We Analyze and Design the Future.

MIDAS IT

MIDAS IT consists of engineering software developers and professional engineers with significant practical experience.

Over 250 developers and engineers with extensive experience serve the customers worldwide.

One of our strengths is to respond to the needs of the practicing engineers and project owners extremely fast.
MIDAS IT
at Work on the Global Stage
About MIDAS IT

The prime focus of MIDAS Information Technology Co., Ltd. (MIDAS IT) includes civil/structural/mechanical engineering software development and analysis & design support. The MIDAS Programs have been developed since 1990 and used commercially since 1996. Their reliability has been established through applying them over a countless number of real projects.

The company was officially incorporated in September 1, 2000, and it was formerly operated under the auspices of POSCO Group. MIDAS IT also has corporate offices in Beijing, Shanghai, Detroit, Dallas, Europe, India and Japan.

MIDAS IT consists of structural software developers and professional engineers with significant practical experience. Currently, over 250 developers and structural engineers with extensive experience support the company. One of our strengths is to respond to the needs of the practicing engineers extremely fast.

In addition to engineering software development, the company also provides engineering consulting services, which include Automatic Design Solution Development, Value Engineering, Safety Engineering, Design Consulting, special purpose S/W Development and Structural Design of major and specialty structures.

History of MIDAS IT

2000. 09  Incorporated MIDAS IT (newly established by POSCO Group)
2001. 02  Formalized strategic partnership with Bentley Systems, Inc.
2002. 04  Entered into a distribution agreement with KKE, Japan for midas Gen
2002. 09  Certified by ISO 9001 and ISO 14001
2002. 11  Founded MIDAS China in Beijing
2002. 12  MIDAS Family Program, awarded 'Gold Prize' in Korean National Software Awards
2003. 01  Founded MIDASit in Houston, USA
2003. 12  Distribution Agreements (Russia, India, Malaysia & Taiwan)
2004. 03  Distribution Agreements (DIC-Japan, USA, Canada, UAE, Iran, Bolivia & Thailand)
2005. 01  Distribution Agreements (Vietnam, Italy & Brazil)
2005. 04  Founded MIDAS China in Shanghai
2005. 11  Strategic alliance with TNO DIANA, the Netherlands
2006. 07  Distribution Agreement with JIP Techno Science, Japan
2007. 04  Founded MIDAS China in Chengdu & Guangzhou
2007. 05  Strategic Agreement for Consultancy Services to Jain Infra Projects Limited, India
2007. 07  Strategic Alliance Agreement with Noran Engineering, USA
2007. 12  Distribution Agreement with JIEEI IT, Korea
2007. 12  Distribution Agreement with CREATEC, Japan
2008. 03  Founded MIDAS China in Shenyang
2008. 04  Founded MIDAS India in Mumbai
2008. 05  Strategic cooperation agreement with KKE, Japan in the mechanical engineering field
2008. 06  Founded MIDAS Japan in Tokyo

* POSCO: One of the largest iron & steel companies in the world – Headquarters in Korea
Introduction to MIDAS Family Programs

- **midas Gen (midas DShop)**
  Integrated Design System
  for Building and General Structures

- **midas BDS**
  Shear wall type Building Design System

- **midas SDS**
  Slab & basement Design System

- **midas Set**
  Structural engineer’s tools

- **midas Building**
  A revolutionary building specific design system
  with auto-drafting modules

- **midas GTS**
  Geotechnical and Tunnel analysis System

- **midas GeoX**
  Temporary shoring & Settlement analysis System
  for Excavation

- **midas GTS 2D (Coming Soon)**
  Geotechnical and Tunnel analysis System
  (Specialized Edition for 2D Analysis)

- **Soil+ (CRC in Japan)**
  Structural Analysis System
  for Geotechnical Engineering

