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LIUGONG MUNICIPAL CONSTRUCTION SOLUTION

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Current Status of Municipal Construction

Industry Status and Trends of Municipal Construction

The global municipal construction industry is characterized by digitalization, sustainability, infrastructure upgrades, urban regeneration, and public engagement etc.

Main industry trends include technological innovation, new materials, environmental trend, digital transformation, and specialization & diversification.

Look into the future, with urbanization and economic recovery, the sector is expected to continue expanding. Innovation will drive development. Green, low-carbon approaches will become industry mainstream. Meanwhile, international collaboration and competition coexist, bringing both new opportunities and challenges to the industry.



MUNICIPAL PIPELINE NETWORK CONSTRUCTION

Working Scenarios and Key Features of Municipal Pipeline Network Construction

The municipal pipeline network comprises six major categories: drainage pipelines, heating pipelines, power grids, water supply pipelines, gas pipelines, and telecom cables.

Construction Challenges:

Space & Environment Constraints: Narrow roads and complex underground utilities in older districts hinder the use of large machinery, therefore small equipment is relied upon for operations, and risk causing traffic congestion and complaints from residents.

Leakage & Settlement Problems: Poor joint quality of pipelines and inadequate backfilling led to water tightness test failures and road surface subsidence.

Future Development Trends:

Electrification & Intelligent Equipment Upgrades

Electric Equipment: By 2030, the EU targets 35% electrification in construction equipment to reduce emissions and noise. New energy equipment will occupy an increasing proportion in the future development.

Autonomous Operations: High precision positioning (such as GNSS centimeter level) and automatic path planning technology will be applied to pipeline laying to improve efficiency and reduce human error.

LiuGong Equipment Advantages in Municipal Pipeline Network Construction

Full Electric Solutions: Lithium battery-powered mini-excavators with fast charging (1.5h) and long runtime (6-8h), zero emissions, low noise, suitable for continuous operation in narrow urban areas and underground spaces. 60% energy savings, 30% longer maintenance cycle compared to diesel equipment.

Flexible Adaptability to Complex Applications:

Small-sized machine design: Skid steer loaders and mini excavators are suitable for narrow urban areas, with low ground pressure (35kPa) reducing crushing damage to soft ground.

Multifunctional Attachments: Equipped with quick couplers compatible with breakers, dredging shovels and other attachments, capable of completing multiple tasks such as excavation, backfilling and crushing on a single machine, reducing equipment scheduling costs.

Smart Safety Technology: Equipped with mm-wave radar and emergency braking for automated obstacle avoidance. GNSS positioning controls the construction trajectory accuracy ($\pm 2-3\text{cm}$) to ensure uniform compaction of the pipe foundation.

Remote Management Platform: Real time monitoring of equipment status and construction quality, supporting fault pre-diagnosis, reducing downtime.



Municipal Pipeline Network Construction Process and LiuGong Equipment Solutions

Process/Equipment	Land Clearing	Trench Excavation	Pipe Laying	Backfilling	Compaction	Maintenance
Electric Excavator (6-28 Ton)	Deep Trench Bucket, Earthmoving Bucket, Dozer Blade, Quick Coupler, Breaking Hammer	Deep Trench Bucket, Earthmoving Bucket, Dozer Blade, Quick Coupler, Breaking Hammer	Trenching Bucket, Grapple, Lifting Arm	Earthmoving Bucket, Grading bucket, Dozer Blade, Quick Coupler	Vibratory Rammer	Bucket, Vibratory Rammer, Deep Trench Bucket, Earthmoving Bucket, Dozer Blade, Quick Coupler
Excavator (6-28 Ton)	Deep Trench Bucket, Earthmoving Bucket, Dozer Blade, Quick Coupler, Breaking Hammer	Deep Trench Bucket, Earthmoving Bucket, Dozer Blade, Quick Coupler, Breaking Hammer	Trenching Bucket, Grapple, Lifting Arm	Earthmoving Bucket, Grading bucket, Dozer Blade, Quick Coupler	Vibratory Rammer	Bucket, Vibratory Rammer, Deep Trench Bucket, Earthmoving Bucket, Dozer Blade, Quick Coupler
Electric wheel loaders (1-5t)	Standard Bucket, 4-in-1 Bucket		Grapple Bucket, Lifting Arm, Quick Coupler	Standard Bucket, 4-in-1 Bucket, Grapple Bucket, Lifting Arm, Quick Coupler		Standard Bucket, 4-in-1 Bucket, Grapple Bucket, Lifting Arm, Quick Coupler
Diesel wheel loaders (1-5t)	Standard Bucket, 4-in-1 Bucket		Grapple Bucket, Lifting Arm, Quick Coupler	Standard Bucket, 4-in-1 Bucket, Grapple Bucket, Lifting Arm, Quick Coupler		Standard Bucket, 4-in-1 Bucket, Grapple Bucket, Lifting Arm, Quick Coupler
Backhoe loaders	Excavator Bucket, 6-in-1 Bucket, Breaking Hammer, Earthmoving Bucket, Quick Coupler, 4-in-1 Bucket	Deep Trench Bucket, 6-in-1 Bucket, Breaking Hammer, Earthmoving Bucket, Quick Coupler		Excavator Bucket, 6-in-1 Bucket, Breaking Hammer, Quick Coupler	Vibratory Rammer	Excavator Bucket, 6-in-1 Bucket, Breaking Hammer, Quick Coupler, Lifting Arm
Skid steer loaders	Standard Bucket, 4-in-1 Bucket, Enclosed Sweeper, Breaking Hammer, Dozer Blade	Standard Bucket, 4-in-1 Bucket, Enclosed Sweeper, Breaking Hammer, Quick Coupler, Disc Cutter		Standard Bucket, 4-in-1 Bucket, Vibratory Compactor, Mixer, Dozer Blade, Quick Coupler	Vibratory Compactor	Standard Bucket, Pallet Fork, 4-in-1 Bucket, Enclosed Sweeper, Milling Head, Breaking Hammer, Vibratory Compactor, Mixer, Dozer Blade
Rollers Compact tandem vibratory rollers (0.9-3.2t)					Vibratory Compactor	
Truck-mounted Crane (~8 tons)						

● 推荐设备 ● 可选设备 充电条件满足情况下优先推荐电动

Recommended Equipment - Excavators

Mid-sized excavators

Perfectly balance mobility in narrow spaces with powerful output and multi-functional attachment compatibility.



Excavator

Series	Model	Operating Weight	Rated Power	Bucket Size	Flow	Pressure
F Series Crawler Excavators	915F, 915FCR, 917F, 922F, 924F, 926F, 928F	14,600-28,400 kg	96-145 kW	0.6-1.20 m³	2x117-2x234 L/min	34.3-37.3 MPa
E Series Crawler Excavators	915E, 920EES, 920E, 922E, 925E	14,050-27,500 kg	86-142 kW	0.60-1.20 m³	2x120-2x240 L/min	34.3 MPa
Wheeled Excavators	906FW, 9075FW, W915E	5,880-14,600 kg	46.3-97 kW	0.09 m³-0.58 m³	144-350 L/min	25-37.3 MPa

Multi-functional Capabilities for Challenging Conditions

All-terrain Penetration: Compatible with rock buckets, hydraulic shears, etc. for rock breaking and demolition works. High-performance travel motors and optional wide tracks provide excellent traction on loose ground.

