MGI

Automated & Integrated Mobile Testing Laboratory

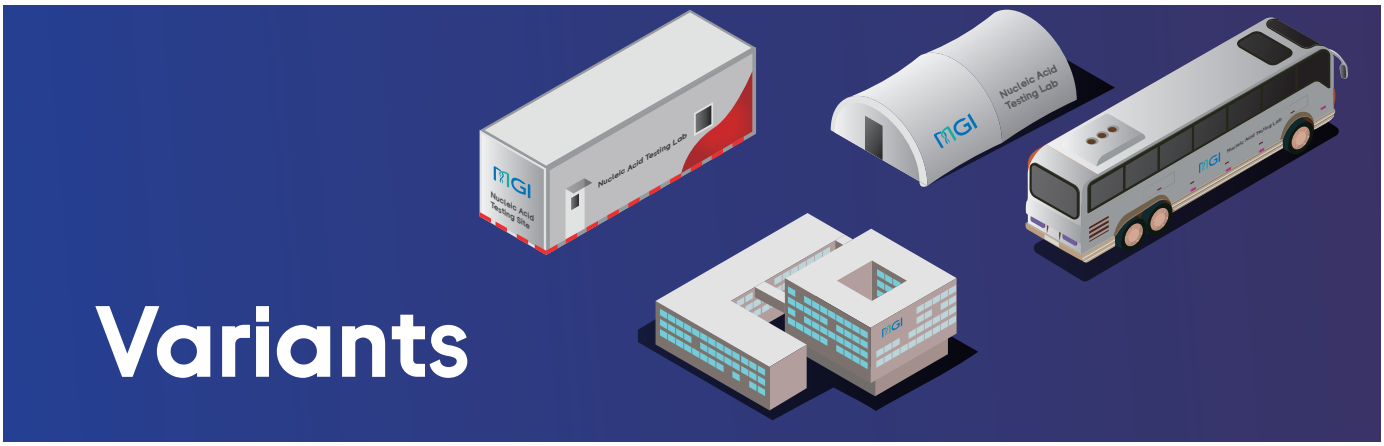
A Nucleic Acid Testing Total Solution

Introduction

For a temporary shortage of testing facilities in an epidemic or the need to quickly increase the nucleic acid detection capacity, MGI's Automatic & Integrated Mobile Laboratory offers a total solution. The lab provides one-stop service with an entire set of equipment, reagents, and consumables for nucleic acid testing. It comes in multiple designs to suit your various testing needs, including size and testing capacity. It is integrated, automated, flexible, and mobile all at the same time.

MGI Offers

Enhanced biosafety level 2 laboratory (P2+) design, customizable and modular	**Convenient set-up** within hours with very few requirements on location
Operational training from professional technicians; **Customer support** from an exceptional after-sales team	**High mobility** allows the laboratory to quickly travel between regions and increases its utility
Automated core equipment from sample to report	**Flexibility** in choosing dimension and throughput
One-stop service with reagents and consumables for the entire workflow	**Reduction in manpower** by 2/3; Produces reports in 3.5 hours
Standard operating procedure with laboratory management and QC support	**High precision and security** eliminate human error and reduce risk



Variants

Multiple Versions Enables Set-Up in Various Conditions

Automated & Integrated Container Laboratory MGIFLP-C3000 / C6000

This version serves as long-term, durable testing site, yet its modular structure also facilitates assembly, disassembly, and transportation. It comes in two variants to realize different throughputs. It is divided into three functional areas, each isolated to avoid contamination. The design is standardized, allowing for custom size and flexible combinations of containers.

Fast Setup Modular Negative Pressure Laboratory MGIFLP-HW

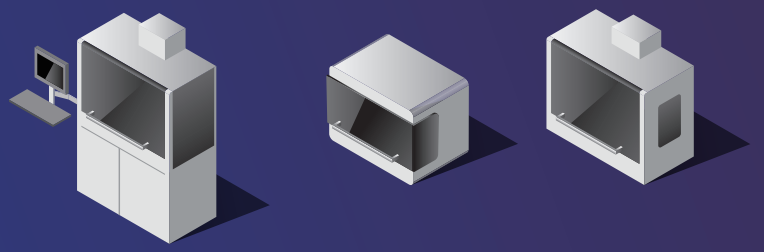
This version offers ultra-high throughput and can be set up within 6 hours, including equipment. It is highly customizable and suitable for spacious areas such as stadiums or parks. It comes with three interconnected tents per set, along with antimicrobial and anti-aging PVDF membranes. Its PVC film and metallic frame also prepare it well for harsh environments.