- **midas Civil**
  Integrated Solution System
  for Bridge and Civil Structures

- **midas Abutment**
  Abutment Automatic Design System

- **midas Pier**
  Pier Automatic Design System

- **midas Deck**
  Deck Automatic Design System

- **midas FEA**
  Advanced Nonlinear and Detail Analysis System

- **Nastran FX**
  Total Solution for True Analysis-driven Design

- **midas FX+**
  General Pre & Post Processor
  for Finite Element Analysis

- **FEP Partner (PMC in Japan)**
  Customized Pre & Post-processor
  for Plastic CAE
midas Gen
Integrated Design System for Building and General Structures

“Integrated Design System for Building and General Structures”

Features
- 2D & 3D Modelling
- Nonlinear Properties & Elements
- Structure Wizards
- Auto Mesh midas Generation

Analysis
- Static & Response Spectrum Analysis
- Eigenvalue & Fitx Vector Analysis
- Pushover & Inelastic Time History Analysis
- Construction Stage Analysis

Design
- Steel Design
- RC Design
- SHCC Composite Design
- Light Gage Design

Applications
- RC & Steel Structure, Composite Structure, Heat of Hydration for Mass Concrete,
  Light Gage Structure, Plant & Underground Structures, Public Facilities, etc.

Why midas Gen?

midas Gen is a general-purpose structural analysis and optimal design system.

The intuitive User Interface, contemporary Computer Graphics and substantially fast Solver Speed are some of the highlights of midas Gen.

The user-oriented input/output features and significant analysis capabilities enable the practicing engineers and researchers to readily undertake structural analyses and designs for even complex and large structures.

The fastest Multi-Frontal Solver and the latest analysis algorithms instantly bring accurate and practical analysis results.

In addition, midas Gen provides design capabilities using various standards of different countries leading to an Optimal Design Solution.
midas BDS is a shear wall type Residential Building Analysis and Design System.

It provides a revolutionary modeling feature, which utilizes AutoCAD DXF architectural drawings and Unit Block Method for repetitive building plans.

midas BDS is equipped with Super Element Analysis, Irregular Wall Design Feature and Auto-evaluation of Effective Stiffness with iterative Method. Thus, it offers the optimized analysis and design system of shear wall type residential buildings.

Why midas BDS?

Building Engineering

Features

Modeling
- 2D Modeling & 3D Display
- Tracing Line from DXF File
- Super Element
- Plan

Analysis
- Effective Stiffness Analysis
- Wall Opening
- Full/Partial Semi-Rigid Diaphragm
- Transfer System Detail Analysis

Design & Post-processor
- 3D Wall Design
- Rebar Arrangement of Wall
- Auto-Calculation of Cracked Sections
- Seismic Report Generation

Applications

Shear wall type Residential Buildings, Transfer Girder System, Transfer Plate System, etc.
Why midas SDS?

midas SDS is a specialized Slab and Foundation (Pile/Net) Analysis and optimal design system.

It maximizes efficiency and productivity in complex slab modeling by offering user-friendly graphic interface and 100% data conversion with midas Gen and BDS.

Unlike grid-based mesh generation, object-oriented modeling enables the user to freely model the structures of complex floor layouts without any restriction of mesh lines.

As a result, more accurate analysis results can be obtained through automatically generated elements.
Why midas Set?

midas Set is one of the MIDAS structural engineering programs and named after the initials of "Structural Engineer’s Tools".

It is a collection of handy structural component design tools, which are easy to use and speeds up the day-to-day design process. It provides various design standards of many countries.

A variety of design functions for structural members enable us to readily carry out structural design in engineering practice.