Ultra-durable Structure: Box-type undercarriage and integral cast bearing seats improve impact resistance. Reinforced track rollers and chains increase machine life by 30% in harsh conditions.

Dual-mode Efficiency Engine: P Mode focuses on maximum power output for land clearing and dumping. E Mode is ideal for light-duty excavation with 15% reduced fuel consumption. Intelligent power control balances efficiency and economy.

Millimeter-level Trench Precision: Narrow trench buckets provide ±5mm width accuracy. Long-arm combinations match designed slope gradients precisely.

Intelligent, Compliant, and Comprehensive Protection

Safety: ROPS cab and ISO-certified operator protection mesh for safer operation in high-risk job sites.

Smart Monitoring: Real-time fuel consumption and fault code monitoring with remote control capabilities.

Efficient Maintenance: Side-opening maintenance doors, quick-change filters, centralized lubrication system, improve maintenance efficiency by 40% for high-frequency municipal works.



LiuGong Attachment Solutions for Municipal Pipeline Network Construction

In municipal pipeline network construction projects, attachment selection must align with the specific character of the work, including:

- Project requirements:** e.g., narrow-space pipe laying or deep-buried renovations.
- Soil conditions:** the stability of soft soil, rock layers, or backfill areas.
- Machine compatibility:** ensure hydraulic/electric systems match between attachments and base machines.
- Safety priority considerations:** avoid vibration or impact that may damage existing pipelines.
- Construction efficiency:** e.g., quick coupler systems to reduce operation interruptions.
- Cost-effectiveness:** consider rental cost and utilization rates of multifunctional attachments.
- Environmental requirements:** attachments with low noise adaptable to urban restrictions.

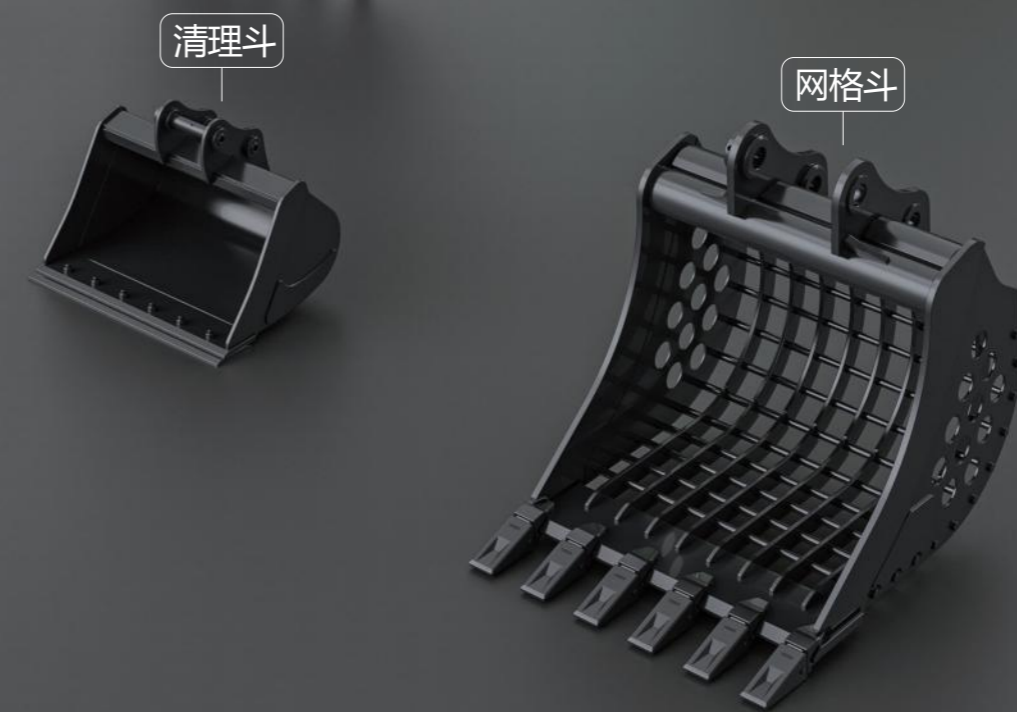
Scientific attachment selection can significantly improve trenching precision, reduce the risk of accidents, and optimize life cycle cost.



挖沟斗

标准斗

倾斜斗



清理斗

网格斗

Bucket Attachments

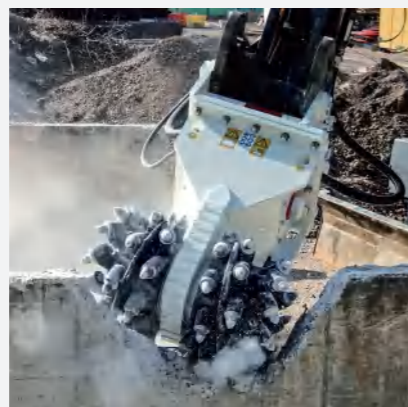
Designed and matched specifically for LiuGong excavators to optimize productivity. Multiple types are available to meet various needs such as trenching, digging, loading, and finishing.

Name	Capacity	Width	Application	Compatible Models
Standard Bucket	0.038-0.36 m ³	455-910 mm	Ideal for standard excavation and truck loading of soil, loam, and gravel	2-25 Ton Excavator
Trenching Bucket	0.015-0.170 m ³	230-450 mm	Perfect for linear utility trenching, confined space operations, and tough soil conditions	2-25 Ton Excavator
Ditch Cleaning Bucket	0.065-0.5 m ³	800-1,228 mm	Designed for cleaning storm water and sewage pits, as well as pipe maintenance	2-25 Ton Excavator
Skeleton Bucket	1.2-2.2 m ³	1,220-1,833 mm	Ideal for sorting finer materials from larger debris and riverbed cleaning	2-25 Ton Excavator
Tilting Bucket	0.15-0.6 m ³	914-1,524 mm	Enables precision work in angled or uneven working conditions	2-25-ton Excavator

Drum Cutter

Used for trenching, wall shaping, and concrete surface demolition, etc. Features precise milling with minimal disruption.

Name	Weight (without bracket)	Rated Power	Milling Force	Compatible Models
Drum Cutter	300-1,100 kg	30-70 kW	15.1-40 kN	3-22 Ton Excavator



Vibratory Rammer

Uses the excavator's hydraulic power to rotate the internal eccentric module at high speed, producing vibratory force several times its weight. Suitable for compacting flat surfaces, slopes, steps, and trenches.

Name	Weight	Compaction Force	Vibration Frequency	Flow Requirement	Compatible Models
Vibratory Rammer	260-850 kg	2-10 T	2,000 Time/min	50-260 L/min	2-33 ton excavators



Compaction Wheel

Ideal for compacting narrow trench bottoms. Wheel width is adjustable via bolted segments and can be easily changed on-site. Mounted with rotating device, can be rotated to compact at different angles.

Name	Rim Width	Working Depth	Weight	Max Vibration Force	Compatible Models
Compaction Wheel	150-400 mm	≤800 mm	585-800 kg	42 kN	5-12 Ton Excavator



MUNICIPAL LANDSCAPING PROJECTS

Construction Scenarios and Key Features

Key Characteristics of Municipal Landscaping Projects:

Comprehensive Construction Needs: Landscaping projects involve diverse tasks including earthworks, water features, garden paths, planting, and irrigation and drainage systems, etc. requiring equipment to have the ability of quick-switching multi-function attachments (excavating, breaking, trimming, sweeping, etc.) to handle complex working conditions.

Ecological and Low-Carbon Orientation: Regulations in Europe and the US require landscaping equipment to meet low or zero-emission standards, accelerating the adoption of electric equipment.

