

Perkins in China



a global leader in engine power
our Chinese partners
are always at our heart

A global business

For over 75 years Perkins has been working with the makers of powered industrial equipment to provide the highest levels of performance and reliability for the toughest tasks in the industrial, construction, materials handling and agricultural markets. Today Perkins' engines lead the way. Not only in the traditional values of proven reliability and power, but also in the more modern qualities that make Perkins' engines quieter, cleaner, longer lasting, and even more economical.

Since pioneering diesel power for industrial machinery, Perkins has maintained an uncompromising commitment to meeting the needs of equipment manufacturers and those that legislate for a safe and clean future. As a result, thousands of ideas have shaped a product line of cleaner, low emissions engines that stretch from 5 to 2500 hp.



By concentrating on the production of engines rather than complete machines, Perkins has developed an extensive range of power solutions to satisfy the demands of a constantly changing market. Now built on three continents Perkins' specialist engine solutions are trusted by more than 1,000 leading manufacturers across all industrial market sectors.

Since 1932 over 17 million Perkins' engines have entered into service. Close to half of these are still hard at work, supported by a vast network of distributors and dealers throughout the world. Such global standing calls for a sustained investment of massive proportions into research and development. Perkins' goal: the ultimate balance of advanced technology and rugged reliability, smoothly guiding customers through progressive emissions stages with cost effective power.



Pearl Tower and Shanghai at night

**Perkins means
confidence for our
customers**



The Perkins Team outside the manufacturing campus in Wuxi District

Perkins in China

Perkins is in a very exciting place today.

Our investment has delivered four years of intense activity. Completing the major tasks in this timetable has given us the strong foundation to bring our products, services and global reputation to the China marketplace.

Since its opening in 2008, the Perkins manufacturing facility in Wuxi has been producing the celebrated, very successful 400 Series engine. In 2010 production starts of another Perkins core product, the 1100 Series engine; an exciting, eagerly awaited expansion that gives our customers the products they need to grow their business in both export and domestic markets.

More additions to the Wuxi campus are planned, one of which is a state-of-the-art R&D centre which was officially opened in December 2009. This will be the China Technical Centre and will have its own multi-phase development plan – the first of which is the building of four Test Beds and an Installation Workshop.

A driving force in these activities is the busy, expanding sales office in Shanghai. Our people continue to open up new markets and opportunities for our products and services; creating new partnerships and introducing new customers to Perkins.

Other benchmark activities such as the apprentice programme, process coaching and skills training ensure we have engaged employees who contribute one hundred per cent to Perkins success in China. This success is proven by the focus we give to our customers - by understanding their needs and giving them the best experience whenever they contact our business.

Perkins distribution network is the most far-reaching link in our product support chain. As Perkins presence continues to grow in China, so does the product support we offer our customers. Our three distributors Lei Shing Hong Machinery (LSHM), Sime Darby Elco Power Systems and WesTrac have expert knowledge of our engines and are proactive in applying this knowledge and training throughout the provinces they cover. They have been especially selected for the attention they pay to their customer's specific requirements and how they deliver the promise of Perkins product support ethic 'To keep our customers machines running wherever they are in the world'.

Outside of the engine business, Perkins is determined to demonstrate the genuine interest it has and the role it plays within care in the community and social responsibility. Perkins philanthropic support is well known in all the local communities it touches, and

China is no exception. The Heart-to-Heart programme is a charity dedicated to caring for sick children with heart defects. Perkins has transformed the lives of a number of the children by supporting the cost of their heart surgery and will continue to be a benefactor of this charity and other programmes.

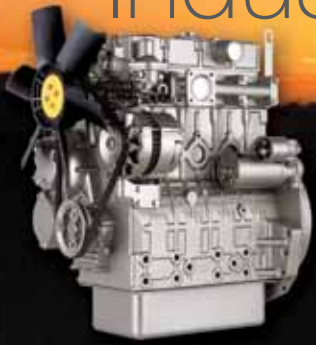
The investment we have committed to confirms our belief that Perkins future in China is positive and enduring.

Our flexibility to produce reliable, cost effective power solutions to meet the diverse demands of our OEMs (Original Equipment Manufacturers) ensures we never lose our customer focus. This principle delivers dynamic, strong customer relationships and growth that runs parallel with China's own prosperity.