MGI Nucleic Acid Testing Vehicle Laboratory MGIFLP-A2000*

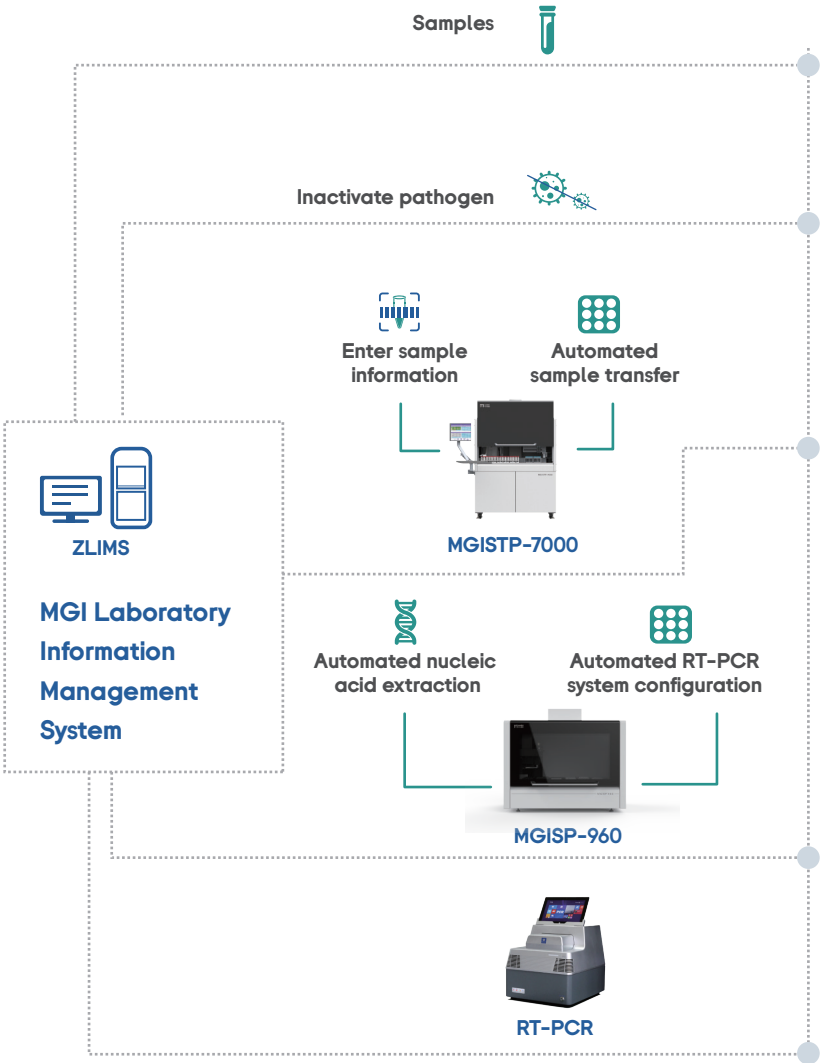
This version specializes in long-distance traveling across regions. It ensures functionality after arduous journeys, even in mountainous or high-altitude areas. It can start testing upon arrival and requires only a minimum of four workers to operate.

*This product is only offered in selected regions. Please contact your local sales representative to confirm availability.

Testing Workflow



Fully Automated Process, Greater Efficiency, Less Manpower



ZLIMS oversees the entire workflow. It records the instruments' status, evaluates test results and generates reports.

Sample Collection

A sample is obtained from the patient and the pathogen is inactivated.

Sample Transfer

MGISTP-7000 automatically scans sample codes and transfers the samples to the 96-tube rack.

Nucleic Acid Extraction

MGISP-960 performs nucleic acid extraction on the samples and configures them for the RT-PCR system.

RT-PCR Testing

The RT-PCR instrument checks each of the extracted nucleic acid samples.