Precision and Aesthetic Requirements: Tree and hedge trimming demands uniform results (e.g., shaping deviation $\leq 5\text{cm}$). Manual methods often result in inconsistencies, highlighting the importance of standardized mechanized operations.

Current Construction Challenges and Pain Points:

Environmental Constraints and Ecological Conflicts:

Space Limitations: Narrow streets in older urban areas in European and American countries restrict access of large equipment. Requiring small and mini equipment to operate in alleys with width $\leq 3\text{m}$.

Pollution Issues: Fuel-powered landscaping equipment accounts for 35% of jobsite carbon emissions and generates over 50% of noise complaints.

Resource Waste and Efficiency Bottlenecks:

Traditional irrigation relies on manual labor, wasting up to 40% of water resources. Landscaping waste (branches, lawn clippings) makes up 15% of urban solid waste, necessitating on-site processing equipment.

Future Development Trends:

Electrification and Zero Emission Transformation:

The EU plans to completely ban the sale of fuel-powered landscaping equipment by 2030, and promote the application of lithium battery / hydrogen energy equipment.

Solar Charging Technology Application: e.g., Irrigation systems equipped with solar panels, achieving $>90\%$ self-sufficiency in energy supply.



LiuGong Equipment Advantages

Compact Design: Skid steer loaders and mini excavators with widths of $\leq 1\text{m}$ can access confined spaces easily.

Electrification and Eco-Friendly Performance Upgrades:

- Electric skid steers with noise of $\leq 70\text{dB}$.
- Offer 8-hour endurance for all-day work.
- Meet zero-emission zone regulations in Europe and the US.
- Energy recovery technology reduces energy consumption by 15% and is paired with solar charging stations to shorten idle time.

Multi-functional Attachment Compatibility:

- Compatible with dozens of attachments (hydraulic shears, mowers, sweepers, etc.) through quick coupler, achieving "One machine for multiple functions", thus reducing procurement costs by 30%.
- Multiple attachments operations replaced traditional irrigation and can handle the transfer of landscaping waste more efficiently.

Smart Maintenance and Aftermarket Support:

- Predictive Maintenance: Real-time equipment status monitoring via sensors. Early fault alerts reduce downtime by 50%.



Main Working Scenarios and LiuGong Equipment Solutions

Process/ Equipment	Land Clearing	Soil Leveling & Improvement	Infrastructure Construction (Pipes, Landscapes, Facilities)	Maintenance
Electric Excavator (2-20 Ton)	Hydraulic Clamp, Earthmoving Bucket, Deep Trench Bucket, Breaking Hammer, Grapple, Quick Coupler	Hydraulic Clamp, Earthmoving Bucket, Grapple, Quick Coupler	Hydraulic Clamp, Earthmoving Bucket, Deep Trench Bucket, Trenching Spade, Auger, Grapple, Quick Coupler	Hydraulic Clamp, Earthmoving Bucket, Deep Trench Bucket, Trenching Spade, Breaking Hammer, Auger, Quick Coupler
Excavator (2-20 Ton)	Hydraulic Clamp, Earthmoving Bucket, Deep Trench Bucket, Trenching Spade, Breaking Hammer, Grapple, Quick Coupler	Hydraulic Clamp, Earthmoving Bucket, Grapple, Quick Coupler	Hydraulic Clamp, Earthmoving Bucket, Deep Trench Bucket, Trenching Spade, Auger, Grapple, Quick Coupler	Hydraulic Clamp, Earthmoving Bucket, Deep Trench Bucket, Trenching Spade, Breaking Hammer, Auger, Quick Coupler
Electric Wheel Loader (1-5 Ton)	Standard bucket, Grass Grab, Grapple Bucket		Standard bucket, Grass Grab, Grapple Bucket	Standard bucket, Grass Grab, Grapple Bucket
Wheel Loader (1-5 Ton)	Standard bucket, Grass Grab, Grapple Bucket		Standard bucket, Grass Grab, Grapple Bucket	Standard bucket, Grass Grab, Grapple Bucket
Backhoe Loader (All Models)	Tree Spade, 6-in-1 Bucket, Tree Fork, Earthmoving Bucket, Breaking Hammer, Auger	4-in-1 Bucket, 6-in-1 Bucket, Auger	Auger, Earthmoving Bucket, 6-in-1 Bucket, 4-in-1 Bucket	
Skid Steer Loader (All Models)	Standard Bucket, Hydraulic Clamp, Auger, 4-in-1 Bucket, Trencher, Grapple Bucket, Pallet Fork, Mower, Tree Transplanter	Standard Bucket, Hydraulic Clamp, Auger, 4-in-1 Bucket, Trencher, Grapple Bucket, Pallet Fork, Mower, Tree Transplanter	Mower, Tree Transplanter	Standard Bucket, Hydraulic Clamp, Auger, 4-in-1 Bucket, Trencher, Grapple Bucket, Pallet Fork, Mower, Tree Transplanter
Roller 0.9-3.2 Ton Hydraulic Single Drum Roller 1.4-2 Ton Mechanical Single Drum Roller 1.2-2 Ton Compact Tandem-Drum Roller				
Bulldozer (200-260 HP)		Dozer Blade		
Aerial Working Platform (16-20 Meter)				

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Recommended Equipment for Landscaping - Skid Steer Loaders

In narrow spaces such as old city centers or parks, one skid steer loader can handle 90% of daily maintenance tasks, solving the pain point of larger machines not being able to enter, and its silent feature meets requirement of noise-sensitive environments.



Skid Steer Loader

Model	Rated Load (50% Tipping Load)	Gross Power	Dump Height	Operating Weight	Flow (Standard/High)	Pressure	Bucket Size
365B	795 kg (1,750 lb)	35.7-48.0 kW	2,220 mm	2,950 kg	72.8/100.0 L/min	21 MPa	0.40 m³
375B	865 kg (1,900 lb)	49.9-50.2 kW	2,220 mm	3,100 kg	79.2/124.0 L/min	21 MPa	0.40 m³
385B	1,045 kg (2,300 lb)	53.7-61.3 kW	2,572 mm	3,750 kg	91.2/132.5 L/min	21 MPa	0.50 m³
395B	1,133 kg (2,500 lb)	70.0 kW	2,572 mm	3,850 kg	87.4/146.6 L/min	21 MPa	0.55 m³



Electric Skid Steer Loader

Model	Battery Capacity	Voltage	Bucket Breakout	Boom Lifting Force	Rated Load	Flow	Pressure	Bucket Size
385BE	101 kWh	333 V	36 kN	29 kN	1,500 kg	92 L/min	23 MPa	0.5 m³

Multi-function Compatibility:

- Compatible with main attachments, versatile for multi-functions such as digging, shoveling, drilling, shearing, etc.
- High-flow hydraulics (up to 130 L/min) drives high-power attachments to meet the needs of greening, paving, sweeping.

Compact and Maneuverable:

- Differential steering + stationary turning (minimum radius) for flexible operation in tight spaces.
- Optional backup camera and anti-collision frame for better passability and safer operation.

All-Terrain Protection:

- IP67 sealed cab, heated defrosting rearview mirrors, 4x high-brightness LED lights for all-weather use.
- Dacromet-coated fasteners (rust resistance 7-10 times over zinc coating), extending working life.
- Tilt-back frame and drainage holes prevent water accumulation.