Production in Wuxi

Industrial engine range ...



400 Series



854 Series



1104

1100

400 Series

The Perkins 400 Series comprises of a range of tough 2, 3 and 4 cylinder water-cooled engines which provide clean, quiet and cost-effective power. The 400 Series covers a power span of 8.2 – 49.3 kW (10.9 – 66.1 hp) and offers naturally aspirated and turbocharged models, with the additional choice of balanced ratings.

The versatile nature of the 400 Series makes it ideal to suit a large variety of applications in Agriculture, Lawn and Garden, Construction, Materials Handling and General Industrial.

Product Functionality

- Glow plugs for reliable cold starting to -20°C .
- 47 Nm PTO from right-hand side timing case to power customer ancillaries.
- 35° gradeability continuous.

854 Series

The 854 Series, 4 cylinder, 3.5 litre engine completes the Perkins line-up of EU Stage IIIB and EPA Tier 4 Interim emissions compliant engines. Offering more power and torque from a smaller package, customers will now be able to move seamlessly through the power bands as the 854 produces 45 kW (60 hp) up to 86 kW (115 hp).

Customer Benefits

- The 854 Series has a common rail fuel injection system, smart wastegated turbocharger and aftercooler, all regulated by full authority electronic controls to ensure world-class performance and fuel consumption.
- High power density, combined with excellent torque, enables the machine manufacturers to select this engine where previously they may have used an engine of higher cubic capacity. This downsizing represents a cost saving and creates more space to package the new aftertreatment unit.

1100A and 1100C Series

The Perkins 1100 A and C Series is a range of 1 - 1.1 litre per cylinder water-cooled engines, offering a power range from 63.5 kW to 97 kW (85.1 - 130.1 hp) Many different models in 3, 4 and 6 cylinder variants offer a wide range of tailor-made solutions for applications in the Agricultural, Construction, Materials Handling and Power Generation markets. Utilising a common platform theme, the A and C Series engines are designed to offer minimal change engineering when moving to the next level of emissions compliant engines.

Product Functionality

- Cold start down to -25°C .
- Choice of balanced electronic and mechanical ratings.
- Wide choice of PTO offerings - lh/rh, single/twin, medium/light duty up to 210 Nm (155 lbf ft).
- Delivered torque up to 695 Nm (513 lbf ft).
- Up to 36° operational gradeability.

Fuel systems technology

- Self venting rotary fuel pumps.
- Electronic and Mechanical all speed governing options.



1100 Series

1106

1200 Series

1100D Series

The Perkins 1100D Series is a comprehensive family of 3, 4 and 6 cylinder, 1.1 litre per cylinder engines, which are Tier 3/ Stage IIIA emissions compliant. The range brings more power from 36.9 to 205 kW (49.5 to 275 hp) yet provides low fuel consumption from a quieter, more refined package that will easily fit into current machine designs. 1104D and 1106D engines can be specified with an electronic fuel system using components of Caterpillar's ACERT™ technology, or with an advanced mechanical fuel system. This capability to tailor engine technology to a specific market provides more flexibility in managing product costs.

Product Functionality

- Using ACERT technology boosts engine performance: up to 43% more power and 51% more torque
- Multi-vee belts and service cylinder liners eradicate time consuming tasks such as tensioning and cylinder re-bores, shortening service time, and reducing the cost of ownership
- Bare engine noise lowered by up to 5 dB(A).
- Minimal impact on package size, with major hook up points common with the 1100C.

1200 Series

The new, innovative Perkins 1200 Series 4 and 6 cylinder engines, with a power range of 65.9 kW to 225 kW (88.4 - 302 hp), are designed to meet EU Stage IIIB and EPA Tier 4 Interim emissions legislation. They offer not only specific power outputs but also a choice of engine configurations and options. Their robust technology allows our OEMs the ability to integrate these engines into their equipment with the minimum of re-engineering.

Customer Benefits

- Low cost of ownership - Hydraulic tappets, multi-vee belts, no ash service aftertreatment and 500 hour oil change intervals enable low-cost maintenance. Many service items have a choice of location on either side of the engine to enable maximum service access.
- Superior fuel system and electronic controls deliver low fuel consumption.
- Aftertreatment should not need ash-servicing throughout useful life of the engine*.
- Exceptional power density enables standardisation across numerous applications. Multiple installation options minimise total package size. Ideal for equipment with narrow engine compartments.

