EQUIPMENT ANALYSIS:
HYDRAULIC EXCAVATORS – FRANCE
DECEMBER 2006

CONTENTS **PAGE**

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INTRODUCTION

This report concerns the market in France for hydraulic excavators. They are defined as machines capable of turning through 360 degrees, which are mounted either on tyres or on steel tracks. Service weights range from 6.1 to over 600.0 tonnes. Off-Highway Research labels machines up to 6.0 tonnes as mini excavators. The sector of machines from 6.0 to 11.0 tonnes is often called "midi" excavators, which nearly always have a special design to minimise the tail swing and make the machines useful in narrow job sites. All these are included in the report's definition of the hydraulic excavator.

The findings presented in this report are based on the existing database of Off-Highway Research and on an interview programme undertaken in France with all leading manufacturers, importers and distributors in July to November 2006.

SUMMARY

Table 1. France: Statistical Summary of Hydraulic Excavators, 2005

Number of Domestic Manufacturers	3
Market Leader	Liebherr
Production (Units)	3,825
Domestic sales (Units)	5,300
Importers' Penetration (% of Total)	77
Population	35,000
Sales Forecast 2010	3,800

Source: Off-Highway Research

The volume of machines sold since 1999 has been quite unprecedented, averaging 4,550 units per year. Optimism in the business community has been accompanied by trading down to smaller machines, from 7.0 to 12.0 tonnes. Small machines went into local authority work and in larger jobs work has moved increasingly to the sub-contractors, using smaller machines in larger numbers. Advances in product design make the new small machines under 16 tonnes almost as productive as 20 tonne machines of ten years ago.

Used construction equipment sales have also created the opportunity for new machine sales. The low value of the euro at times has made European excavators very easy to sell in Africa and the Middle East and export agents have to have stock to make turnover. They create deals by going directly to users with cash offers for machines and the user can then employ the proceeds to buy part of a new excavator.

Production has decreased in the last five years because of the closure of the CNH plant and the end of the small experiment by Furukawa to produce hydraulic excavators in Europe. On the other hand, Caterpillar has moved wheeled excavator assembly into France during 2005.

Liebherr is now the market leader, with a large margin of difference between it and the rest. Case suffered a serious loss of share because of its performance in wheeled excavators after 2003, while Volvo has improved in every year and is now in fifth place.

2006 should see an increase in crawler excavator sales to 3,600 units and at the same time a modest growth in respect of wheeled excavators. After that a large number of hydraulic excavators from a generally firm period of the market will come up for renewal, so sales should stay firm, except for a possible tailing off in wheeled excavators at the end of the period.

ECONOMIC AND CONSTRUCTION ACTIVITY

Economic Activity

Table 2. France: Selected Economic Indicators, 2001-2005

(% Annual Change)

	2001	2002	2003	2004	2005*
GDP	1.8	0.9	0.5	2.1	1.2
Fixed Investment	2.1	(1.8)	(0.2)	2.1	3.0
Unemployment Rate (%)	8.9	8.7	9.8	9.7	9.0
Industrial Production	1.1	(1.5)	(0.5)	2.0	0.2
Short Term Interest Rates (%)	4.3	3.5	3.8	2.1	2.5

* Estimate

Source: Economist Intelligence Unit, Bank of France

2001 was the beginning of a bad period for the economy. Wage deals associated with the 35-hour working week tended to be very low and cut household incomes. Industrial production was going down in most sectors except passenger cars (where the market remained strong

through to 2002) but the economy was in a reasonable state. 2002 was worse and in 2003 growth was at its lowest level since 1996, although the trend of private spending was still positive throughout this time, to the surprise of the economic analysts. A big improvement in exports but also a surge in imports marked 2004. 2005, helped by a positive trend in exports, was not too bad but the domestic consumer demand element seems to have been sustained by credit cards and bank loans more than by real increases in wages.

Investment followed a different cycle. The trend of spending on capital goods fell in 2002, as heavy investments in the earlier period had left firms with high levels of debt and excess capacity. Household spending on investment (essentially buying houses) ceased to grow in 2003 but then, at the end of 2003, the price of new property rose steeply and consumers tried to climb aboard the inflationary trend in values. Low stocks of houses for sale when money was more available to buy them pushed up prices and made developers keen to build. The overall situation improved in 2004, as businesses detected a better climate abroad and 2005 was healthy at first, in respect of both the industrial investor and the private house buyer.

As 2005 progressed, however, things did not go well. Private consumption fell after the second quarter of the year and confidence waned. Savings went up as people worried about wages, jobs and oil prices. Business investment went down, again worries about oil prices but also the reaction to the rejection of the EU constitution, a populist move that unsettled the business community; and a third factor, the simple lack of utilisation of existing assets. On the other hand, the housing market remained firm, meaning good sales of everything from sofas to central heating boilers.

Public Works

Table 3. France: Public Works Activity, 2001-2005

(Annual % Change at Constant Prices)

2001	2.9
2002	-1.3
2003	4.5
2004	3.0
2005	3.5

Source: FNTP

2001 marked a short-lived high point in public works. By the end of that year all growth had disappeared in both the work done and the new contracts made. In 2002, the growth of the work

done slowed from 7.6 to 2.9 per cent. 2003 was influenced in its first half by the budget freezing but then, as the spending was resumed, activity accelerated from zero to nearly 10 per cent by autumn 2003. 2004 and 2005 experienced growth in the range of three to four per cent. The growth of orders was smaller, at only 1.0 per cent, in 2005.

Over the last five years, there has been acceleration in the use of subcontractors for earthmoving. The FNTP estimates that over 75 per cent of earthmoving is now done by specialists and its data indicates that they enjoyed real rates of growth in their business of seven to eight per cent from 2000 onwards. Whilst there was clearly no tidal wave of public works to make them rich, nevertheless that market has gone in their direction recently, giving them some confidence to invest in equipment for their specialised work.