Variety of functionality

- Concurrent view of input and output windows on the same screen extremely versatile to change input values while viewing the design results in the output window simultaneously
- Help functions (Tool tip) provided to enable even a novice to use the design tools without committing a mistake
- Instant input checking capability of alerting the user when an input value falls beyond the permitted range by highlighting the input value red in the entry field
- Design results saved in a graphical format, which can be opened in an editor such as MS Word
- The logo and output format of design results controlled by the user
- Continuity of work flow maintained by setting the previous work environment when the program is initiated

Features

- Design Algorithms
  - Various Standards such as AISC, ACI, BS, etc.
  - Automatic design function, which finds optimum member sizes
  - Various design Options provided to closely reflect the environments of construction and serviceability
  - Accurate results produced on the basis of optimum algorithms

Variety of functionality

- Concurrent view of input and output windows on the same screen extremely versatile to change input values while viewing the design results in the output window simultaneously
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"Integrated Solution System for Bridge and Civil Structures"

**Features**
- Construction Stage Analysis
  - Creep/Shrinkage
  - Prestressing Tendon
  - Comp. Strength of Concrete
  - Nonlinear Construction Analysis
- Nonlinear Analysis
  - Geometric Nonlinear
  - Material Nonlinear
  - Elastic Cathedry Cable
  - Compression/Gap Link
  - Tension/Hook Link
- Dynamic Analysis
  - Eigenvalue Analysis
  - Response Spectrum Analysis
  - Time History Analysis
  - Nonlinear Boundary Time History Analysis
  - Inelastic Time History Analysis
  - Pushover Analysis

**Applications**
- Cable-Stayed Bridge, Segmental Bridge, Steel Deck Bridge, Composite Structural Steel Bridge, Culvert Frame Bridge, Subway, Dam, Tunnel, etc.

**Bridge Engineering**

**Why midas Civil?**
midas Civil is a Total Integrated Solution System for Civil Structural Engineering.

The System combines General Purpose Structural Analysis Features and Civil Engineering-specific Structural Analysis Capabilities.

It includes Pre-stressed Concrete Box, Suspension and Cable-Stayed Bridge Analysis features and other useful Civil Structure Analysis features such as Moving Load Analysis and Heat of Hydration analysis, which reflect Construction Sequence.
"Abutment Automatic Design System"

Features:
- Generation of design report & BOM in Excel format
- Data analysis & management using project database
- Semi-gravity type abutment design using railway bridge loads
- Standardized electronic design documentation system
- Girder placement for various road layouts & bridge types
- Abutment parapet wall design for railway bridges
- Quick response to changes in design conditions
- Wing wall design reflecting road layout & soil slope
- Mass foundation design & calculation of excavated materials reflecting change in soil layers in longitudinal and transverse directions
- Various pile construction types & allowable capacity calculations supported
- Dynamic & static soil pressures separately applied
- New data generation by copying and translating a completed abutment
- Various types of parapets including breakwater detail
- Complete cycle of bridge design with midas Deck, Pier, Pile & Civil

Why midas Abutment?
midas Abutment is a specialized abutment design automation program, which generates Design Report, Drawings, BOM & Excavation/Cut quantity take-off.

midas Abutment minimizes human errors resulting from a manual design process, and it enables the engineer to swiftly respond to design changes.

Because it auto-generates design report, BOM and drawings, the engineer has more time to systematically check the design and is able to concentrate on engineering concepts. midas Abutment offers quality, accuracy and productivity.
midas Pier
Pier Automatic Design System

"Pier Automatic Design System"

Features
- midas Civil Solver embedded & generation of seismic design report
- Generation of design report & BOM in Excel format
- Railway bridge pier design standard implemented
- Various road, subway, railway, parabola & irregular layouts
- Precise girder placement reflecting plan, longitudinal layout & cross slope
- Various pier types such as single/multiple column, wall, etc.
- Versatile column types such as hexagon, octagonal track, track, etc.
- Curved or hunched coping underside, planar ends, front slopes, etc.
- Mass foundation design & calculation of excavated materials & cut
- Reflecting change in soil layers in longitudinal and transverse directions
- Standardized electronic design documentation system
- Complete cycle of bridge design with midas Deck, Abutment, Pile & Civil

Why midas Pier?

midas Pier is a specialized pier design automation program, which generates Design Report, Drawings, BOM & Excavation/Cut quantity take-off.

midas Pier minimizes human errors resulting from a manual design process, and it enables the engineer to swiftly respond to design changes.