Core Equipment

User-Friendly Designs Consolidate Multiple Integrated Functions

Core Instrument #1: MGISTP-7000 High-Throughput Automated Sample Transfer System

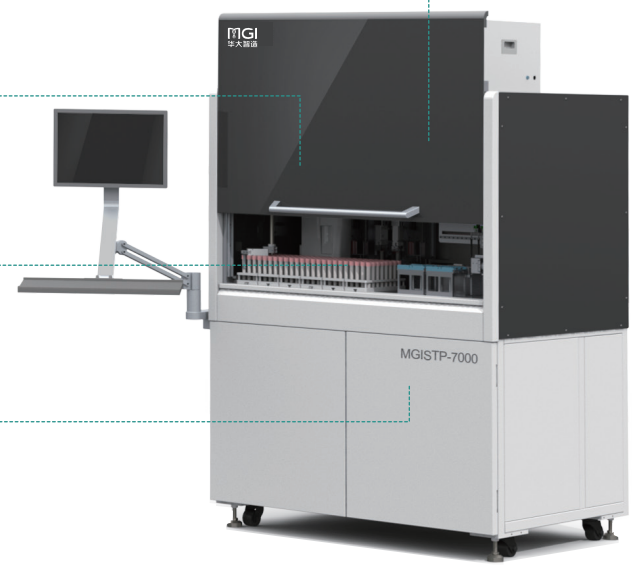
The MGISTP-7000 provides an effective solution for loading samples — the most labor-intensive and high-risk procedure in the COVID-19 testing process.

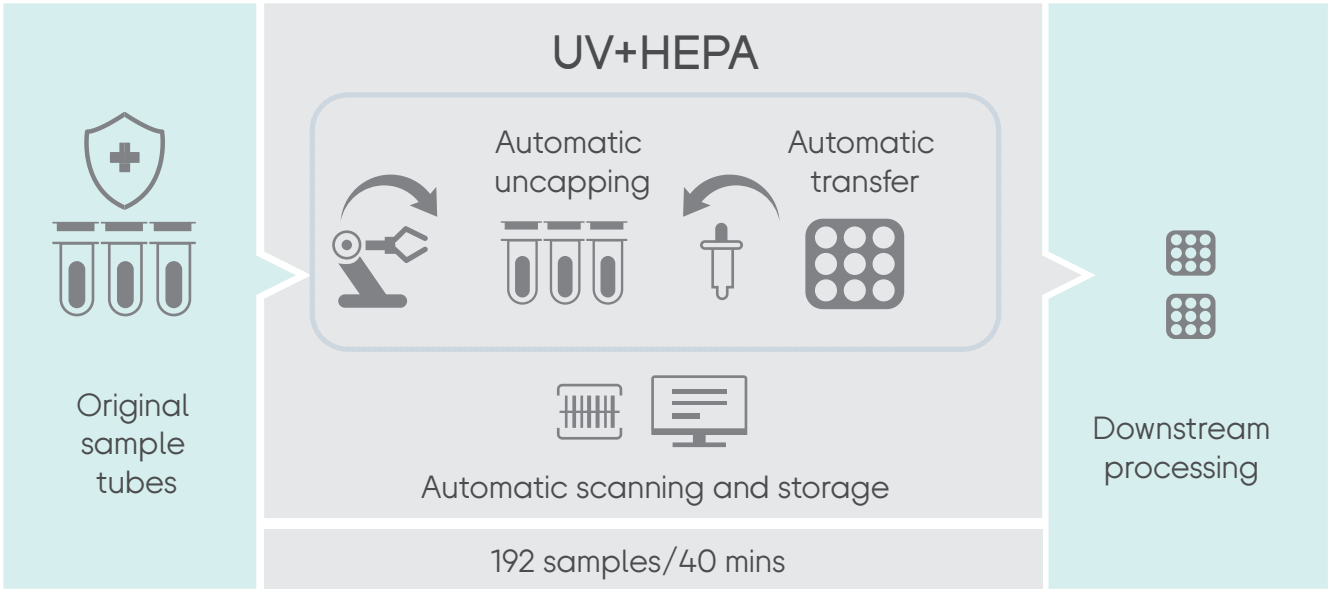
Accurately uncap and transfer 192 samples to a 96-tube rack in 40 minutes

Intuitive one-touch design — a simple insertion of the original sample rack

Built-in negative pressure HEPA filter system and UV ultraviolet disinfection system

Recap and recycle the sample test tubes at the end of a cycle for future use





Core Instrument #2: MGISP-960 High-Throughput Automated Sample Preparation System

The MGISP-960 resolves testing throughput bottlenecks in small spaces by performing nucleic acid extraction at a fast pace. It also prevents lab contamination and mixing of samples due to human error.