High-Efficiency Sweeping System:

- Angled broom with load-sensing hydraulics ensures effective dust suppression.
- Large dustbin + dual-stage filters handle frequent municipal cleaning.

Superior Stability:

- Low center of gravity + wide wheelbase design with 26° departure angle ensures ample safety margin when reversing downhill.
- Optional 65-160 kg counterweights to prevent tipping in rough terrain.
- FOPS/ROPS-certified cab with 3-point seatbelt for enhanced safety protection.

Ground Adaptability:

- Optional deep-tread anti-slip tires, anti-slip chains, tracked chassis adapt to wet/hard-paved surfaces.
- High ground clearance + reinforced protective plates to handle gravel and pothole conditions.

Smart Hydraulics System:

- Load-sensing with 30% redundant oil tank ensures energy savings.
- Independent oil temp monitoring, dual cooling loops, and high-precision filters (β 200) keep the system clean and reliable.



Recommended Equipment for Landscaping - Backhoe Loaders

One machine equivalent to both excavator and loader, ideal for efficiently completing whole earthwork process within limited budgets and tight spaces, minimizing the damage to green zone surface caused by equipment move in/out.



Backhoe Loader

Model	Operating Weight	Rated Power	Loader Bucket	Backhoe Bucket	Rated Load	Flow	Pressure	Recommended Attachments
764A	8,100 kg	70 kW	1 m ³	0.09–0.36 m ³	2,000 kg	143 L/min	21 MPa	Loader: 4-in-1 Bucket, 6-in-1 Bucket, Sweeper, Quick Coupler Backhoe: 0.09–0.36 m ³ Bucket, Breaking Hammer, Vibratory Rammer, Quick Coupler
766A	8,100 kg	70–86 kW	1 m ³	0.09–0.36 m ³	2,000 kg	143 L/min	24 MPa	
775A	8,400 kg	70 kW	1 m ³	0.09–0.36 m ³	2,000 kg	143 L/min	21 MPa	
777A MAX	8,400 kg	74.5 kW	1 m ³	0.09–0.36 m ³	2,000 kg	167 L/min	25 MPa	
777A	8,400 kg	70–86 kW	1 m ³	0.09–0.36 m ³	2,000 kg	143 L/min	24 MPa	
777A-S	9,400 kg	74.5 kW	1.1–1.2 m ³	0.09–0.36 m ³	2,000 kg	143 L/min	24 MPa	
777A-S MAX	9,400 kg	74.5 kW	1.1–1.2 m ³	0.09–0.36 m ³	2,000 kg	167 L/min	25 MPa	

High Mobility:

Max speed 40 km/h + 160L extra-large fuel tank allows citywide coverage without transport assistance, quickly responding to dispersed operations.

Multi-function Quick Coupler System:

Standard bucket for loading/grading, 6-in-1 bucket for dozing, clamping, and forking (fork span 1,500mm, load 2,000kg), flexible for multiple purposes.

Efficient Excavation Performance:

- Trenching buckets (300–914mm) + telescopic boom for up to 5.5m wall side trench digging depth.
- Auger (200–600mm diameter) is accurately adapted for pile foundation/tree drilling.

Superior Compaction Capability:

- Hydraulic vibratory plate compactor + rear axles with differential locks for steady traction on wetlands and grasslands.
- 3.45m minimum turning radius with single-side braking.

Safety and Reliability:

- FOPS/ROPS-certified cab + hydraulic assist braking, double protection.
- LiuGong iLink remote monitoring with real-time fault alerts to reduce equipment failure risks.

LiuGong Attachment Solutions for Landscaping Projects

Attachment selection for municipal landscaping must be closely aligned with following conditions:

Narrow-space operation (e.g., alleyways 2m wide)

Soil characteristics:

- **Soft ground:** ground pressure 25kPa to avoid sinking
- **Rocky ground:** impact energy 120J for effective breaking

Root systems and utility line protection:

- Vibration frequency 30Hz
- Non-contact detection preferred

Electro-mechanical compatibility:

Hydraulic pressure is well matched to actual operating load, with an error margin within 5%.

Quick coupler efficiency:

Attachment switching time 2 minutes, improving multi-purposes efficiency

Scientific selection can improve:

- **Seedling survival rate increased** by 15%
- **Accident rate reduction** by 50%
- Electric attachments (noise 65dB) meet urban environmental regulations.
- Energy cost over three years is only 1/3 of fuel-powered attachments.

The core objective is to overcome space limitations, soil risks, and ecological constraints through technology adaptation - ensuring optimal quality, cost-efficiency, and safety.



Auger

Offers precise and efficient deep hole excavation. Interchangeable drill rods allow customization of bore diameters. The proprietary tooth-locking system ensures reliable tip connection and easy disassembly.

Name	Output Torque	Drill Length	Drill Diameter	Compatible Models
Auger	2,500-25,000 Nm	1,200-1,800 mm	350-800 mm	2-22 Ton Excavators, Backhoe Loader, Skid Steer Loader



Trencher

Performs fast, accurate narrow trench excavation for laying urban and rural underground pipelines and fiber optic cables. Rear screw conveyor shifts soil to the side, preventing backfill into trench. Adjustable digging depth in 3 stages, fast chain tensioning and multiple chain options are compatible with different soil conditions.

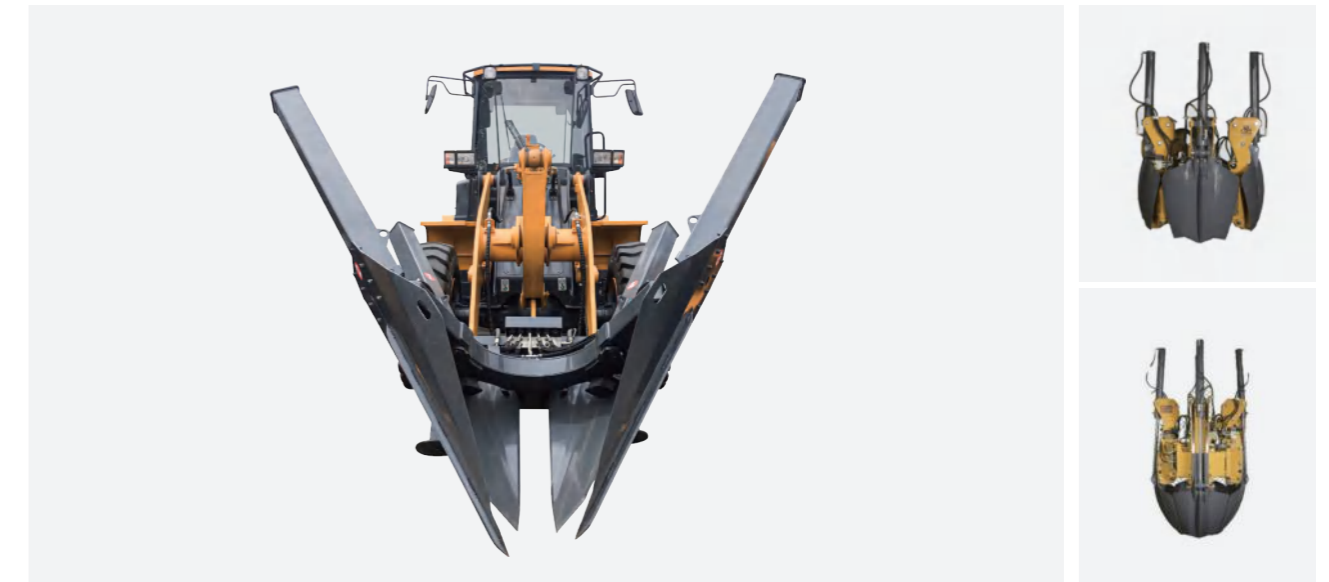
Name	Working Pressure	Flow	Max. Digging Depth	Trench Width	Compatible Models
Trencher	21 MPa	40-95 L/min	900 mm	300 mm	Skid Steer Loader



Tree Transplanter

Handles tree pit digging, extraction, and transplanting operations in one machine. Preserves surrounding soil structure integrity and minimizes damage to the roots while excavating trees. The operator remains in the cab throughout the whole excavation, transportation and planting process, ensuring high quality and efficiency.