MARKET SIZE AND TRENDS

Table 4. France: Sales of Hydraulic Excavators, 1996-2005

(Units)

1996	2,293	**2001**	5,155
1997	2,366	**2002**	4,100
1998	2,865	**2003**	3,708
1999	4,000	**2004**	4,448
2000	5,100	**2005**	5,300

Source: Off-Highway Research

2001 and 2005 were very remarkable years in the history of hydraulic excavator sales in France but it is necessary to look back a decade to see how extraordinary they were. In 1996 and 1997 sales were still barely above the long-term trend of the late 1980s and suffering from the long depression in the first half of the 1990s. After that matters began to improve. Interest rates fell, public works projects were unblocked and both commercial and house construction improved, necessitating the building of more access roads. In 1998 sales of hydraulic excavators rose by 22 per cent, in 1999 by no less than 38 per cent and in 2000 by a further 27 per cent.

The volume of machines sold since 1999 has been quite unprecedented. The machine has not increased seriously in its capabilities but in the last five years sales have averaged 4,550 units per year, compared to 1,900 in the 1980s and 2,200 in the early 1990s. The explanations are various.

- A good part of the demand from 1999 to about 2001 was simply furnished by replacement of machines bought in the second half of the 1980s and reaching the end of their lives.

- Optimism in the business community was quite strong in the period from 1998 to 2000 inclusive. That optimism has gone now but it cannot be forgotten as a potent factor in sustaining investment in earlier years. It supported the wave of industrial and commercial building that gave work for hydraulic excavators, as well as being a part of the decision of so many users to buy construction equipment at that time.

- Highly visible trading down to smaller machines. The sector from 7.0 to 12.0 tonnes has grown very quickly because of the insertion of such machines into rental fleets. The Caterpillar dealer and some national rental houses have adopted them, as have a few local rental firms and some dealers. This has added 350 or more excavators to the market total in one year.

- Small machines were also very suitable for contracts for local authorities. To an extent the local authorities have even created new excavator users by giving out so much work. There is a countervailing danger that if local authority work dries up in the future, these users will have no cash flow from the only source that they know and might go bankrupt before paying off the loans taken out to buy the machines.

- Earthmoving work has moved increasingly to the sub-contractors and they work with smaller machines in larger numbers. Advances in product design make the new small machines under 16.0 tonnes almost as productive as 20.0 tonne machines of ten years ago.

- Users such as the contractors just mentioned have had a strong incentive to replace machines from the frequent telephone calls which they have from export agents seeking good quality used excavators. The low value of the euro has made European excavators very easy to sell in Africa and the Middle East, and export agents have to have stock to make turnover. They therefore pester franchised dealers to find machines and create deals by going directly to users with cash offers for machines that have been well maintained. The user can then employ the proceeds to buy part of a new excavator with the rest being financed by a lease that will undoubtedly be cheaper than he has seen for some time.

The two types of hydraulic excavator have broadly different roles. Wheeled excavators perform maintenance and renovation tasks in the urban works market, as well as a specific role in farm crop handling in the north; crawler excavators are the bulk earthmoving tools and the choice for any work involving machines over 20.0 tonnes' service weight.

In the latter part of the 1990s the share of the business was 60 per cent in favour of the crawler excavator and 40 per cent for the wheeled excavator. Since 2000 the market has been more skewed towards the crawler excavator, even if sales of wheeled machines were very good in 2001 and 2005.

Table 5. France: Sales of Hydraulic Excavators by Type, 2001-2005

	Wheeled		Crawler		
	Units	%	Units	%	Total
2001	1,800	35	3,355	65	**5,155**
2002	1,500	37	2,600	63	**4,100**
2003	1,260	33	2,448	67	**3,708**
2004	1,555	35	2,893	65	**4,448**
2005	1,850	35	3,450	65	**5,300**

Source: Off-Highway Research

New urban works such as the tramways being installed in provincial cities have favoured the wheeled excavators, which have been notably healthier. In the last five years annual sales have averaged 1,600 units, a third higher than the long term sales of 1,200 units per annum. Part of this is due to the ongoing success of the Mecalac, a multipurpose machine that came on the market in the middle of the 1980s. Although it can work well as a wheeled loader and a fork lift, the machine is accepted by the industry as a wheeled excavator.

Wheeled Excavators

Table 6. France: Sales of Wheeled Excavators by Weight Category, 2001-2005

	2001		2002		2003		2004		2005	
Tonnes	Units	%	Units	%	Units	%	Units	%	Units	%
6-8	130	7	100	7	60	5	60	4	30	2
8-13	490	27	400	27	350	28	450	29	550	30
13-15	615	34	470	33	420	33	510	32	570	31
15-17	225	13	210	15	200	16	245	16	350	18
17-20	290	16	290	16	190	15	215	14	250	14
Over 20	50	3	30	2	40	3	75	5	100	5
Total	**1,800**	**100**	**1,500**	**100**	**1,260**	**100**	**1,555**	**100**	**1,850**	**100**

Source: Off-Highway Research

The table above combines all types of wheeled excavator above 6.0 tonnes:

Midi excavators in the **6.0 to 8.0 tonnes** category. This category sits uneasily in the French context, because of the massive popularity of the 7.0 to 8.0 tonne backhoe loader, which still has a population of about 26,000 machines and annual sales of 3,000 units. In backhoe loaders buyers have concentrated on the 7.5 to 8.0 tonnes machine and, by ordering them with turbocharged engines and a variety of attachments, they have made fairly good multipurpose machines. They also have a good road speed (39 km/hr), whereas hydrostatic drive has in the past tended to limit a wheeled excavator to speeds of 20 km/hour. Most buyers of backhoe loaders work in rural areas and appreciate a higher road speed.

At the beginning of the period shown above, the sales figures rose briefly as a result of the launch of the small (7.1 tonnes) version of the Mecalac, called the 10MX and now known as the 10MSX. It was (and is) particularly quiet and has as an option the Easy Drive system for keeping the excavating and loading buckets level. It reawakened interest in small wheeled excavators, as it was manoeuvrable and able to load a truck without moving from its work position in a city street. It had the problem, however, that its maximum road speed was only 27 km/hour and is now off the market.