MGIEasy Nucleic Acid Extraction Reagent

- Stable extraction; Suitable for automated sample processing system
- High success rates for low-concentration sample extraction
- Suitable for downstream applications such as PCR, RT-PCR, sequencing, *etc.*

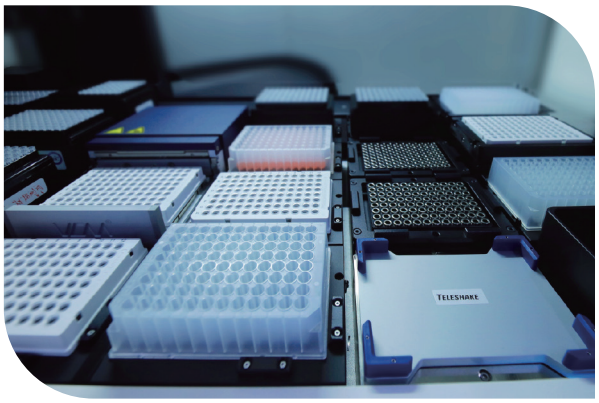
MGISP-960

- Automatically processes 192 samples in 80 minutes
- Integrates a range of functions and occupies less than 1 m^3 of space
- Easy to operate; one person can work with 3 instruments at the same time
- Compatible with third-party magnetic bead-based RNA extraction reagent kits*

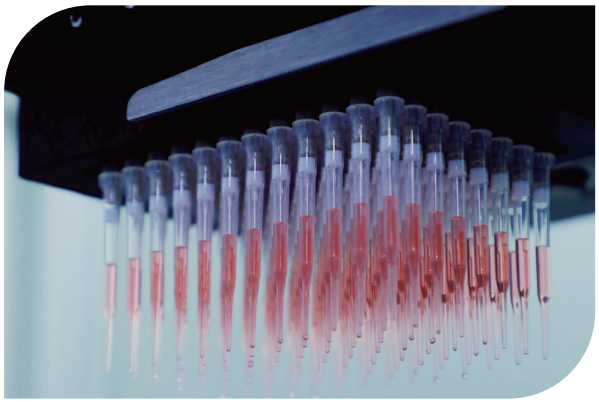
*Results must be verified via automated testing

