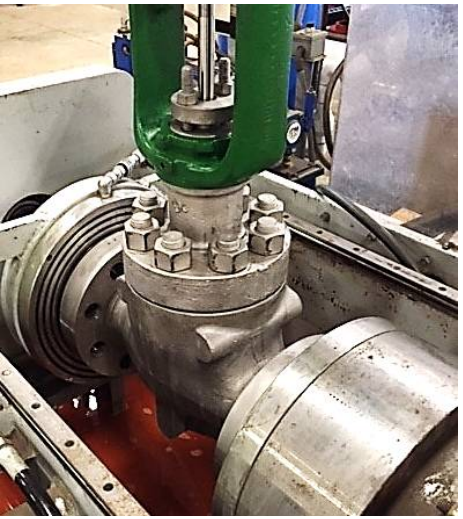
# 航空機

T-50
001
대한민국공군

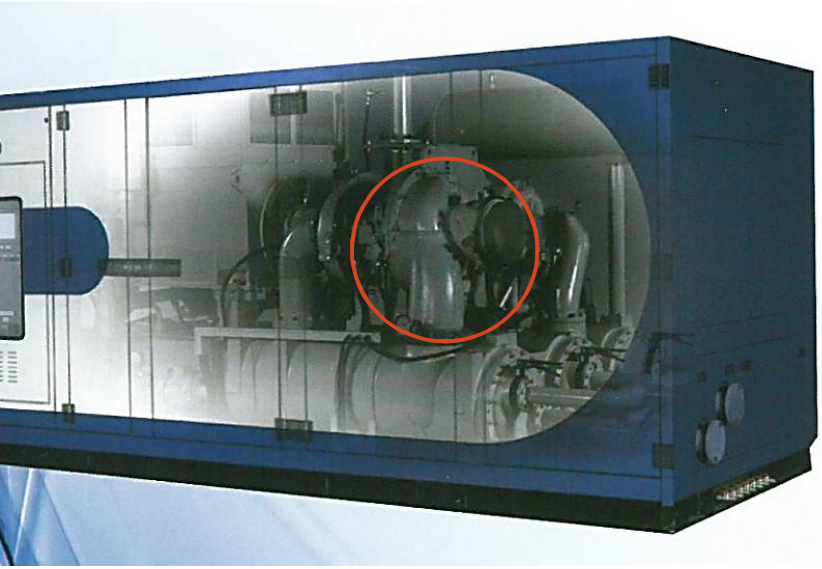

Korea Aerospace Industries
T-50 GOLDEN EAGLE
LOCKHEED MARTIN
FLIGHT

構成部品

# バルブ

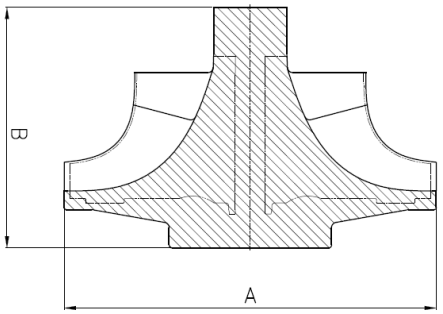


# ターボコンプレッサー用インペラー

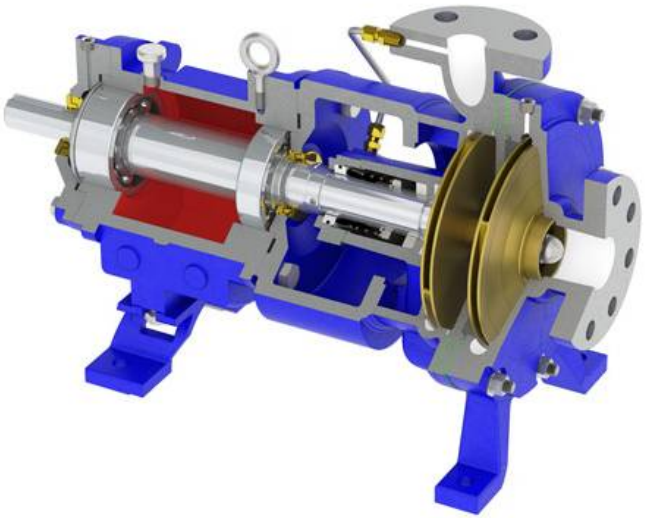


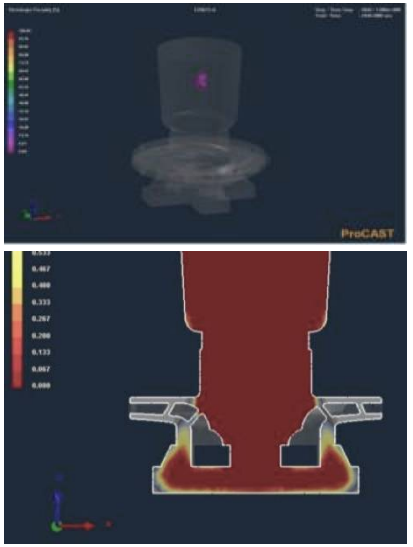
## 仕様

| 単位 : mm | 寸法 A | 寸法 B | 重さ |
|---|---|---|---|
| 最大許容値 | Φ600 | 350 | 80kg |



# ポンプ用インペラー

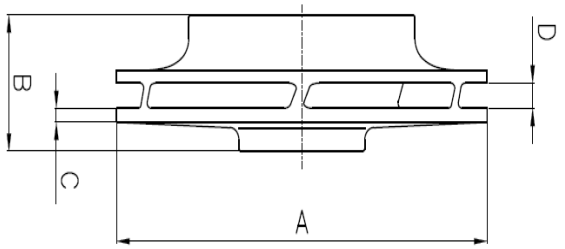




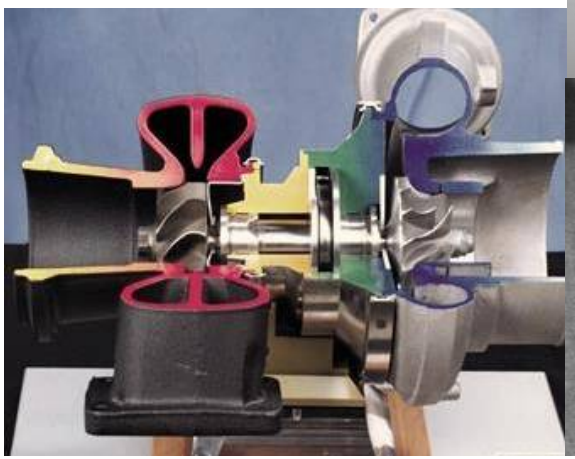

## 仕様

単位：mm

| | | 寸法 B | 寸法 C | 寸法 D | 重さ |
|---|---|---|---|---|---|
| 寸法 A | ~ Φ150 | 最大 450 | 7.0 ~ 10.0 | 5.0 以上 | 最大 80kg |
| | Φ151 ~ 200 | | | 7.0 以上 | |
| | Φ201 ~ 300 | 最大 250 | | 9.0 以上 | |
| | Φ301 ~ 400 | | 10.0 ~ 20.0 | 12.0 以上 | |



# 自動車部品



# 主要製品（一般）

送信機の部品

- Flange, Adapter, Amp Dai

アルミ部品

- GPTTS Housing
- Housing Electro Optical System

# 主要製品(一般)

# 天池産業の強み

## 40年以上の経験

1974年10月に設立

過去、約18,000のアイテムを開発

## 品質が実証された鋳造メーカー

TS16949, AS9100, ISO9001, ISO14001, AD2000など

航空機、原子力、防衛産業関連

## 特化した検査設備

磁粉探傷検査機、蛍光浸透探傷装置、放射線透過試験機

## 顧客との密接な信頼関係

エマソン・プロセス・ マネジメント、富士電機、シーメンスAG、IHI、三菱重工業、Amot Controls

ハンファタレス/ハンファテックウィン、LIG Nex-1、現代ロテム、韓国宇宙航空産業

# 顧客満足に向けて

納期厳守

高品質で価格競争力のある製品を提供

持続的な改善によりコストを削減

品質基準(ISO 9001, AS9100など)

材料や製造工程における操作ソリューション

# ありがとうございました。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