Name	Suitable Tree Diameter	Root Ball Diameter	Digging Depth	Compatible Models
Tree Transplanter	≤120 mm	≤1,110 mm	≤1,000 mm	6-25 Ton Excavators, 2-5 ton Loaders, Skid Steer Loader



Lawn Mower (Brush Cutter)

Used for clearing, maintaining and transforming lawns and shrublands. More compact overall structure with twin-axis and dual blades ensures smooth cutting. Belt-driven hydraulic motor absorbs shock effectively during operation. Protective chains at the front and wear-resistant skids underneath ensure safety of the operator and the equipment.

Name	Total Width	Working Width	Cutting Height	Compatible Models
Lawn Mower	2,020 mm	1,860 mm	≥40 mm	Skid Steer Loader



4-in-1 & 6-in-1 Buckets

Closed: functions as a standard bucket.

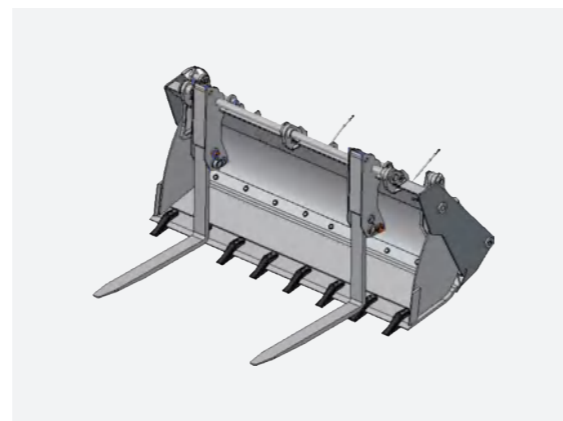
Fully open: acts as a dozer blade with the lower bucket boy.

Partially open: controls spread rate of materials, achieving uniform distribution of materials.

Clamping: grips and transports bulk materials.

Enables loading, grading, clamping, spreading, and forking without switching tools, greatly improving the working convenience of the bucket.

Name	Width	Bucket Capacity	Weight	Compatible Models
4-in-1 Bucket	1,680-2,568 mm	0.40-1.7 m ³	340-1,237 kg	Skid Steer Loader, Backhoe Loader, 2-3-ton Wheel Loaders
6-in-1 Bucket	2,260-2,304 mm	1.0-1.1 m ³	1,500 kg	Backhoe Loader



Mulcher (Land Clearing Attachment)

Used for crushing uneven trees, especially for disaster prevention/post disaster reduction, maintenance of public pipelines or roads, or site preparation, etc.

- Bolt-on teeth are easy to replace.
- Different tooth types available based on work conditions.
- Oil-bath lubrication system for cooling and durability.
- Hydraulic cushioning system avoids shock to both machine and attachment during abnormal operations.
- External pressure gauge shows real-time load, easy for adjusting cutting depth and speed.

Name	Total Width	Weight	Working Width	Tooth Options	Compatible Models
Mulcher	≤120 mm	≤1,110 mm	≤1,000 mm	Lotus / Claw / Crescent Teeth	Skid Steer Loader



Grapple Bucket

The dual independent upper clamps securely hold irregular materials. It's ideal for shoveling and transporting loose or odd-shaped materials.

Name	Bucket Size	Weight	Width	Compatible Models
Grapple Bucket	0.35-4.70 m ³	395-2,803 kg	1,880-3,160 mm	Skid Steer Loader, 2-3 Ton Wheeled Loaders



MUNICIPAL ROAD MAINTENANCE

Worksite Scenarios and Key Characteristics

Main Construction Challenges:

Traffic vs. Environmental Conflicts:

Traditional maintenance requires lane closures, causing traffic congestion and economic losses.

Fuel-powered equipment often exceeds urban noise limits (65 dB), leading to frequent complaints.

Efficiency Bottlenecks:

The low accuracy rate of manual inspections leads to deterioration of minor defects, increasing repair costs by up to 8 times.

The transportation cost of milled materials accounts for 35% of total maintenance costs.

Technical Complexity: Poor compatibility between multifunctional attachments and machine hydraulic systems leads to 30% higher failure rates.

LiuGong Equipment Advantages and Technological Adaptability

Green Compliance: The working noise of electric skid steer loaders is 70 dB, supporting nighttime work in cities (compliant with noise limit standards in EU and American cities).

High-Efficiency Construction Technology: Asphalt pavers equipped with infrared temperature sensors and auto-leveling systems:

- Temperature uniformity: $\pm 5^{\circ}\text{C}$
- Compaction density: >97% (vs. industry average of 93%)

Multifunctional Compatibility: Skid steer loaders with quick coupler can switch between over 30 attachments (e.g., milling heads, brooms), perfect for narrow-street repair work.

Compact Machine Design: Mini-excavators with width of 0.99 m can enter sidewalks and medians, avoiding impact on peak-hour traffic.



Municipal Road Maintenance

21/22

LiuGong Equipment Solutions for Municipal Road Maintenance

Process/Equipment	Pavement Removal	Filling & Repair
Electric Excavator (2-15 Ton)	Breaking Hammer, Standard Bucket, Milling Head, Quick Coupler ●	Breaking Hammer, Standard Bucket, Milling Head, Quick Coupler ●
Excavator (2-15 Ton)	Breaking Hammer, Standard Bucket, Milling Head, Quick Coupler ●	Breaking Hammer, Standard Bucket, Milling Head, Quick Coupler ●
Backhoe Loader (All Models)	●	●
Skid Steer Loader (All Models)	Breaking Hammer, Milling Head ●	4-in-1 Bucket ●
Roller 0.9-3.2 Ton Compact Tandem Roller		●
Cold Planer 0.5-2.0 Meter Width	●	
Paver 6-9 Meter Paving Width		●

● 推荐设备 ● 可选设备 充电条件满足情况下优先推荐电动



Recommended Equipment - Skid Steer Loaders

Ultra-narrow machine body fits into median strips and sidewalks. Paired with quick-change attachments, it covers the full maintenance process operations such as sweeping, patching, milling, etc. Its low-noise design meets urban night construction requirements, significantly improving maintenance efficiency while reducing labor costs.