Configurations

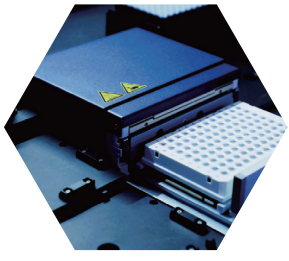
Customized 24-Position Board



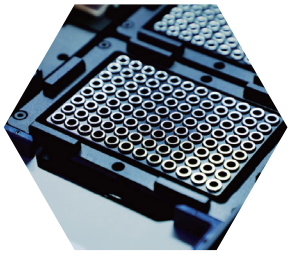
96-Channel High-Precision Pipetting



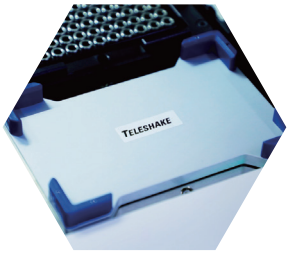
4 function modules



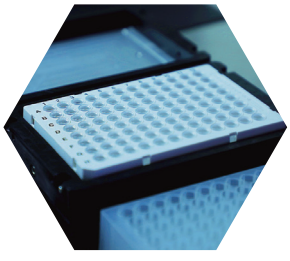
PCR



Magnetic Beads Purification Module



Shaker

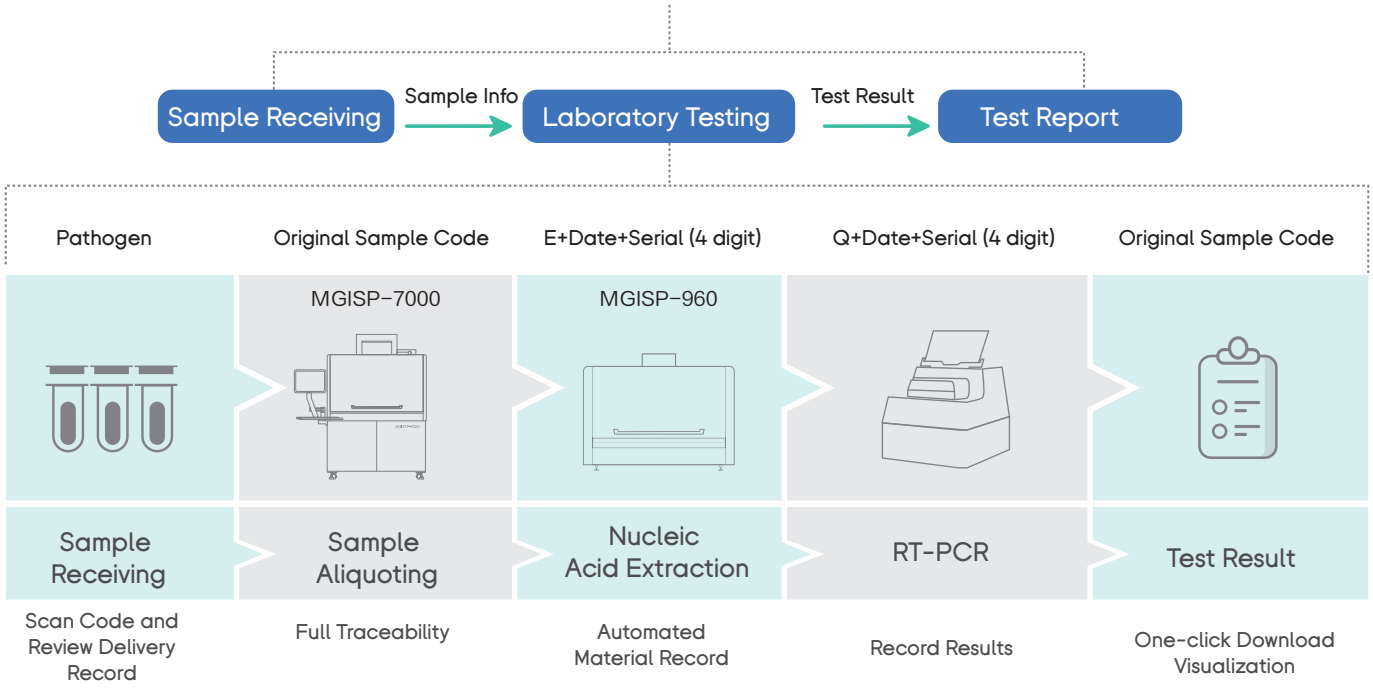


Temperature Control Module

Core System: ZLIMS Laboratory Information Management System

Laboratory System for ZLIMS

(Fast, Efficient, Rigorous, Traceable)



As a special information management platform for life science instruments, ZLIMS offers a complete solution from sample input to the final report while protecting users' privacy. It tracks samples, records experimental data, and monitors instrument status. It also generates reports, which can be easily customized to meet different needs.

ZLIMS Operation Interface

Relevant Figures

Strict Adherence to BSL-2 Standards

As an enhanced BSL-2 laboratory with third-party certification, MGI's laboratory is designed in accordance with related industry standards and adheres to the COVID-19 testing guidelines by the local Centers for Disease Control and Prevention (CDC). Specifically, its noise level, temperature, and other parameters all fall within a predetermined range:

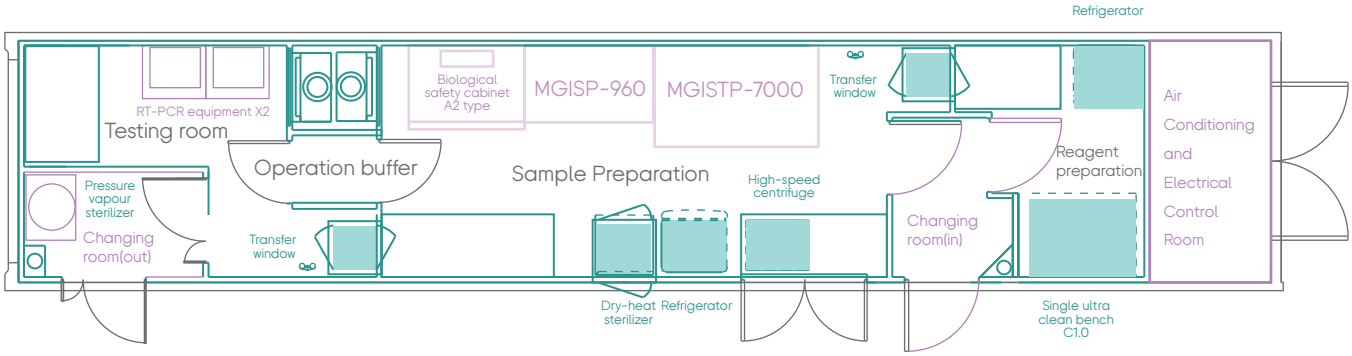
Performance Parameters**	Standards (MGIFLP-A2000 + MGIFLP-C3000 / C6000)	Standards (MGIFLP-HW)
Cleanliness	Class 100,000	
Noise Level (dB)	≦60℃	
Temperature (℃)	18-26	
Relative Humidity	30-70%	
Ventilation Rate (times / hour)	≧12	15-20
Illuminance (lx)	Main room≧200, auxiliary room≧150	300
RPA* Pressure (Pa)	+5	+10
SPA Pressure (Pa)	-15	-10
TA Pressure (Pa)	-25	-20