*Life of engine is determined by a number of factors, but generally this will be classed as 10,000 (ten thousand) hours.

Electric power engine range ...



400 Series



1100 Series



1300 Series



2000

400 Series

The 400 Series (8.3 - 39.0 kVA) is a class-leading diesel range from Perkins - a significant evolution of the very successful compact engine family. Developed in conjunction with our customers, the 400 Series offers superior performance, with low emissions and low operating costs - all in a small efficient package.

These ElectropaKs provide compact power, from a robust family of 3 and 4 cylinder diesel engines designed to provide economic and durable operation at Prime and Standby duties, hitting the key power nodes required by the power generation industry.

- 1.1 to 2.2 litre.
- In-line 2, 3 and 4 cylinder.
- Naturally aspirated.

1100 Series

The Perkins 1100 Series (30 to 219 kVA) is a multi-generational product designed to provide an optimum range of power solutions for both emissions controlled and non-regulated territories.

These ultra clean engines are assembled on a new high technology production line. Frequent computerised checks during the production process ensure high build quality is maintained throughout.

Some engine models provide the options of either electronic common rail or mechanically controlled fuel systems.

- In-line 3, 4 and 6 cylinder.
- Naturally aspirated..
- Turbocharged.
- Turbocharged, air-to-air charge-cooled.

1300 Series

The Perkins 1300 Series family (189 to 275 kVA) of ElectropaK engines has become renowned throughout the power generation industry for the engines' superior performance and reliability.

They feature 'full authority' electronic engine management coupled with Hydraulically actuated Electronic controlled Unit Injectors to provide quiet, clean, highly competitive power, with outstanding economy. This range also has the proven reliability of premium design features such as roller cam followers and wet liners building in low cost of ownership.

- 8.7 litre.
- In-line 6 cylinder.
- Turbocharged, charge-cooled.



Series

4000 Series

2000 Series

The Perkins 2000 Series is a range of 13, 15 and 18 litre diesel engines providing prime and standby power from 350-700 kVA at 1500 rpm, and 320-600 kWe at 1800 rpm. They have been developed to meet the tough demands of the power generation industry, and are uncompromising in the reliability and superior performance they offer to our customers.

- Available as either ElectropaK or Fan-to-Flywheel specification.
- Mechanically actuated, electronically controlled unit injectors (MEUI system) with full-authority electronic control giving governing to ISO 8528 class G3.
- 'Ecoplus' fuel filters with replaceable elements and primary water/fuel separator.
- 'Ecoplus' oil filter with integral oil cooler and filter header.
- Gear driven coolant pump, engine-mounted belt-driven fan and mounted air filter designed for ambient conditions up to 50°C.
- Mechanically operated unit fuel injectors with advanced electronic control give exceptional, low fuel consumption
- High compression ratio gives clean, rapid starting in all conditions.

4000 Series

Perkins' 4000 Series range of engines comprises 6, 8, 12 and 16 cylinder (600-2500 kVA) diesel and spark ignited gas engines, developed using the latest engineering technology.

- 23, 30, 46 and 61 litre.
- In-line 6 cylinder.
- Turbocharged, air-to-air/air-to-water charge-cooled
- Temperate or tropical cooling groups.
- Available as either Electrounit, or ElectropaK spec (with loose-coupled cooling group, fan, pipes and guards)
- Commonality of components.
- Economic - 4 valve cylinder heads for optimised gas flow, unit injectors for ultra-fine atomisation and controlled combustion.
- Reliable - Developed using latest technologies, pistons cooled by advanced gallery jet system, tolerant of wide range of ambient temperatures without derate.

The emissions arena

Perkins business is simple – the manufacture of efficient, powerful diesel engines that our customers can rely on to keep their equipment running. To make this commitment, we offer a choice of options on our diesel engines as diverse as the equipment our customers manufacture.

This flexibility is what sets us apart from our competitors. It has given us the knowledge and experience to ensure our success in the complicated emissions arena.

Perkins product development is driven by two things – our customers needs, and emissions legislation. It is critical to our business that we provide the products and services to match both these requirements in our global markets, and not develop one to the exclusion of the other.