Because it auto-generates design report, BOM and drawings, the engineer has more time to systematically check the design and is able to concentrate on engineering concepts.

midas Pier offers quality, accuracy and productivity.
midas Deck
Deck Automatic Design System

“Deck Automatic Design System”

Features
- Concrete deck design for all types of composite girder bridges
- Precise Auto-Girder Placement based on 3-D road layout & Bridge profile
- Generation of deck design alternatives for planning purposes
- Easy manual adjustment for girder layout for Existing Bridges
- Road layout & profile import and export
- PC Lattice (trans) bars can be selected for design
- Various rebar placement options provided
- Manual adjustment of rebars after auto-generation of drawings
- Mathematically linked Excel format design report and BOM
- Systematical drawing auto-generation
- Auto-girder placement and deck design for bridge widening
- Data analysis & management using project database
- Exchange of girder placement & road layout data with midas Abutment & Pier

Why midas Deck?
midas Deck is a specialized design automation program for all types of composite girder bridge decks, which generates Design Report, Drawings & BOM.

Irrespective of girder types, midas Deck generates accurate geometry of girders & deck reflecting 3-D road layout of horizontal & vertical curves and cross slopes.

midas Deck minimizes human errors resulting from a manual design process, and it enables the engineer to swiftly respond to design changes.

Because it auto-generates design report, BOM and drawings, the engineer has more time to systematically check the design and is able to concentrate on engineering concepts. midas Deck offers quality, accuracy and productivity.
“Advanced Nonlinear and Detail Analysis System”

**Features**
- Intuitive Geometry Modelling
  - Curve, Surface, Solid
  - Mid-level CAD modeler
  - Geometry Healing and Repairing
  - Various CAD interfaces
  - Optimal Windows UI Design
- Easy Mesh Generation
  - Auto-mesh generation
  - Map-mesh generation
  - Mesh protrusion
  - Element-based meshing
  - Various mesh manipulation tools
- Accurate Analysis Conditions
  - Load and Boundary conditions for civil structures
  - Function based definitions
  - Applicable to geometry and mesh
  - Arbitrary line and free loads
  - Pre-stress and Post-tensioning
- Versatile Post-processor
  - Various visualization for results contour
  - Specialized results extraction and assessment tools
  - MS-Excel compatible table
  - Crack Pattern and Element status

**Configurations**
- Geometry Modeler, Mesh Generation, Analysis Condition Definer, FE Analysis, Post-processor and Report Generator

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**Why midas FEA?**

midas FEA maximizes the efficiency of detail analysis using contemporary geometry-based modeling technology and optimum mesh-generation functionality. It also provides functionality for analyzing results.

midas FEA provides optimal solutions for high-end detail analysis and nonlinear analysis in the civil engineering field such as linear static analysis, material/geometric nonlinear analysis, heat of hydration analysis, contact analysis, concrete cracking analysis, fatigue analysis, etc.
“Advanced Nonlinear and Detail Analysis System”

Features
- General Heat Transfer Heat of Hydration
  - Steady-State, Transient
  - Convection, Convection, Radiation
  - Heat Flux, Heat Flow
  - Temperature Dependent Material
- Heat of Hydration Analysis
  - Creep/Shrinkage, Compressive Strength
  - Design Code Support
  - Parametric Analysis

Material/Geometry Nonlinearity Contact
- Material Nonlinearity
  - von Mises, Tresca, Mohr-Coulomb
  - Drucker Prager, Ramping, User-Supplied
- Geometry Nonlinearity
  - Total Lagrangian, Co-rotational Contact Type
  - Weld Contact, General Contact

Computational Fluid Dynamics
- CFD Model
  - Turbulence Model, Compressible Flow
  - Incompressible Flow, Inviscid Flow
  - Unsteady Flow
- Discretization Scheme
  - 2nd-Order (Spatial)
  - Dual Time Stepping (Temporal)
  - Boundary Condition
    - Far-Field, Wall (Slip, Non-Slip), etc.