* RPA = Reagent Preparation Area, SPA = Sample Preparation Area, TA = Testing Area.
** Parameters are subject to local regulations.

Interior Design

MGI's laboratory structure also remains consistent across different variants. It is divided into three functional areas – reagent preparation area, sample preparation area, and testing area – each isolated to avoid contamination. It features entry and exit changing rooms, safety cabinets, pressurized disinfectant equipment, and air conditioning as part of the standardized design. See below for a model layout of MGIFLP-C3000.

MGIFLP – C3000 Floor Plan



Throughput Options

Support In-Depth Customization

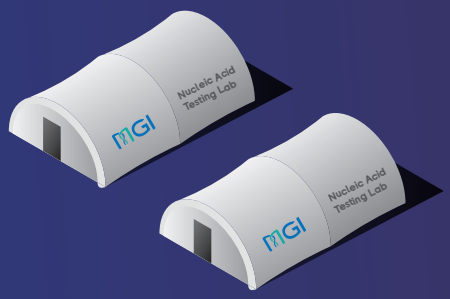
MGI is always creating options that better suit our customers' needs. We realize that entities face vastly different conditions for laboratory set-up, testing population, and desired throughput. For this purpose, we have devised several plans based on daily throughput, though the possibilities extend far beyond the proposals here.

Suggested Throughput Options

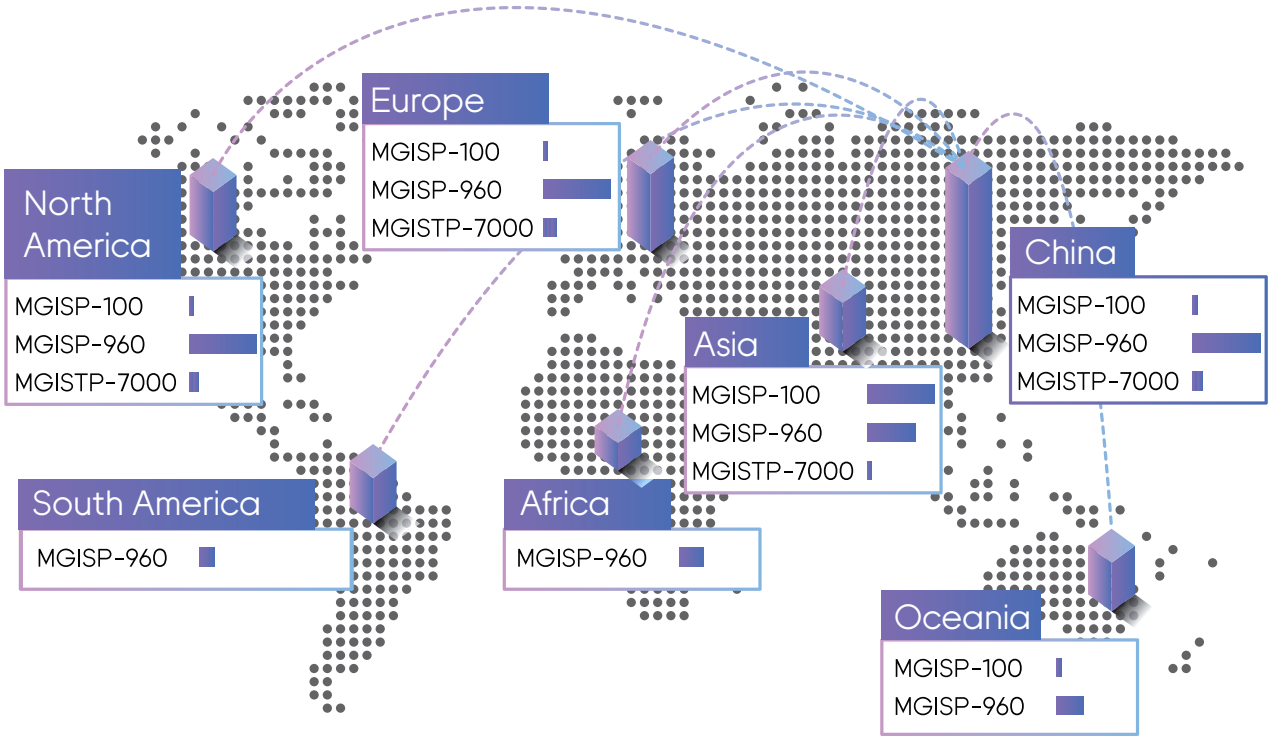
Daily Throughput	Variant / Suggested Size	Core Instruments
2,000 sample tubes	MGIFLP-A2000 **12*2.49*3.8 m^3**	 x1 MGISTP-7000  x1 MGISP-960
3,000 sample tubes	MGIFLP-C3000 **12*2.45*2.89 m^3**	 x1 MGISTP-7000  x1 MGISP-960
6,000 sample tubes	MGIFLP-C6000 **13.5*2.45*2.89 m^3**	 x1 MGISTP-7000  x2 MGISP-960
10,000 sample tubes	MGIFLP-C6000 **16.5*4.9*2.89 m^3**	 x2 MGISTP-7000  x4 MGISP-960
30,000 sample tubes	MGIFLP-HW **25*25 m^2 ****	 x5 MGISTP-7000  x9 MGISP-960