Standard wheeled excavators from **8.0 to 13.0 tonnes**. This sector is a subject of fascination in the industry, as it covers the so called mobile midi excavators. A sales level of 550 units in 2005 looks very impressive but two thirds of them are the different versions of the Mecalac. Details of this machine are in the Production section and, of course, on the website www.mecalac.com. It is compact and works easily where other machines cannot get, particularly on urban, narrow and congested sites. The French market loves it.

The Mecalac share of this sector has increased from 50 to 65 per cent since 2002, so sales of Italian machines made by Komatsu and CNH or from Liebherr, all of them having devised solutions with offset booms and/or articulation, have not grown at all. Ingenuity like the offset boom to change the shape of the machine has not been enough; remaking it entirely, as M. Pingon did when he created the Mecalac, has been the answer.

Standard wheeled excavators from **13.0 to 19.9 tonnes**. These are legal to travel on the roads and they have always been popular, and they are dominant in the northern part of France. It used to be that the interest was spread evenly over many sizes, from 13.0 to 19.9 tonnes, but in recent times the popular 13 to 15 tonne types have done particularly well.

A strong argument exists for saying that buyers of wheeled excavators are not in fact looking for the sophistication that they receive. The driver is really governed by mundane factors such as

traffic lights at the site of the road repair where he is working, or the supply of trucks to take away his muck. What he likes is comfort and visibility and, being a small businessman, he cannot pay for great sophistication or extra pumps to give him faster rotation, which he does not need, anyway, when there is no truck for him to fill. Electronics are useful only if they feed a good supply of accurate information to the operator as to the state of the machine. If anything distinguishes his needs, it is a high lift capacity, for many wheeled excavators work permanently with a clam shell, lifting muck out of the trench rather than breaking it out of the pile; and a minority of them works each year loading potatoes and sugar beets in the fields.

Wheeled excavators **over 20.0 tonnes**. These machines exceed the weight limits for driving on the roads, although they can be carried on low loaders, of course. They are more likely to be put to work in timber yards and metal scrap processing, where they have very long lives. They are sold with extra long booms and magnets, grabs or clamshells. Elevating cabs are a strong sales point in the materials handling market, which also looks for heavy duty undercarriages, in view of the working conditions. The volumes have been low but have risen recently as cable cranes have come up for replacement in ports and scrap yards and provided opportunities to sell large wheeled excavators. The scrap industry has had a good time, of course, with metal prices being recently so high. These buyers often come into the market no more than once every ten years to buy a new handler, and 2005 was the year for some of them.

Crawler Excavators

Table 7. France: Sales of Crawler Excavators by Weight Category, 2001-2005

	2001		2002		2003		2004		2005	
Tonnes	**Units**	**%**	**Units**	**%**	**Units**	**%**	**Units**	**%**	**Units**	**%**
6-8	410	12	380	15	400	16	800	29	850	26
8-12	140	4	100	4	100	4	100	3	140	4
12-14	340	10	285	11	270	11	270	9	350	10
14-16	220	7	180	7	170	7	180	6	170	5
16-19	280	8	210	8	200	8	210	7	270	8
19-21	590	18	440	17	370	15	330	11	360	10
21-24	620	18	530	20	480	20	500	18	590	17
24-33	410	12	290	11	270	11	300	10	360	10
33-50	285	8	155	6	160	7	170	6	310	9
50-90	55	2	25	1	20	1	30	1	45	1
Over 90	5	-	5	-	8	-	3	-	5	-
Total	**3,355**	**100**	**2,600**	**100**	**2,448**	**100**	**2,893**	**100**	**3,450**	**100**

Source: Off-Highway Research

Small crawler excavators under 12.0 tonnes. Known as midi excavators by the industry, they were on the market ten years ago but sold very poorly. Even in 1998 sales amounted to only 100 units. In Japan crawler excavators of narrow dimensions and weighing 7.0 tonnes were already very popular by the beginning of the decade. Caterpillar made such machines in France and Case started marketing the same formula, made by Sumitomo in 2000. Komatsu launched a machine on the market in France, made in Italy, then in 2000 Kobelco made a determined assault on the French market with narrow-radius machines. In 2000 and 2001 others followed them, and they became at least theoretically widely available for users.

The reaction was very positive. In 2000 the sector grew by 250 per cent, to 400 units and in 2004 it made a second leap, so that by now it is worth 1,000 units per year. The machines have attained a level of visibility that convinces the rental companies that they have a place in the market in the long term. Rental companies are in business to cover the cost of the machine with fees over four to five years of use and to make a good profit by reselling the units at the end of that period. They now feel that the new machines are making money and are even finding that they can sell five year old machines to used construction equipment buyers.

The 'seven tonne mini' market has grown from 400 units to over 800 units per year but not all the demand is from rental companies. Small contractors are also adopting them, since transport on a standard tipper truck or a trailer is quite convenient, and certainly no more trouble than the backhoe loaders that many of them replace.

Much less attention has been paid to the 8.0 to 12.0 tonne sector. Three years ago Komatsu, Liebherr and Volvo all had machines of this size on sale but now there are only two narrow radius Komatsu machines and the category is very minor.

The next centre of gravity is a product familiar from the distant past, the 13 tonne crawler. **Crawler excavators from 12.0 to 16.0 tonnes** are no great novelty. This is quite a popular size in Korea and in some European markets, and so the machines are there, available from many suppliers. 13 tonne types are the most successful of the sizes below 20 tonnes but are staying at 10 per cent of the market. Equally, the 14.0 to 16.0 tonne sector has not increased its share of the total business and is now contracting.

16.0 to 19.0 tonnes has always been a very popular size but has declined since 2000. Two groups have left off using them. One has traded up to machines around 19.5 tonnes, for the sake of more output and digging force, but without changing the low loader on which they take the excavator to the job site. The tendency to incorporate extra pumps and use long crawlers has

also made the replacement models somewhat heavier. Another group is the owners of yesterday's 17.0 tonne machine, persuaded that better performance in smaller excavators makes it logical to replace it with today's 15.0 tonne model.