Analysis
Crack/Interface Nonlinearity
- Total Strain Crack
- Fixed & Rotating Crack Model Interface Element
- Interface Model
  - Rigid, Coulomb Friction, Discrete Cracking
  - Crack Dilatancy, Bond Slip, Combined CSC

Capabilities
- Construction Stage Analysis, Linear Buckling, Spectrum Response
- Heat of Hydration, Material / Geometry Nonlinearity, Interface Nonlinearity, Reinforcement, Concrete Cracking, Contact, Fatigue, CFD, etc.

Why midas FEA?
midas FEA provides very accurate and reliable results for which MIDAS IT and TNO DIANA co-developed and verified using their knowledge and experience gained in the civil engineering field over the years.

midas FEA caters to solving various nonlinear problems, which would not have been easy to analyze in practice in the past. Because it is easy and convenient to use, it enables the engineer to readily model and analyze complex problems. midas FEA will surely satisfy the engineer’s desire to attain technical superiority.

[Modal Analysis]
[Box, Grid Analysis with Rebars]
[Geometric Nonlinear Analysis]
[Interface Analysis]
[CFD Analysis]
“Geotechnical and Tunnel analysis System”

**Features**
- Geometry Modeling
  - Curve Modeling
  - Surface Modeling
  - Solid Modeling
  - Advanced Modeling
- Mesh Generation
  - Automatic Mesh Generation
  - Mapped Mesh Generation
  - Mesh Pruning
  - Mesh Manipulation
- Post-processing
  - Extract Result, Probe Result
  - On-Curve Diagram
  - Multi Step Iso Surface
  - Settlement Profile
- Analysis Capabilities
  - Linear & Nonlinear Static Analysis
  - Seepage Analysis
  - Coupled Analysis
  - Slope Stability Analysis
  - Dynamic Analysis

**Applications**
- Tunnel, Excavation & Temporary Structure, Abutment/Pier/Pile Foundation, Embankment, Dredging, Reclamation, Dam, Dike, etc.

**Why midas GTS?**
Midas GTS maximizes the efficiency of geotechnical analysis using contemporary geometry-based modeling technology and optimum mesh generation functionality. It also provides functionality for analyzing results.

Midas GTS provides optimal solutions in geotechnical engineering such as for tunnel analysis with complex inter-connections, ground water seepage analysis, effective stress analysis with stress-seepage coupling, analysis of embankment on soft soils and consolidation, excavation and temporary structure analysis, earthquake and blast vibration analysis, lining structural analysis, etc.
**Temporary shoring & Settlement analysis System for Excavation**

**Features**
- Pre & Post Processor
  - Wizard template
  - Auto-generation of construction stages
  - Interactive views
  - Soil retaining dedicated diagram
  - Analysis results produced by Groups

**Analysis Capabilities**
- FEM & Elasto-plastic beam analysis
- Seepage analysis
- Checks for self-retaining by walls without structural members
- Structure-Ground stability analysis

**Design & Report**
- Constitutive members for soil retention for excavation design
- FEM report
- Elasto-plastic report
- Design report (Excel format)

**Miscellaneous**
- Parametric analysis for horizontal/vertical spacing and embedment
- Generation of cross sections
- Analysis for foundation reinforcement

**Geotechnical Engineering**

**Why midas GeoX?**

midas GeoX analyses and designs temporary structures for excavation with a superb user interface based on FEM.

midas GeoX overcomes the limitation of being able to consider only a symmetric half section by the elasto-plastic method. Systematic analysis for effects on adjacent structures such as settlements and complex temporary structures for excavation can be handled seamlessly.

midas GeoX offers powerful design features, which generates design report and drawings. This is a totally new environment in which excavation design is carried out.
“Total Solution for True Analysis-driven Design”