** MGIFLP-HW are produced on a case-to-case basis. The dimensions (L*W) here are only estimations. If you have another size in consideration, please reach out to your local sales representative to discuss personalized designs.

MGI Goes Global



MGI Automated Nucleic Acid Extraction Equipment Global Distribution Map

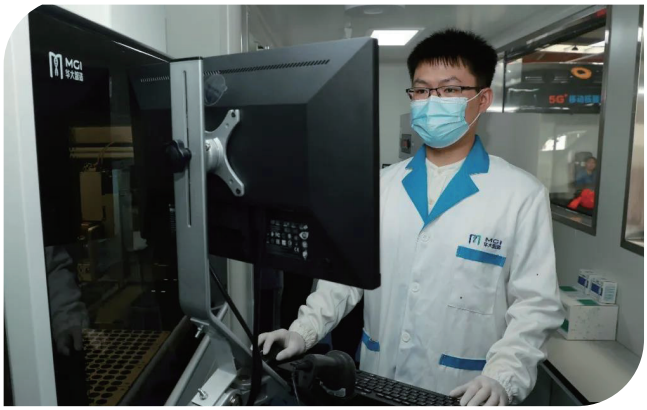


MGI has been at the forefront of the battle against the global pandemic since the very beginning. On February 1st, 2020, as a member of the Anti-Epidemic Joint Action Initiative, MGI delivered abundant supplies and initiated the construction of a MGI laboratory in Wuhan. By February 10th, the lab has already received nearly 3,000 samples.

Since then, MGI has been helping global customers (including hospitals and disease control centers) rapidly expand their nucleic acid testing capacity by building new testing laboratories and delivering our automated nucleic acid extraction equipment. For example, MGISP-960 has facilitated epidemic control and prevention efforts in over 100 cities. Today, we have assisted more than 50 countries and regions, and our equipment has performed more than 3 million nucleic acid extractions.