The biggest change since the last report is the decline of 19 to 21 tonne machines, where renewals of machines are running at almost half the rate of six years ago. Just as volumes have declined in that size, so they have risen in the **21.0 to 24.0 tonnes** size, which is now the single most popular size for public works machines. This is now the characteristic size of this basic earthmoving tool for civil engineering and is the favourite of the professional earthmovers.

Civil engineering applications, such as the high-speed railway lines and the motorway extensions have sustained the market for machines from **24.0 to 50.0 tonnes** in the last three years, above all in 2005. The most popular are machines of **25.0 and 35.0 tonnes**, selling particularly well in 2005. In larger machines the rise in sales in 1999 to 2001, attributed to deferred purchasing means that 2005 to 2007 will see a wave of replacement, unless the owners entirely lose their nerve. Building materials producers needed new production resources in 2005. The cement industry, the quarries and the gravel pits have become good customers again.

Above the **50.0 tonne** mark, the demand comes mostly from quarries. The statistics show a regular pattern of replacement. When times are hard, it reaches down to 30 units in a year. When matters improve, it rises to 55 units, since the number of quarries does not vary much over time and, whilst the work in driving the TGV line through the hills of Provence brought a few sales, there are almost no projects of that scale existing today.

Design Trends

The hydraulic excavator, representing a market of 20,000 to 35,000 machines per year in Europe, is the target of great interest in the aspect of product design. The French market exhibits many of the points which are interesting to manufacturers at the present time.

Among the small machines there is interest in seven tonne excavators. In their favour they can use a standard light low loader or trailer to move them from site to site and can cross a road without damage if they are equipped with rubber tracks, as is the style in Japan. Equipped with electronic controls, they are usually easy to learn to operate, more so than backhoe loaders.

Small machines can make themselves better accepted by being able to work in tight corners, which explains the ongoing success of the wheeled Mecalac, of course. Other devices that are

appearing are booms that pivot on a mounting rather than being fixed to the frame at the side of the cab; and double parallel booms with offset mounting.

The seven tonne excavators are claimed to be part of a general phenomenon of trading down in terms of size. Users report that they are being paid less and less for a fixed amount of earthmoving as time goes by. They must seek lower operating costs and can no longer use an oversize machine. The weights of the machines used are probably reducing and will continue to do so.

Some manufacturers are able to offer ultra-narrow machines where the counterweight rotates within the width of the tracks. In France this feature has been available on standard size crawler excavators up to 24.0 tonnes from Kobelco after 2000 and from Komatsu after 2001 at 13.0 and 23.0 tonnes. Kobelco was absent from the market for many years and decided to re-enter the sector with a Unique Selling Point, which is the SR design, an ultra narrow machine available in sizes up to 22.0 tonnes. The concept has a big cost disadvantage, around 25 per cent when compared to machines of orthodox design. Kobelco made good progress but possibly its choice of dealers helped as much as its product design. Most other suppliers doubted that the idea would influence the market for compact excavators. In the French market it may well be held back somewhat by the Mecalac offering the ability to work in the same narrow space, and France may be behind other markets for this reason.

One aspect that is taking the attention of designers at present is road speed. To a large extent the providers of wheeled excavators have simply lived with the fact that their machines went slower than backhoe loaders but increasingly the clients are looking for better travel speeds. Wheeled excavators are increasingly able to travel over 20 km/hour but the equipment for braking, lighting and steering has to be uprated to road vehicle standard, which adds cost. The bigger consideration, however, is the heat generated and the need for a larger, more expensive engine. Neither the larger heat exchanger nor the bigger engine is actually needed to operate the machine.

Road travel for heavy construction equipment is becoming harder. Local authorities are reportedly making the certificates for heavy transport harder to obtain and consequently some suppliers see a likely trend to using smaller machines, located in one region and never travelling across the country. In general, a 20.0 tonne crawler excavator and its associated trailer can pass anywhere but that is the maximum for movement without difficulty.

Finally, in common with other construction equipment, the hydraulic excavator has had to change in response to the arrival of new EU engine emissions standards.

- In the largest machines, powered by engines from 175 up to 750 horsepower, Stage II standards gave way to Stage IIIA at the beginning of 2006. That affected most products above 26 tonnes in weight in approximate terms, although the authorities have allowed some leeway in imposing the new norms of machines built during 2006.
- The next stage is that engines from 175 down to 100 horsepower will have to correspond to new norms of similar severity in January 2007.
- This will be followed by the 50 to 99 horsepower category, rarely used except in the smallest midi excavators, in January 2008.

PRODUCTION

Table 8. France: Production of Hydraulic Excavators by Manufacturer and Type, 2001-2005 (Units)

Manufacturer	Type	2001	2002	2003	2004	2005
Caterpillar	Wheeled	-	-	-	-	500
	Crawler	1,250	1,100	1,020	1,100	1,150
	Total	**1,250**	**1,100**	**1,020**	**1,100**	**1,650**
Liebherr	Wheeled	-	-	1	5	5
	Crawler	1,500	1,330	1,348	1,498	1,500
	Total	**1,500**	**1,330**	**1,349**	**1,503**	**1,505**
Mecalac	Wheeled	650	540	490	575	620
	Crawler	-	-	30	20	50
	Total	**650**	**540**	**520**	**595**	**670**
CNH	Wheeled	980	805	680	150	-
	Crawler	380	110	-	-	-
	Total	**1,360**	**915**	**680**	**150**	**-**
Furukawa	Wheeled	150	-	-	-	-
	Crawler	150	-	-	-	-
	Total	**300**	**-**	**-**	**-**	**-**
Grand Total	Wheeled	1,780	1,345	1,171	730	1,125
	Crawler	3,280	2,540	2,398	2,618	2,700
	Total	**5,060**	**3,885**	**3,569**	**3,348**	**3,825**

Source: Off-Highway Research

The role of France in European hydraulic excavator production has diminished in the last five years, to 15 per cent of the total. This fall can be attributed to the closure of the CNH plant and the end of the small experiment by Furukawa to produce hydraulic excavators in Europe. On the other hand, Caterpillar has moved wheeled excavator assembly into France during 2005, so production in 2006 should exceed 5,000 machines, as it did in 2000 and 2001.