**Features**
- CAD Interfaces
  - STEP, IGES, STL
  - Parasolid
  - CATIA V5, CATIA V4
  - SolidWorks, SolidEdge
  - UG, Pro/E, Inventor
- Intuitive Geometry Modeling
  - Solid, surface, curve
  - Mid-range CAD modeler
  - Non-manifold surface
  - Geometry healing and repairing
  - Various check and measurement
- Powerful Mesh Generation
  - Auto-mesh generation
  - Map-mesh generation
  - Mesh protrusion
  - Element-based remeshing
  - Works Tree based management
- Versatile Post-processing
  - Results Works Tree
  - Various visualization for contour
  - Iso-surface, slice plot, clipping plot, mirror
  - Result table and graph (MS-Excel compatible)
  - Result probe and extraction

**Applications**
- General machinery design, Aerospace, Automotive, Maritime/Shipbuilding, Electronics/Electrical, Consumer goods, Plants, Bio Engineering, Civil engineering, etc.

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**Why Nastran FX?**

Nastran FX offers advanced structural analysis functionality such as contact analysis, nonlinear analysis and optimal design in addition to the tried and tested Nastran’s superb structural analysis functionality over the years.

Nastran FX inherits the reputation of Nastran providing highly reliable solutions to complex analysis and design.
### Features
- **Linear Analysis**
  - Linear static (thermal, prestressed)
  - Normal modes (pre-stressed)
  - Linear buckling
  - Linear contact (static, modal)
  - Composite
- **Dynamic Analysis**
  - Transient, frequency, spectrum
  - Random vibration
  - Complex eigenvalues
  - Enforced motion
  - Modal database
- **Heat Transfer Analysis**
  - Steady-state, transient
  - Temperature-dependent material
  - Thermal stress
  - Thermal contact
- **Advanced Analysis**
  - Material/geometry nonlinear
  - Surface-to-surface contact
  - Bonded, friction, sliding, etc.
  - Drop test
  - Optimization

### Applications
- Linear statics, Modal, Buckling, Contact, Heat transfer, Dynamics (Time/Frequency/Random), Nonlinear (Material/Geometry/Contact), Fatigue, Optimal design, Drop simulation, Composite materials, etc.

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### Why Nastran FX?
Nastran FX offers an easy and convenient environment of fully integrated solvers and pre- and post-processors, which incorporate Windows-based contemporary graphics technology.

Nastran FX also provides various CAD interfaces, practical geometry cleanups, high performance mesh generation and intuitive analysis of post-processing results.
“General Pre & Post Processor for Finite Element Analysis”

**Features**
- CAD Interfaces
  - STEP, IGES, STL
  - Parasolid
  - CATIA V5, CATIA V4
  - SolidWorks, SolidEdge
  - UG, Pro/E, Inventor
- Geometry Modeling
  - Solid, surface, curve
  - Mid-range CAD modeler
  - Non-manifold surface
  - Geometry healing and repairing
  - Various check and measurement
- Mesh Generation
  - Auto-mesh generation
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  - Mesh protrusion
  - Element-based remeshing
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- Post-processing
  - Results Works Tree
  - Various visualization for contour
  - Iso-surface, slice plot, clipping plot, mirror
  - Result table and graph (MS-Excel compatible)
  - Result probe and extraction

**Applications**
- Aerospace, Automotive, Marine, Electronics, Telecommunications, Consumer Product, Bio Engineering, Civil/Geotechnical, etc.

**Mechanical Engineering**

Why midas FX+?
midas FX+ is a General FEA Pre and Post Processor, which is designed to remove the burden of complex model generation and interpretation.

midas FX+ offers advanced geometric modeling functions, powerful mesh generation algorithms, various analysis conditions, and exceptional output displays with latest graphic technologies.

Thus, midas FX+ renders substantially higher productivity and versatility.
**“General Pre & Post Processor for Finite Element Analysis”**

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</tr>
</tbody>
</table>

**Applications**
- Aerospace
- Automotive
- Marine
- Electronics
- Telecommunications
- Consumer Product
- Bio Engineering
- Civil/Geotechnical, etc.

**Mechanical Engineering**

**Why midas FX?**
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