Skid Steer Loader

Model	Rated Load (50% tipping)	Gross Power	Dump Height	Operating Weight	Flow (Std./High)	Pressure	Bucket Size
365B	795 kg (1,750 lb)	35.7-48.0 kW	2,220 mm	2,950 kg	72.8/100.0 L/min	21 MPa	0.40 m ³
375B	865 kg (1,900 lb)	49.9-50.2 kW	2,220 mm	3,100 kg	79.2/124.0 L/min	21 MPa	0.40 m ³
385B	1,045 kg (2,300 lb)	53.7-61.3 kW	2,572 mm	3,750 kg	91.2/132.5 L/min	21 MPa	0.50 m ³
395B	1,133 kg (2,500 lb)	70.0 kW	2,572 mm	3,850 kg	87.4/146.6 L/min	21 MPa	0.55 m ³



Electric Skid Steer Loader

Model	Battery Capacity	Voltage	Bucket Breakout Force	Boom Force	Rated Load	Flow	Pressure	Bucket Size
385BE	101 kWh	333 V	36 kN	29 kN	1,500 kg	Low: 92 L/min High: 150/min	23 MPa	0.5 m ³

Versatile and Highly Efficient for Challenging Conditions

- **Rapid Attachments Switch:** Easily switch between milling, breaking, sweeping functions to handle compound operations like cracking and potholes.
- **Dual-Speed Mobility:** Compact size + dual-speeds motor allow fast redeployment for fragmented repair jobs, easing road closure pressures.

Safety & Eco Compliance:

- ROPS/FOPS certified cab + panoramic view + rearview camera, avoid the risk of pipeline damage.
- Low noise design (<75 dB), Euro Stage V/China III emissions compliant, meet the requirements of nighttime repairs and noise restrictions in cities.

Cost Reduction & High Efficiency:

- High-power hydraulic system + easy maintenance reduce job time
- Pilot controls simplify operations for preventive, high-frequency tasks



LiuGong Attachment Solutions for Municipal Road Maintenance

Application Scenario 1:

Road surface repair (e.g. maintenance of potholes, mesh cracks, manhole cover)

Features: Localized surface damage, requiring fast digging, clearing, resurfacing, and compaction.

Recommended Attachments:

- **Milling Head:** For precise removal of damaged asphalt or concrete layers; depth-controlled, high-efficiency under normal conditions.
- **Breaking Hammer:** Flexible response to special surfaces and cost-effective for small-scale work.
- **Manhole Milling Head:** Specifically for restoring surfaces around damaged manholes.
- **Vibratory Compactor:** Ensures quick and uniform compaction of newly patched surfaces.

Application Scenario 2: Road Surface Cleaning

Features: Fast debris removal from road surfaces.

Recommended Attachments:

Enclosed Sweeper: Sweeps and collects debris simultaneously, with less dust.



Milling Head

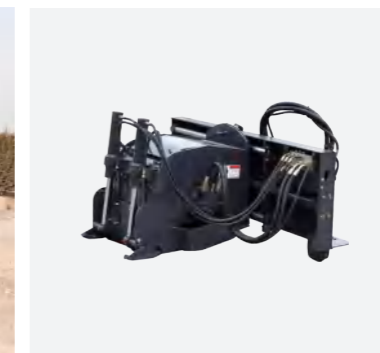
Suitable for precise milling or simple roughening operations of maintenance or repair on limited damage areas of asphalt and cement road surface. The auto-leveling function ensures the surface flatness even when the machine is tilted.

When mounted on excavators, the milling head can perform angled or even vertical surface milling, which is ideal for wall trimming or curb edge profiling.

Name	Milling Depth	Drum Width	Side Shift	Compatible Models
Milling Head	70-200 mm	200-600 mm	/	2-15 Ton Excavators

When mounted on excavators, the milling head is ideal for milling close to edges (e.g., road curbs) thanks to its side-shift function. Ensures high maneuverability in tight urban environments.

Name	Milling Depth	Drum Width	Side Shift	Compatible Models
Milling Head	170 mm	450 mm	510 mm	Skid Steer Loader



Manhole Milling Head

Equipped with an innovative center-alignment positioning device, it can be fixed directly over the manhole center for highly targeted resurfacing. 360° hydraulic rotation with adjustable speed, hydraulic adjustable milling depth and milling diameter.

Name	Milling Diameter	Milling Width	Milling Depth	Compatible Models
Manhole Milling Head	700-1,300 mm	300-350 mm	0-100 mm	Skid Steer Loader, 3-13 Ton Excavators



Breaking Hammer

Used for fast crushing of damaged surfaces in road maintenance.

Name	Classification	Compatible Models
Breaking Hammer	Straight, Triangular, Silent	Skid Steer Loader, Backhoe Loader, 2-25 Ton Excavators



Enclosed Sweeper

Sweeps and collects waste simultaneously with reduced dust thanks to enclosed structure, while the waste can be easily poured out when the hopper is full. Optional spray system further improves dust suppression. Polypropylene + steel wire brush has the characters of wear resistance, high elasticity, and no damage to the road surface.

Name	Hopper Capacity	Brush Diameter	Sweeping Width	Compatible Models
Enclosed Sweeper	0.43 m ³	660 mm	1,830 mm	Skid Steer Loader



Forward-Facing Enclosed Sweeper

Ideal for cleaning road dust and waste while collecting into a hopper for disposal at designated place. The forward operation mode reduces operator fatigue.

Name	Hopper Capacity	Working Width	Brush Diameter	Compatible Models
Forward Sweeper	0.25-1.60 m ³	1,830-2,580 mm	660-800 mm	Skid Steer Loader, 2-5 Ton Wheeled Loaders



Vibratory Compactor

The internal eccentric module generates a vibration force several times its own weight during operation, making it ideal for compacting operations and small-scale road construction on asphalt, cement, etc.

Name	Overall Width	Drum Diameter	Vibration Force	Compatible Models
Vibratory Compactor	2,096 mm	592 mm	37 kN	Skid Steer Loader



MUNICIPAL SNOW REMOVAL

Work Scenarios and Key Features of Municipal Snow Removal

Current Status of Municipal Snow Removal Strict Environmental Regulations:

- EU Stage V mandates particle emissions < 0.025 g/kWh, pushing electric equipment adoption.
- Nordic countries limit chloride-based deicers to < 100 g/m², driving mechanical snow removal upgrades.

Construction Challenges:

Extreme Weather Conditions:

- Frequent blizzards compress work windows (e.g., >15 annual snowstorms in the North American Great Lakes region).
- Traditional equipment has 35% higher failure rates under these conditions.

Environmental vs. Economic Trade-offs:

- Chemical deicers are corrosive, but biodegradable agents cost 6x more.

Labor Shortage:

- Over 25% workforce gap in Western snow removal industry.
- Night shifts and high-intensity work make recruitment difficult.

LiuGong Equipment Advantages & Technological Adaptability

Extreme Cold Configuration:

- LiuGong machines are equipped with extreme-cold packages, ensuring reliable performance in blizzards and extremely low temperatures.

Environmental Compliance:

- Electric skid steer loaders working noise is of < 70 dB, meeting EU noise restrictions for nighttime work.
- Hydraulic systems are sealed and corrosion-resistant, reducing failures from deicer splashes by 50%.

Ease of Operation:

- LiuGong machines are operator-friendly with a low learning curve—ideal for temporary or seasonal drivers.

Full Lifecycle Cost Efficiency:

- Modular design simplifies maintenance (direct fault code readout), lowering servicing costs by 30%.
- Extended warranty plans cover extreme environments.

Attachment Compatibility:

- Skid steer loaders with quick coupler system support 10+ snow attachments such as snow brushes, snow throwers, spreaders, etc., with < 2 min switching time, adapting to changes in snow conditions (power snow/ice layer).



Recommended Snow Removal Equipment - Skid Steer Loaders

Ultra-narrow machine body with 10s quick-change tools, ideal for clearing sidewalks, medians, and other hard-to-reach areas. High mobility, adapting to narrow areas.