Caterpillar became the largest hydraulic excavator producer in France in 2005 and will keep that title in 2006, as the Grenoble plant will have had a full year of building the wheeled excavators that began to roll off the line in September 2005.

Caterpillar Grenoble is in fact three sites, two in Grenoble and one in the nearby suburb of Echirolles. It opened in 1962 and in the 1980s, it was destined to become the unique world source for crawler loaders, apart from one small model made in Japan. That assumption was undermined by the swift decline of the crawler loader market and so the corporation added crawler dozers, and then small crawler excavators to its programme.

It has been producing compact crawler excavators at the plant in Grenoble since 1992. The excavators were inspired by the Japanese style of very compact midi, designed by Japanese staff but engineered for the European market. The range was extended over the years, so that production is now divided between four different basic models. In 2002 the European dealers launched the first of the 'C' series products to be built in Grenoble, the model 312C. The cab is the main change, with a new design for the controls. The machine incorporates an uprated hydraulic flow for attachments and an optional Tool Control Pro electronic control system, allowing the flow and pressure settings for up to five different attachments to be preset on a console in the cab.

In 2005 the plant began assembling wheeled excavators that had previously been made in Germany, in a plant owned by Sennebogen. This became possible because the Grenoble site no longer pursues the former Caterpillar policy of making most parts for itself. The production of components has been transferred out of the facilities to other Caterpillar plants (such as Russia and Hungary) and to sub-contractors. The assembly of wheeled excavators and of other machines is integrated with a new small logistics centre in Grenoble where small teams receive components and make sub-assemblies that then pass to Echirolles. This stockyard in nearby Versoud was opened in 2003, covering 20,000 m^2 and employing 82 people to receive material, transform it into sub-assemblies and dispatch it to the plants. An extension of 7,000 m^2 was added in 2005, for pre-painting of components.

The crawler excavator volumes have been steady in recent years, around 1,200 units per year. The wheeled excavator volume is destined to be larger than the 2,000 units made in Germany in 2004, if the company achieves its aims.

Liebherr in Colmar will thus lose its crown as the largest volume builder of excavators in the country. This is inevitable, as it has a substantial part of its resources devoted to very large mining excavators which are built in small quantities and the production total in the plant in the medium term will probably stay near the level seen in 2005.

It is part of the production system for the Swiss family company in respect of its earthmoving machinery. Opened in 1961, it covers a 34 hectare site and now has eight production halls. Colmar produces all the crawler excavators above 20 tonnes and employs 1,350 people. In the past 30 per cent of its production went for sale in Germany and it is the state of the German market that brought the production level down in 2001 to 2003. Even in 2005, Germany still accounted for less than 20 per cent of deliveries.

The product line has been divided into two management units. Standard excavators run from 18 to 85 tonnes and are sold about 85 per cent in Western Europe. Excavators of 100 tonnes and more are now classified as mining products, to be linked with the growing line of rigid dump trucks built in the USA. To emphasise the difference the mining excavators sport a standard bodywork colour of white, as do the rigid dump trucks. Production volumes in the mining product area are small but the company continues to introduce new products. In late 2002 it launched the R994B Litronic at 300 tonnes' service weight and phased out production of the R992. Faced with a massive increase in orders for mining excavators recently, the company has moved the production of the older 994 out to Brazil.

In 2005 it opened a new test hall with six bays for testing whole excavators, which will be used in production processes as well as in the development of new models. This 2,700 m^2 building replaced a 35 years old installation of only 1,000 m^2. In the same year the factory moved away from production line assembly of mining excavators to bay assembly, so that mining excavators will no longer be fully assembled at Colmar but rather at the final site.

In the standard contractors' machines the range was updated to 'B' versions, incorporating low-emissions engines and improvements to the hydraulic circuit performance, as well as bodywork with a more curved cab in 2002. The move to the "C" series in 2006 has more to do with the installation of Tier III engines than with major changes to the machine designs. The new engines had to go into machines ordered after 1 January 2006 but the factory has such a long

back order situation that in practice most machines shipped in 2006 will be of the "B" series, with Tier II engines. The models 964 and 974 will not change engines before the very end of 2006.

The novelty of Intermat 2006 in the Liebherr earthmoving machines was the R924 Compact, a crawler excavator of 23 to 27 tonnes designed to have the boom swing in a radius of less than 1.90 metres. This means that it can do serious trenching work on one side of a road without the necessity to close the carriageway entirely.

At the other end of the size scale the changes concern product designation more than model innovations. In 2007 the mining excavators will adopt a new numbering system, with a nine followed by a three digit number corresponding to the approximate weight. The R994 of 230 tonnes goes to Brazil and at the same time the French plant will bring out the R9250 in the 250 tonne class. The "new" R9350 will in effect be the same machine as the R994B and will be in the 300 to 320 tonne size. The R995 may well disappear and the R996 will change into the R9700 of 650 tonnes but without a date being fixed yet.

Mecalac is the brand name of a unique multi-purpose machine that combines the functions of an excavator, loader and tool carrier. A wide range of attachments and a quick-coupling system increase the machine's versatility and operating capacity. It is conceived for working in narrow spaces and in various ground conditions. It can dig and then load the spoil into a truck waiting 180º degrees behind itself, a feat which a backhoe loader cannot execute at all.

The inventor, M. Pingon, launched it in 1980 and opened a plant in Annecy, near the Alps, to assemble the machine, which at that time was only a basic 8 tonne version. In the 1990s he added further versions. The Annecy plant has a covered area of 5,800 m^2 on a site of 20,000 m^2 and employs 125 people; a component plant described in the next section employs a further 50. The ownership of Mecalac has changed several times during the life of the company. In 1995 Volvo purchased it when it bought Groupe Pel-Job. Mecalac aligned its marketing to an extent with that of Volvo in the ensuing years but in the end Volvo came to the conclusion that as a product it did not offer the potential for marketing all over the world which it was seeking from its creations or acquisitions. In 1999 it sold Mecalac back to its former owner, Henri Marchetta.