Along with the hugely successful development of our latest emissions-compliant engines, we are introducing a new range of engines targeted to non, or low emission regulated countries. Wherever they are built, these engines are destined for both export and domestic markets.

Below is an overview of the new range of Perkins engines for both legislated and non-legislated countries that we build in our manufacturing facilities in Europe, USA and China.

Industrial engines built to emissions legislation Tier 4 Interim/Stage IIIB

- 400D Series, mechanical and electronic, 2, 3 and 4 cylinder, 8.2-49.3 kW
- 854 Series, electronic, 4 cylinder, 45-86 kW
- 1200 Series, electronic, 4 and 6 cylinder, 65.9 – 225 kW

Industrial engines built to non or emissions legislation up to Tier 3/ Stage IIIA

- 400D Series, mechanical and electronic, 2, 3 and 4 cylinder, 8.2-49.3 kW
- 1100A, C and D Series, mechanical, 3 and 4 cylinder, 36.9-97 kW
- 1100D Series, electronic, 4 and 6 cylinder, 74.5->205 kW

Recognition of what our customers need, and understanding our sectors and markets has kept Perkins at the leading edge of diesel engine manufacture. Increasingly, as the challenge of reducing emissions continues, momentum for change is picking up in countries that are no longer worlds apart ...

... Today, Perkins maintains its position as a global force in diesel engine design and manufacture by ensuring the ongoing development of our engines can provide power solutions to all our customers in the future.



1206E-E70TTA engine

**Trusted
to deliver
reliability and
performance**

Engine Model	Non-legislated	EU 97/68/EC Stage 1 US EPA Tier 1	EU 97/68/EC Stage II US EPA Tier 2	EU 97/68/EC Stage IIIA US EPA Tier 3	EU 97/68/EC Stage IIIB US EPA Tier 4 Interim
1103A, 1104A, 1103B					
400C, 800C, 1103C, 1104C, 1106C					
400D, 800D, 1103D, 1140D, 1106D					
400D, 854E, 1200E					



Global product support

Wherever it is required in the world, Perkins product support is designed to keep a Perkins engine running. We recognise the importance of maximising engine productivity to fulfil our customer's needs.

The appointment of our three Perkins distributors - Sime Darby Elco Power Systems Ltd, Lei Shing Hong Machinery and Westrac China is a vital part of our commitment to our partners in China. These Centres of Excellence bring all their experience and knowledge to ensure our Chinese customers receive the same outstanding levels of service as our OEMs elsewhere in the world.

Perkins trained distributors have TIPSS (The Integrated Product Support Solution) suite of web enabled tools at their fingertips, providing them with the very latest, up-to-date real time information. So whether it's for parts identification and ordering, engine fault diagnosis or technical information, the Perkins distributor can complete the job to Perkins stringent standards, first time, worldwide.

From standard maintenance, to comprehensive repair or complete overhaul, a cost effective solution is available whatever the age or condition of the Perkins engine. Perkins OE specification parts also come with a 12 month warranty, providing the best quality at the lowest possible cost.

Fully dedicated to looking for innovative solutions to industry issues, Perkins is working hard to ensure continuity of component supply. The exchange range offers remanufactured parts, giving good as new quality parts, from reworked core. A sustainable proposition, at the right price and all this with a reduced impact on the environment.

To give complete peace of mind to the machinery user, Perkins also offer Extended Service Contracts that take the worry out of engine ownership. Flexible coverage can be taken out for up to 8,000 hours of engine service, giving total protection against unexpected repair costs.



Perkins global product support is designed to enhance the customer experience of owning a Perkins powered machine. We deliver this through the quality of our distribution network, extensive global coverage and a range of Perkins supported OEM partnerships. So whether you are an end-user or an equipment manufacturer our engine expertise is essential to your success.