Skid Steer Loader

Model	Rated Load (50% tipping)	Gross Power	Dump Height	Operating Weight	Flow	Bucket Size	Recommended Attachment
365B	795 kg (1,750 lb)	35.7–48.0 kW	2,220 mm	2,950 kg	72.8/100.0 L/min	0.40 m ³	Angled Sweeper, Snow Plow, Snow Blower (High-Throw / Low-Throw)
375B	865 kg (1,900 lb)	49.9–50.2 kW	2,220 mm	3,100 kg	79.2/124.0 L/min	0.40 m ³	
385B	1,045 kg (2,300 lb)	53.7–61.3 kW	2,572 mm	3,750 kg	91.2/132.5 L/min	0.50 m ³	
395B	1,133 kg (2,500 lb)	70.0 kW	2,572 mm	3,850 kg	87.4/146.6 L/min	0.55 m ³	

Cold-Weather Reliability:

Cold-start system + low-temperature hydraulic oil ensures continuous operation in low temperature conditions, avoiding snow season downtime.

Narrow-Space Performance:

Compact body + stationary turning technology allows safe access to alleyways and residential corners—replacing dangerous manual labor.

Traction on Ice:

Optional dual configuration with tracked chassis or anti-skid chains provides excellent grip, while standard LED lights improve visibility for night work.

Rapid Tool Switching:

Quick coupler system can switch quickly between attachments (e.g., bucket, Snow Plow, blower), handling multiple applications such as compacted snow clearing or snow throwing with a single machine.

Blizzard Clearing Capacity:

With large volume bucket driven by 130 L/min high-flow hydraulics, improves one-way snow clearing efficiency on main roads, seizing key 4-hour window period.



Recommended Snow Removal Equipment - Motor Graders

Widely applied in snow removal for highways and wide roads. 7-meter extra-long blade + auto-leveling system clears two-lane roads in one pass, breaking compacted snow with precision.



Motor Grader

Model	Rated Power	Operating Weight	Blade Height	Max. Ground Clearance	Max. Cutting Depth	Max. Blade Distance from Tire
4140D	118 kW	12,300–15,450 kg	819 mm	1,010 mm	1,000 mm	4,645 mm
4160D	132 kW	14,370–17,110 kg	819 mm	1,050 mm	960 mm	4,750 mm
4180D	142 kW	14,990–18,190 kg	819 mm	1,050 mm	960 mm	4,750 mm
4215D	162 kW	16,000–20,150 kg	819 mm	1,050 mm	960 mm	4,750 mm
4230D	180 kW	16,300–20,150 kg	819 mm	1,050 mm	960 mm	4,750 mm

Rapid Blizzard Response:

Efficient snow clearance for wide roads and highways with thick snow cover, ensuring the 4-hour key window period for main roads.

Dynamic Blade Adjusting Technology:

Dynamically adjusts blade angle to adapt to snow depth and ice hardness, handling the complex working conditions.

Zero Damage to Road Surface:

Built-in obstacle avoidance system, it accurately protects road markings, reducing repair costs and complaints.

Heavy-Duty Clearing:

High power blade push structure for rapid site and open-area clearance, ensuring immediate post-blizzard recovery of the road surface.



Recommended Snow Removal Equipment - Wheel Loaders

Efficient for cleaning and transporting large volumes of snow in multiple areas. 3 m³ large capacity bucket + 50 kN snow pushing force triples handling efficiency post heavy snowstorms. Articulated steering conquers steep slopes and curves.



Wheel Loader

Model	Operating Weight	Rated Power	Bucket Range	Full Turn Tipping Load	Flow	Working Pressure	Recommended Attachments
816H	5,180 kg	65 kW	0.7-1.5 m ³	3,300 kg	83 L/min	18 MPa	Standard Bucket, Angled Sweeper, Snow V-Blade, Snow Blower, Snow Plow, 4-in-1 Bucket
820H	5,920 kg	66 kW	0.8-1.4 m ³	3,700 kg	105 L/min	20 MPa	
835H	10,125-13,050 kg	92-115 kW	1.5-4.0 m ³	6,700-7,677 kg	95.5-172 L/min	18-26 MPa	
ZL50CN	16,595-16,800 kg	162 kW	2.7-5.0 m ³	11,100 kg	124 L/min	17.2-18 MPa	
855H	16,500 kg	162 kW	2.7-5.0 m ³	11,100 kg	124 L/min	18 MPa	
856H	17,250-20,214 kg	162-168 kW	2.7-6.0 m ³	11,900-13,703 kg	90-184 L/min	20.7-25 MPa	

Multi-purpose:

Quickly switch between snow attachments (blade, sweeper, blower), suitable for different snow types such as dry snow or compacted snow. The machine can be switched for loading or grading during non-snowy seasons, solving idle equipment issues.

Heavy-Duty Ice Breaking:

Powerful engine and high-torque drivetrain easily break through thick snow and ice on highways, meeting 4-hours emergency clearance targets.

Terrain Adaptability:

High ground clearance + small turning radius is compatible with operations in both narrow streets and deep snowfields in the wild, avoiding blind spots of large equipment.

High Efficiency:




Fast speed and work cycles support rapid municipal snow clearing.

High Reliability:

Optional -low-temperature kits include engine heater, cold start battery, thermostats, and low-temperature oil to ensure reliable operation in extreme cold environments..

Comparison of Snow Removal Equipment Solutions

Clearing Operations Example: Snow Sweeping

Equipment	Skid Steer Loaders	Wheel Loaders	Motor Graders
			
Models	365B, 375B, 385B, 395B	816H, 820H, 835H, ZL50CN, 848H, 855H, 856H	4140D, 4165D, 4180D, 4215D, 4230D
Attachments	Angled Sweeper, Snow Plow, Snow Blower	Angled Sweeper, Vibratory Deicer, Snow Plow, Snow Blower, Dozer Blade	Snow Plow, Side-Mounted Snow Attachment
Suitable Working Scenarios	Narrow Spaces: Compact size and agility are ideal for snow clearing in tight areas like parking lots, driveways, and sidewalks. Urban Environments: Fast and effective snow removal in crowded areas such as city streets and commercial zones, etc. Complex Terrain: With superior mobility, skid steer loader suits operations in uneven and complex terrains. Attachment Diversity: Supports quick-change attachments like buckets, Snow Plows, brooms, etc. to meet various needs.	Large-Area Clearing: Ideal for quick snow clearing in large spaces like parking lots, airports, highways, etc. Heavy-Duty Operations: Its powerful loading capacity is ideal for thick snow clearing, as well as snow stacking to designated locations or loading onto transport vehicles. System Integration: Easily works with other equipment such as dump trucks for high-efficiency operation chains.	Liugong motor graders are exceptional for efficient snow removal on wide roads & highways, ensuring smooth traffic flows. Meanwhile, they are also suitable for quick snow clearing on construction jobsites or large open surfaces, keeping zones accessible and operable.



LiuGong Snow Removal Attachment Solutions

Fast: Quick coupler allows attachment switch within 2 minutes, adapting to changing snow conditions. Improving operation efficiency by 40%, restoring road access within 3 hours after snowfall.

Efficient: The energy consumption cost of electric attachments is only 1/3 of fuel-powered ones. Anti-corrosion design reduces maintenance costs caused by deicers by 50%. The overall using cost saving is of over 30%..