The nine tonne 12MX model has disappeared in favour of a model of the same size but employing the same Cummins engine as the 10MX. The turbocharged 12MXT continues as before and the range is topped with the 13 tonne 14MBX. This has a second gearbox for road travel and a newer control system.

The Mecalac Group acquired a controlling interest in Ahlmann, the German wheeled loader manufacturer, from Manitou in April 2002. The Group now comprises:

- Mecalac in Annecy, France
- Hydromo, making components 20 km away in Albens
- Framateq Paris, the dealer for that region
- Ahlmann Baumaschinen (74 per cent owned)
- Ahlmann Duisburg, Germany (a dealership for the two companies in the Ruhr)
- Ghezzi, the Mecalac dealer for northern Italy.

The turnover in 2005 was €58 million, or €93 million including Ahlmann. The group employs 370 people.

Mecalac production levels are 50 per cent higher under private ownership and it can now finance new product development that was suspended during the Volvo years. New creations being launched will still keep the company in its area of compact earthmovers and will confront the hydraulic excavator competitors more directly. A 14 tonne machine on tracks and wheels is the first of several projects; in 2006 the company has also shown pictures of a six tonne mini excavator that can work as a loader in the style of traditional Mecalac machines.

The aim is to keep the product range ahead of the competition, which greatly admires the basic concept of the machine, for which there is no imitator at present. The trading down to smaller machines which the industry expects in the coming years should favour the company and efforts to improve its sales performance in southern Europe should bring results to help finance the ongoing development.

CNH finally closed the hydraulic excavator production facility at Crépy-en-Valois, 40 kilometres to the north-east of Paris in 2004. Crawler excavator production dwindled after 2000 at Crépy and was more or less restricted to models destined for the French market. The wheeled excavators continued to come from the French plant until CNH decided to centre production in Berlin, Germany (although in 2006 it changed policy to close the Berlin plant and move all production to Italy). Production of all hydraulic excavators in France ceased in early 2004.

Furukawa ceased building wheeled and crawler excavators in its plant at Genas, near Lyon at the end of 2001. The last excavators were up to date European machines but they lacked success

in creating volumes. Wheeled loaders continued for longer but the plant now has a new life as a source for the entirely new Hitachi wheeled loaders.

COMPONENT SOURCING

Table 9. France: Component Sourcing for Hydraulic Excavators, 2006

	Caterpillar		Liebherr	Mecalac
	Crawler	Wheeled		
Engine	Mitsubishi, Perkins	Perkins	Liebherr, Cummins, MTU	Cummins
Hydraulic Pumps	Kawasaki	Hydromatik	Liebherr, Linde, Bosch Rexroth	Bosch Rexroth
Hydraulic Motors	Bosch Rexroth	Hydromatik	Liebherr, Linde, Bosch Rexroth	Bosch Rexroth
Transmission	Bosch Rexroth	Hydromatik	Liebherr	Bosch Rexroth
Control Valves	Caterpillar Joliet	Caterpillar Joliet	Bosch Rexroth	Hydromo
Cylinders	Caterpillar Jesi	Donau Hydraulik	Liebherr Kirchdorf	Hydromo
Axles	-	ZP	-	Dana
Cabs	TIM	Fritzmeier	Siac	Siac
Undercarriage	In-house	-	In-house	-
Tracks	Caterpillar	-	Intertractor/Berco	-
Buckets	In-house	Ardennes Equipement	In-house; sub-contract	In-house
Tyres	-	Various	-	Mitas

Source: Company Information

Caterpillar makes as much as possible of its own components but the Grenoble plant plays less of a role than it did at the time of the last report. The plant now makes fewer heavyweight elements than it did in the past, this work have been transferred to lower cost locations such as Hungary. In 2003 the shortage of space in the two plants was alleviated by the building of a stockyard for Caterpillar Logistics at nearby Versoud. This building of 20,000 m^2 employs 82 people to receive material, transform it into sub-assemblies and dispatch it to the plants. An extension of 7,000 m^2 has been added in 2005, for pre-painting of components. It is not functionally part of Caterpillar France SAS but does supply assemblies such as operator platforms ready equipped with a wiring loom and a seat for machines to go on the assembly lines at Echirolles.

The sourcing pattern for the crawler excavators is influenced by the fact that the products are designed in Japan. The small models 307C and 308C have an engine from Mitsubishi Motors, while the pumps which they drive are from Kawasaki. Perkins engines are in the rest of the range made at Grenoble and Bosch Rexroth supplies both the motors and the gearboxes. The list shows a high proportion of the machine coming from various Caterpillar plants around Europe and the rest of the world. The sticks come from the Caterpillar facility at Tosno, near St. Petersburg, Russia, adding yet another Cat facility to the list of suppliers. The listing for

wheeled excavators reflects the origin of the machines in Germany and carries a higher proportion of German hydraulic components.

Liebherr uses its own Swiss-built engines in all sizes from 100 to 400 horsepower and incorporates elements such as its own power splitters into the hydraulic circuits, even if the main elements such as the motors are from Bosch Rexroth and others. The Colmar plant is a full manufacturing facility, making both the upper frame and the undercarriage. It even manufactures some of the buckets sold with the excavators.

Mecalac uses a component manufacturing plant of its own called Hydromo at Albens, 20 km away from the assembly plant, which makes cylinders, swivel joints and fabrications. Cummins engines drive a Bosch Rexroth pump and motor assembly, with the very complex distributor block at the heart of the hydraulic system being supplied by Hydromo. The rest of the major suppliers are noted above.

FOREIGN TRADE

Table 10. France: Exports of Hydraulic Excavators by Manufacturer, 2001-2005
(Units; % of Production)

	2001		2002		2003		2004		2005	
	Units	%	Units	%	Units	%	Units	%	Units	%
Caterpillar	1,100	88	1,000	91	830	81	840	76	1,370	83
Liebherr	1,220	81	1,105	83	1,025	76	1,125	75	1,065	71
Mecalac	190	29	190	35	215	41	215	36	180	27
CNH	760	56	530	68	435	65	50	33	-	-
Furukawa	235	78	-	-	-	-	-	-	-	-
Total	**3,505**	**69**	**2,825**	**72**	**2,505**	**70**	**2,230**	**66**	**2,615**	**68**

Source: Off-Highway Research

Exports are very important to all suppliers but the proportion of production sent to other countries has varied. The closure of the highly export orientated CNH plant depressed the export volumes, but the arrival of wheeled excavator production in Caterpillar Grenoble will push it up again, especially in 2006 when the figures register a full year of exports.