Perkins product support ensures engine expertise is available throughout the world and around the clock. Surpassing customer's needs and keeping Perkins powered machines productive

Our chosen partners

- **Westrac China**
- **Sime Darby Elco Power Systems**
- **Lei Shing Hong Machinery**



Experience our Excellence

All our distributors comply with the Perkins Global Distribution Standards which means our customers have the benefits of:

- Fully trained technicians
- Fully equipped work shops
- Electronic tooling expertise
- Mobile service vans
- Stock holding of Genuine parts

Our distribution provides:

- Local expertise for you, our Chinese OEMs, in provinces which are key to your business
- Coverage in major provincial cities
- Local service capability which is tailored to your needs and the needs of your Dealer network
- Coverage and capability in major Industrial Zones (ports, ware-housing, mining and construction)
- Coverage and capability in major Agricultural Zones

Westrac China has been appointed authorized distributor for northeastern China and north China since 2007. Backed by the sophisticated management expertise and financial strength of its parent company, WesTrac Australia, WesTrac China's Perkins Department has succeeded in boosting Perkins brand awareness in the territory they serve.

The Westrac Perkins Dalian Branch officially opened in March 2010. The addition of this new branch demonstrates Westrac's commitment to continuously expand the coverage of its service and support network. It also testifies to Westrac's confidence in furthering Perkins' market penetration in China.

When WesTrac-Perkins Beijing Headquarter Office was first set up in 2007, the then Department Manager was supported by only two sales officers and two service engineers. Today, the operation has expanded to comprise two service centres, in Beijing and Dalian respectively and a full product support team offering both parts sales

and aftersales service. Added to this is a sophisticated CRM (Customer Relationship Management) system which ensures maximum efficiency in delivering service to customers anytime, anywhere.

In a short span of three years, the division has made significant progress in growing the business. Sales performance in 2010 has been exceptionally impressive. For the first five months, total sales turnover has already reached 80% of the annual sales value recorded in 2008, the boom year before the global financial crisis.

In March 2010, the service team received high commendation from a major customer, Asia Power Systems (Tianjian) for completing emergency repair work for 14 units of Perkins 2506 engines in 13 days. This has helped ASP meet their shipment deadline, thus avoiding serious loss incurred by delayed shipment. The Westrac-Perkins service team has also been increasingly proactive in securing orders for overhaul service. Such business will not only generate more profit for the division, but is also beneficial in uplifting service quality of the team as

well as enhancing Perkins' image as a provider of quality product support.

Parts Store at Westrac



Sime Darby Elco Power

Systems was the first distributor appointed by Perkins to represent the premier engine brand in China. In line with Perkins global marketing strategy, Elco's current mission is to focus on expanding sales in the power generation and construction machinery markets in southern China, including the two Special Administrative Regions of Hong Kong and Macau, as well as in southwestern and northwestern China, offering customers the most responsive product support, right next door. No matter where their machines operate, customers will always have the peace of mind, knowing that Perkins technicians are just minutes away.

As China's engine market undergoes exponential growth, Elco has been persistently stepping up investment in manpower and other resources in the country. The latest move is the expansion project in Shunde, Guangdong province, which is scheduled to commence in the latter half of 2010. When completed, the new complex will house, all under one roof, a state-of-the-art maintenance centre, an upgraded testing facility with newly installed equipment, an all-new training centre and an enlarged parts warehouse. More space will also be added to the main warehouse to increase maximum stock level to 300 engines of the 400 and 1100 series. This

latest investment demonstrates Elco's continuous response to meet customers' demands for professional service.

To further support customers in their endeavour to enhance competitiveness, Elco has been actively developing "localized" solutions. Examples include innovative solutions incorporating locally developed radiators and remote heat dissipation technology. By offering customers more choices in configuration at affordable prices, Elco succeeds in demonstrating Perkins' corporate value of building partnerships with customers.

As energy and environmental issues become increasingly prominent on national agendas around the world, Elco

Workshop at Sime Darby Elco P.S.



is also devoting more effort to explore the gas engine market in China. The company has been conducting an extensive survey in targeted customer groups to get to know their specific needs and operating conditions. This exercise has enabled Elco to develop practical tailored solutions, covering co-generation, high pressure applications, and drilling rig and other marine applications. Such comprehensive support, embracing both presale and after sale service, has won wide approval among customers.

With the 1100 Series production line commencing operation in Wuxi, demand for presale and after sale service is expected to become more stringent, in particular from customers in the construction equipment sector. To meet this demand, Elco is committed to maintain the capability of all its branch companies in full compliance with Perkins Distributor Standards. This is a vital part of the on-going effort to raise customer confidence in the Perkins brand.