Case Studies

Case Study 1 Chengdu, Sichuan, China



Location: Key medical and health institutions in Sichuan

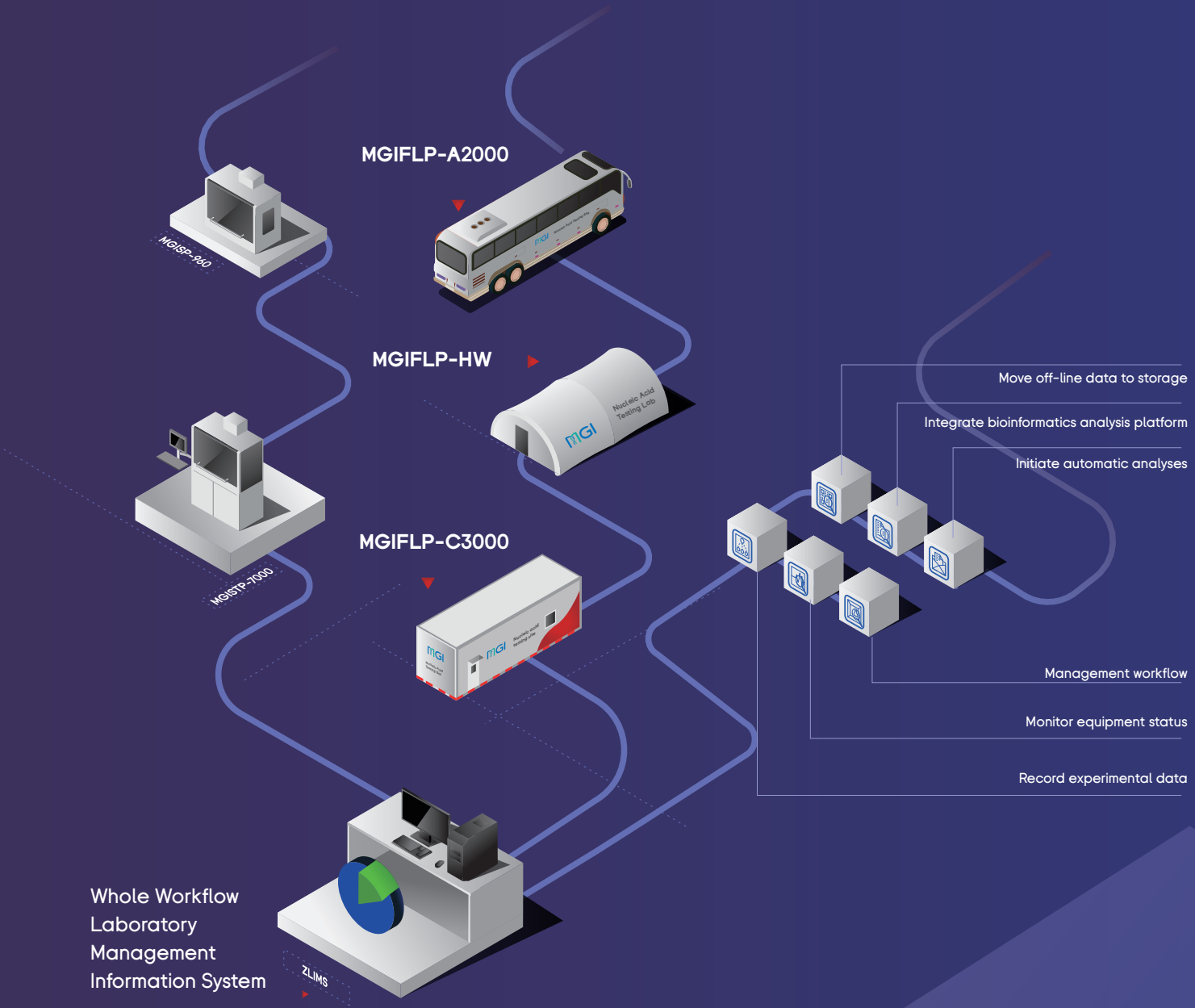
Solution: To support China's epidemic prevention and control, four vehicle-mounted nucleic acid testing labs, co-developed by BGI, MGI, and Shudu Bus, were transported to Sichuan. In this lab, only four persons are needed to achieve a daily throughput of up to 20,000 samples.

Case Study 2 Karolinska Institutet, Sweden

Location: KI Pandemic Center, the Swedish national center for diagnostics

Solution: To quickly scale up KI's nucleic acid testing capacity to between 10,000 and 20,000 samples per day, MGI transported ten MGISP-960 to the Center, along with technicians to aid the set-up process.

A Graphical Representation of MGI's Anti-Pandemic Toolkit



Whole Workflow Laboratory Management Information System

MGI Tech Co., Ltd.

Building 11, Beishan Industrial Zone, Yantian District, Shenzhen. CHINA 518083

en.mgi-tech.com MGI-service@mgi-tech.com 4000-966-988

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