The range made by **Caterpillar** in France covers only about a quarter to a third of the crawler excavator sector. In broad terms one can note that Caterpillar's 300 series is the market leader in crawler excavators in Europe, with a share of 18 per cent outside France. There are, nevertheless, wide variations in performance, so that in 2005 Italy was the best performer, with

26 per cent while Finland and Spain were the worst, with 11 per cent. Approximately 80 per cent of production at Grenoble is exported every year and the hydraulic excavators are nearly all bound for markets in Europe. In the wheeled excavators the export ratio is likely to be of the order of 92 per cent.

Liebherr exported fewer units than Caterpillar in 2005 but the value is much higher. Liebherr-France supplies more than 90 per cent of all the crawler excavators for construction and all of the mining excavators. Exports by the company in 2005 were worth €480 million, compared to the Caterpillar figure of €220 million (source: www.societe.com). The volumes shown for Europe, therefore, are not the whole picture for exports from Colmar.

Table 11. Liebherr: Sales of Crawler Excavators in Europe by Country, 2005

	Units	% Market Share
Austria	67	9
Belgium	23	3
Denmark	30	6
Finland	13	2
Germany	275	9
Greece	3	10
Ireland	8	1
Italy	136	3
Netherlands	25	4
Portugal	1	-
Spain	95	6
Switzerland	41	6
United Kingdom	40	1
Total excl. France	**757**	**3**

Source: Off-Highway Research

The total volume sold in the rest of Western Europe has stayed steady since 2002, although the products have lost share in the German market recently, as Volvo and Hitachi, in particular, attacked the market. After Europe the only large market for Colmar machines is North America, where Liebherr has one per cent market share and sold just under 200 units in 2005.

Finally, to **Mecalac**. This product is in a class of its own, as far as marketing is concerned. It has won its place by heavy promotion and by demonstration. Only in France are there sufficient machines on the ground to allow potential customers to see others using it. The export percentage fell from 80 per cent to below 25 per cent in the 1990s, showing the effect of

neglecting the promotion aspect. After the change of ownership, the export ratio has turned upwards but volumes sold outside France have not grown since 2003.

Table 12. Mecalac: Sales in Europe by Country, 2005

	Units	% Market Share
Austria	4	2
Belgium & Luxembourg	12	4
Germany	30	1
Italy	30	6
Netherlands	5	1
Spain	12	1
Sweden	2	1
Switzerland	5	2
United Kingdom	5	1
Total excl. France	**105**	**1**

Source: Off-Highway Research

MARKET SHARES

Table 13. France: Major Suppliers of Hydraulic Excavators and Their Market Shares, 2001-2005

(Per Cent)

	2001	2002	2003	2004	2005
Liebherr	17	16	17	18	18
Komatsu	7	9	10	11	11
Caterpillar	17	16	14	14	11
Case	17	19	16	10	10
Volvo	6	6	7	8	9
Mecalac	9	9	8	9	9
Hitachi	-	-	3	6	6
Fiat-Hitachi/Fiat Kobelco/New Holland	7	7	7	6	5
JCB	6	5	5	4	5
Others	14	13	13	14	16
Total	**100**	**100**	**100**	**100**	**100**

Source: Off-Highway Research

Liebherr is now the market leader, with a large margin of difference between it and the rest. Since 2003 it has gone from strength to strength. Conversely, **Case** suffered a serious loss of share because of its performance in wheeled excavators after 2003, as deliveries from the

German plant were seriously mishandled in the wake of the closure of the French site. **Volvo** made a strong start with its Korean machines in 2000 and has improved in every year since then.

Wheeled Excavators

With a third of all excavators being sold on a wheeled chassis and a strong interest in small, general purpose machines still evident, it is necessary for any manufacturer that wishes to play a full part in the market to have a complete range of products. This secures the interest of an effective dealer network, when such dealers are very hard to find. Some of the minor marques have only a few strong dealers and thus end up with a national market share that is far below what they would like to have.

Table 14. France: Suppliers of Wheeled Excavators and Their Market Shares, 2001-2005

	2001		2002		2003		2004		2005	
	Units	%	Units	%	Units	%	Units	%	Units	%
Liebherr	409	23	294	20	310	25	438	28	510	28
Mecalac	464	26	370	25	305	24	360	23	478	26
Case	305	17	320	21	245	19	133	9	158	9
Komatsu	60	3	87	6	76	6	122	8	162	9
Caterpillar	177	10	178	12	110	9	156	10	131	7
Volvo	44	2	35	2	26	2	95	6	101	5
Daewoo	65	4	36	2	19	2	39	3	80	4
Hitachi	-	-	-	-	23	2	59	4	73	4
Fiat-Hitachi/Fiat Kobelco/O&K/New Holland	101	7	68	6	70	6	70	6	47	3
JCB	71	4	52	3	39	3	55	4	61	3
Hyundai	18	1	15	1	9	1	8	1	45	2
Furukawa	30	2	-	-	-	-	-	-	-	-
Others*	30	2	32	2	28	1	20		4	-
Total	**1,800**	**100**	**1,500**	**100**	**1,260**	**100**	**1,555**	**100**	**1,850**	**100**

*Others include Schaeff and Terex Atlas

Source: Off-Highway Research

During the second half of the 1990s there were only three effective players in the field of wheeled excavators, taking three quarters of all sales. **Case** remained the best seller in conventionally designed machines, while **Liebherr** widened its range and defended its corner of the market, and the multipurpose **Mecalac** won many converts. In the last five years, however, Case has lost half of its market share and slipped to the second rank of suppliers, while Liebherr has gone from strength to strength.

