

High-performance Compressor/Blower Technology

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- ⇒ Compressors and blowers are key elements that generate gas flow or pressure rise in gas turbine, industrial process and household applications.
- ⇒ Compressor design (aerodynamic, structure, cooling, vibration, mapping) to satisfy the target performance under various operating conditions and testing technology
- ⇒ Compressor performance assurance and performance estimation in design and off-design conditions

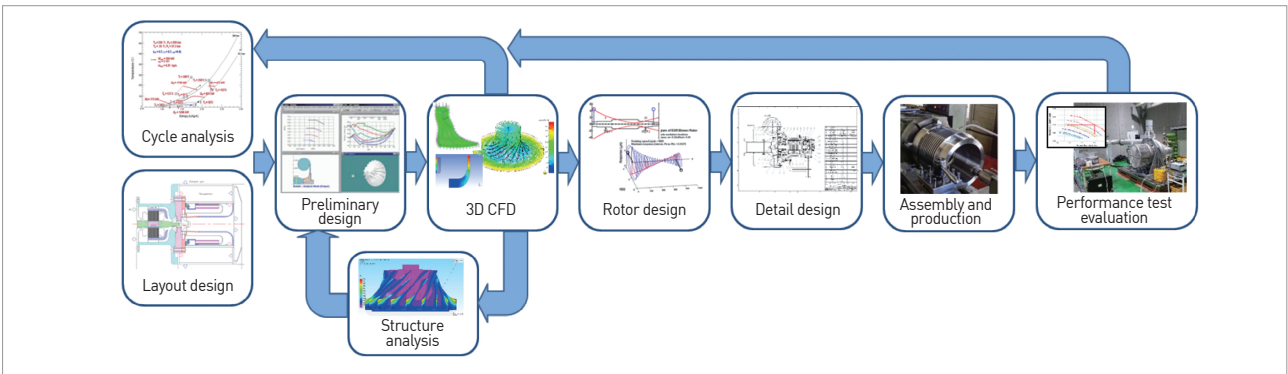
Client / Market

- Gas turbine manufacturer/user company
- Industrial process or general use compressor and blower manufacturer/user company

Necessity of this Technology

- Multidisciplinary technology is required (design: aerodynamics, structure, vibration, heat transfer/manufacture: material, tolerance management, assembly/performance test: apparatus, measurement standard, data measurement and analysis)
- Product development requires a lot of research experience, and it is difficult to introduce a new technology to this long-lasting area of study.
- There are many cases of multi-product small volume production that needs to be newly developed to meet the requirements of users. The impact of technological power on related industries is great, and there is a continuous demand for product development for new fields.

Technical Differentiation



DESIRED PARTNERSHIP

Technology Transfer

Licensing

Joint Research

Other



TECHNOLOGY READINESS LEVEL [TRL]



- Technology and process for entire cycle of compressor development except for manufacturing-cycle analysis, layout design, sizing, 3D CFD, 3D shape formation, production and assembly, and performance test, etc.-has been secured internally.
- Actions for each technology stage such as performance interpretation and analysis, optimal shape design, and product performance test are performed.

Excellence of Technology

- Equipped with 20 years of experience in developing high performance compressors and blowers for various purposes
- Equipped with various S/W for meanline design, 3D geometry formation, and 3D CFD analysis

No	Start	Target
1	2008	Reversible Axial Fan for ventilation system
2	2008	Turbo refrigerant compressor (magnetic bearings)
3	2012	Centrifugal compressor for 100kW class MGT
4	2014	Unsteady analysis of axial compressor for aero GT
5	2017	300HP 2 stage air compressor (magnetic bearings)
6	2017	Blower for ship EGR (exhaust gas recirculation)

Current Intellectual Property Right Status

KNOW-HOW

- Compressor design technology and compressor performance securing/estimation at design/off-design points
- Various analysis techniques: Multistage performance analysis and unsteady simulation, shape optimization, RGP (real gas property, refrigerant, supercritical property) analysis, heat transfer analysis (cooling structure, motor heating), structural analysis (structure-aerodynamics interaction analysis)
- Detailed drawing and production and assembly: Material, tolerance management, 2D/3D component drawing and assembly drawing
- Performance test: Performance test loop design, performance measurement complying with international standards
- Rotor design and manufacturing: Rotor-dynamic analysis, shafting design, bearing and seal selection/design, precision balancing, rotation safety secured