Stable: Narrow road adapted attachments (e.g., 0.9 m skid-mounted sweeper) avoid road closures and traffic delays. Night silent operation (working noise 65 dB) effectively avoids citizen complaints and environmental fines, improving public trust and citizen satisfaction.

The core objective is to solve the three major problems of efficiency bottleneck, budget overrun, and public opinion risk with one investment, making winter city operation and maintenance more at ease.



Snow Blower

Optional: High or low throw chutes for different working conditions

- Low-throw chute: Up to 270° rotation.
- High-throw chute: Up to 200° rotation.

Adjustable support legs: Protect blade from ground damage.

Self-powered version:

- Snow removal system is driven by an 194 kW independent engine.
- Separate hydraulic circuit.
- Max. snow removal capacity is up to 2,500 tons/hour, significantly increasing efficiency.

Name	Width	Discharge Angle	Chute Type	Compatible Models
Snow Blower	1,896-2,247 mm	270°	Low/High Throw	Skid Steer Loader
Self-powered Snow Blower	2,600 mm	300°	High Throw	5-6 Ton Wheel Loaders



Angled Sweeper

Hydraulic drive: Enables left/right broom angle adjustment.

Floating design: Follows ground contours for even sweeping and wear.

Brush: 800 mm diameter, polypropylene + steel wire brush material has the characters of wear resistance, high elasticity, and no damage to the road surface.

Name	Sweeping Width	Swing Angle	Compatible Models
Angled Sweeper	1,800-3,600 mm	±30°	Skid Steer Loader, 2-5 Ton Wheel Loaders



Snow Plow

Hydraulically controlled blade that allows ±30° side deflection, enabling flexible snow discharge direction during plowing.

Obstacle Avoidance Mechanism: When encountering fixed obstacles (e.g., curbs or manhole covers), the blade automatically folds backward to avoid damage. After bypassing the obstacle, the blade automatically resets with spring assistance—no manual intervention required.

Replaceable Blade Options: Wear-resistant steel or nylon material.

Name	Deflection Angle	Obstacle Clearance Height	Width	Compatible Models
Snow Plow	±30°	80-210 mm	1,830-3,600 mm	Skid Steer Loader, 2-5 Ton Wheel Loaders



AFTERMARKET SOLUTIONS

Product Training

We provide customers with professional product training, including basic theoretical knowledge training, online learning platform, equipment operation training, equipment maintenance and professional technical skills training for service engineers. Customized training programs are offered based on the actual level of each customer's team.

Service Solutions

With over 500 certified and trained dealers in more than 130 countries around the world, we provide trusted and local support to our customers. With more than 30 overseas subsidiaries and agencies, over 20 overseas regional parts distribution centers (PDC), and 16 regional joint training centers, as well as call centers covering multiple countries, we provide a variety of customized service solutions to meet the actual needs of our customers.

Our service solutions include

Equipment Maintenance Plan

Maintenance Training Program

Equipment Disassembly, Assembly, and Transportation

Equipment Downtime Service

Equipment Upgrade and Replacement Services

Service Package

Customized Product Warranty Options

Parts Guarantee

Adequate and accurate spare parts reserves are very important for users. What's more, we can also provide appropriate consignment plans based on the business needs of our customers across various industries. We also offer various forms of credit sales, such as installment payments and deferred payments.

Company headquarters spare parts reserve

Spare parts warehouse reserve of our regional PDCs

Overseas dealer spare parts warehouse reserve

Reserve of recommendations provided to customers

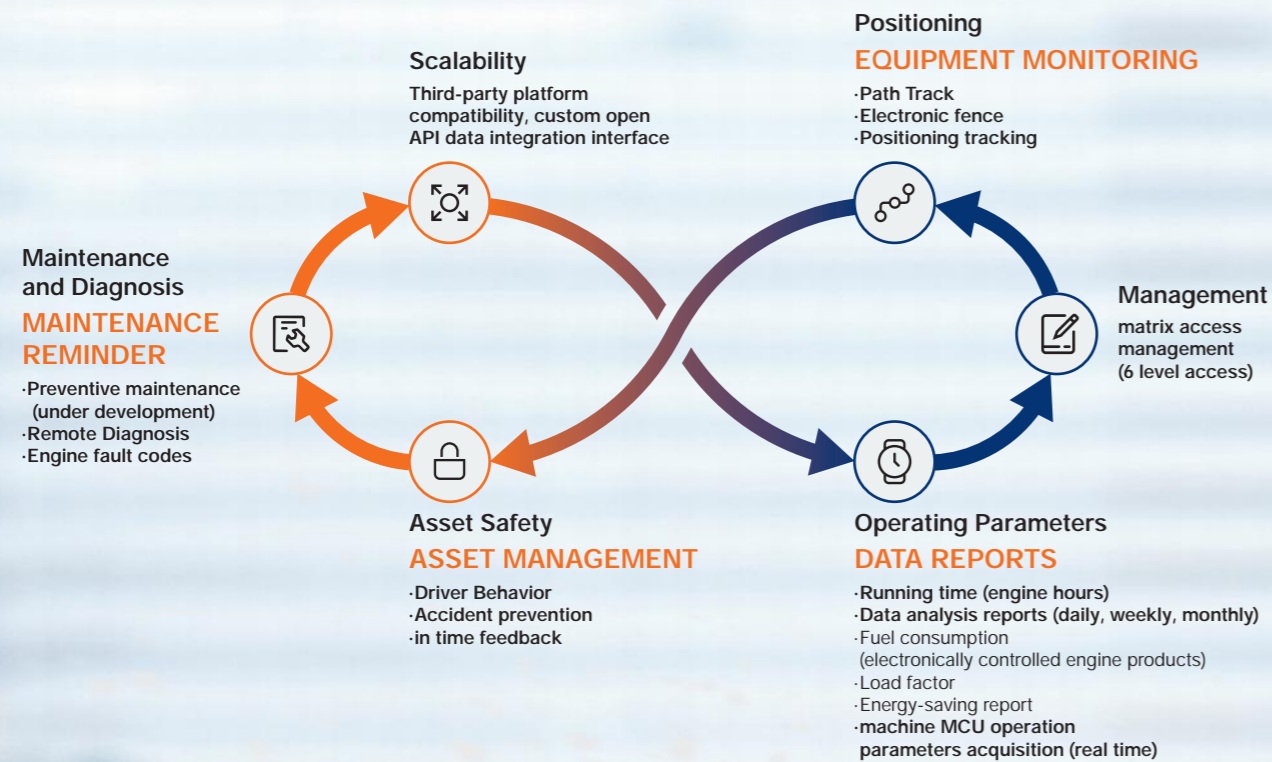


Aftermarket Solutions

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TECHNOLOGICAL SOLUTIONS

LiuGong's iLINK Equipment Intelligence System



Based on the LiuGong's iLink system analysis, we will provide the following reports:

- Detailed operation and equipment usage reports
- Recommendations for improving operator skills based on the work environment and job requirements.
- Total cost of ownership
- T-Sensitivity analysis, ideal combination of equipment for operations



Intelligent Management Platform Digitized Decision-making

LiuGong's iLink Equipment Intelligence System gives you real-time information on all of your machines. It provides you with equipment productivity evaluation, fault analysis, equipment maintenance reminders, remote equipment management, and other value-added services. For example, it provides you with a comprehensive analysis of equipment usage and the entire operating system to optimize the operation process. We have global customer references with operations in various working condition. Based on the knowledge and experience we gained from our global customers, we are able to provide you with the right guidance for your operations.