Among the customers served by Elco, many are leading manufacturers in the construction machinery sector, including Hunan Sunward (supported by Changsha branch), Xiagong (supported by Xiamen branch) and Sichuan Chenggong (supported by Chengdu branch). Elco is committed to continuously contribute to building Perkins' support network in China. The ultimate goal has always been: to deliver service to Chinese customers wherever and whenever they need it.

Lei Shing Hong Machinery

(LSHM) has been appointed authorized distributor in six provinces and one municipality, viz., Jiangsu, Zhejiang, Hubei, Henan, Shandong, Anhui and Shanghai. LSHM was set up in October 1994 by its parent company Lei Shing Hong Group as a subsidiary to focus on developing business in mainland China. After over a decade of intensive investment, LSHM now boasts a strong team of some 2000 professional personnel. Building on its expertise in China's construction machinery and power generating equipment sectors, as well as in the domestic engine industry, LSHM has succeeded in establishing itself as one of the most outstanding sales and technical service providers in China.

LSHM has fully adopted the software system designated by Perkins for processing orders and service requests. Besides maintaining a complete in-country inventory of whole engines and spare parts, the company also works closely with Perkins' regional distribution centres around the world to ensure OEM customers and end-users are provided with the best solution in a timely manner.

LSHM has devoted substantial effort to build a service network which fully complies with Perkins highest Distributor Standards. Each of the service centres is equipped with the specified technical service facilities and tooling, and staffed by service engineers who have all completed professional training programmes offered by Perkins and accredited to possess the required qualifications. These personnel have the full capability to handle critical service jobs, from routine maintenance to engine overhaul.

Sales Reception at LSHM



In accordance with the company's motto: "Superior Product Support for Superior Product", LSHM has been continuously expanding and refining the Perkins support network in the areas they serve. Following the opening of the Perkins Jinan Branch in Shandong province in May 2010, LSHM has moved swiftly to set up more Perkins branches. Two new branches, the Nanjing and Ningbo branches are expected to become operational soon. These new service outlets are destined to facilitate more responsive delivery of service to customers.

LSHM's commitment of resources to hardware, software and brand building has reaped good rewards. In 2008, LSHM achieved excellent sales performance and was named Regional Winner of the Perkins Power Award in Asia-Pacific.

LSHM is committed to build a strong partnership with Perkins and together overcome every possible challenge to achieve healthy growth in the China market, ultimately becoming the leading provider of power solutions in the local equipment manufacturing industry, and the most preferred "Power Partner" among gen set builders.

P.R. China

Perkins Engines Company Ltd
5/F, No.939 Hu Qing Ping Road
Min Hang District
Shanghai
201105
P.R. China
Telephone: +86 (0)21 5449 9988
Fax: +86 (0)21 5449 5686

New address effective from August 2010

Room 1702

No. 1319 West Yan'an Road

Changning District

Shanghai 200050

P.R. China

Asia

Perkins Engines (Asia Pacific) Pte Ltd
14 Tractor Road
Singapore 627973
Telephone: +65 6828 7469
Fax: +65 6828 7414

Europe, Middle East and Africa

Perkins Engines Company Limited
Peterborough PE1 5NA
United Kingdom
Telephone: +44 (0)1733 583000
Fax: +44 (0)1733 582240

WesTrac China Ltd

No 868 West of North Interchange of Shibaldian
Chao Yang District
100122 Beijing
Shanghai
P.R. China
Telephone: +86 400 888 6218
Fax: +86 010 590 21766
email: Henry.Fok@westrac.com.cn
web: www.perkins-westrac.com

Sime Darby Elco Power Systems Ltd

No.5 Industrial Road
Hao Yong Industrial Zone
Song Gang
Shenzhen
China 518105
Telephone: +86 755 8176 6188
Fax: +86 755 8176 6088
email: info.elco.gd@simedarby.com.hk
web: www.sdelco.com

New address effective from October 2010

10 Weiye Road

Beijiao Industrial Park

Beijiao, Shunde

Foshan City

Guangdong Province 528311

P.R.China

Lei Shing Hong Machinery

2/F, No.939 Hu Qing Ping Road
Min Hang District
Shanghai
201105
P.R. China
Telephone: +86 21 6421 7688
Fax: +86 21 6421 9964
email: perkins@ks.lsh.com
web: www.lsh-perkins.com



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www.perkins-ch.com