Liebherr has increased its high share of the market from 20 to 28 per cent since the last report. It has no part of the agricultural handling business that in part sustains Case and lives off small contractors. The product is considered by them to be a desirable tool, although it is expensive.

Liebherr marketing has hardly changed in this sector in ten years. Lack of change means a steady presence that makes the product easy to resell at a high price. Liebherr dealers are very efficient at used machinery marketing and machines are quickly resold in France or Germany.

Mecalac has become the master of the 11 tonne urban excavator market. Whilst the design has great advantages in not occupying much road space when working in the middle of the street in Lyon, Toulouse or Bordeaux, not every city is installing a tramway. Sales of the Mecalac are not confined to that eye-catching application. The product has been endowed with a more modern bodywork and quiet engine. It has made a lot of sales in replacements of machines bought in the middle 1990s but has also increased the number of users by more than 40 per cent since 2001.

Komatsu built up its market share in compact and standard wheeled excavators from 1997 onwards to nine per cent but in 2001 hit difficulties with over valued used machinery and with financial fragility of some of its dealers. It has recovered from that and as the network improves its share of the business is still growing.

Caterpillar still seems to have a degree of difficulty in convincing French buyers to accept Caterpillar as the best supplier for an everyday machine such as a 13.0 or 15.0 tonne wheeled excavator for repairing broken sewer pipes, a phenomenon that also seemingly affects **Volvo**, **JCB** and other minor suppliers.

Crawler Excavators

The nature of the market for crawler excavators has changed entirely in the last few years. A situation where Caterpillar won first place effortlessly, with a strong and confident Case network able to be a very good second, has disappeared. Instead we have five leading companies with very similar sales volumes all supplying products of excellent quality, three of Japanese origin and two others.

Caterpillar has been the market leader since 1993. Its 300 series is now into its third generation with the 'D' series in models from 23 to 38 tonnes. The small machines up to 21 tonnes are made in France, the rest supplied from the plant in Belgium. It has lost some market share since 2000, mainly because some significant competitors have been better organised, and not because of any shortcomings in its products or the dealer, which offers the best after sales support in the industry. In 2005 the arrival of price increases deterred some buyers and the share went down to 14 per cent.

Table 15. France: Suppliers of Crawler Excavators and Their Market Shares, 2001-2005

	2001		2002		2003		2004		2005	
	Units	%	Units	%	Units	%	Units	%	Units	%
Caterpillar	676	20	483	19	409	17	480	17	466	14
Komatsu	322	10	269	10	279	11	349	12	444	13
Liebherr	485	14	345	13	326	13	373	13	442	13
Volvo	240	7	209	8	244	10	244	8	402	12
Case	580	17	445	17	350	14	324	11	388	11
Fiat-Hitachi/Fiat Kobelco/New Holland	280	8	215	8	191	8	223	8	244	7
Hitachi	-	-	-	-	87	4	198	7	244	7
JCB	233	7	152	6	134	5	135	5	225	7
Daewoo	215	6	112	4	99	4	130	4	181	5
Yanmar	59	2	91	4	52	2	91	3	100	3
Hyundai	65	2	60	2	46	2	82	3	100	3
Takeuchi	-	-	-	-	32	1	40	1	77	2
Neuson	-	-	60	2	60	2	60	2	68	2
Kubota	-	-	39	2	25	1	46	2	49	1
Mecalac	-	-	-	-	-	-	20	1	13	-
O&K	27	1	12	-	10	-	-	-	-	-
Kobelco	95	3	104	4	101	4	83	3	-	-
Others	78	3	4	-	3	-	15	1	7	-
Total	**3,355**	**100**	**2,600**	**100**	**2,448**	**100**	**2,893**	**100**	**3,450**	**100**

* Others include Kato, IHI, HBM-Nobas and Furukawa

Source: Off-Highway Research

Komatsu has already been mentioned as having undergone major difficulties in 2001. These affected the performance in the crawler excavator area, although the company held onto 10 per cent of the market. Since then a new management team has improved the network, the main reason behind the steady increase in market share.

Liebherr has not performed up to its full potential since 1996. Given the high quality of its network, including the branches, the integrity of its product and the fact that much of the range is made in France, one would expect the market share to be around 20 per cent, not the 13 to 14 per cent actually achieved. In the short term it has the problem that it cannot increase production sufficiently when the market moves quickly upwards. One also has to question if the company is not isolating itself as the producer of large machines for civil engineers needing 24 to 33 tonne mass excavation tools. The range built in France now covers less than half the market and Liebherr has only a minor production in Germany to cover the rest.

Volvo has joined the grouping of market leaders for the first time in 2005. It relaunched its excavators in France in 2000, reorganising its dealer network to give full commitment to the excavators, for which it reached its target of a ten per cent share of the market in only three years.

Case launched the Sumitomo models progressively from 2000 onwards, so that by the beginning of 2003 it had 13 different models (including some ultra-narrow designs), as opposed to six in 1998. By 2002 it was doing well, regaining the confidence of professional earthmoving people in its larger machines and increased its market share to 17 per cent but since then increased competition and the uncertainty surrounding CNH have taken their toll.

The other CNH construction equipment franchise has changed its name twice in the last five years. **Fiat-Hitachi** gave way to **Fiat Kobelco** in 2001, then in 2004 CNH took the decision to reduce the number of brands sold in the region, so the excavators made in Italy changed to **New Holland** in January 2005. At the same time, Kobelco disappeared as a separate name, as did O&K (which was already out of the crawler excavator business by 2004).

As the Fiat-Hitachi partnership ended, **Hitachi** of Japan had to begin the task of building a network of independent dealers for its own products, most of which now come from a plant in Amsterdam, Netherlands. The company increased the model range available from that plant steadily between 2003 and 2005, while in France it had more or less completed the task if dealer recruitment by the end of 2004. Its market share reached seven per cent by 2005 but will probably rise further.

The other Korean manufacturers, relative newcomers to the market, had difficulty establishing themselves, and the task of achieving a full dealer network covering all six corners of the country has proved to be a huge challenge for them. **Daewoo** proved to be far better than **Hyundai** at recruiting dealers but hit difficulties in 2002. It has taken several years to reconstruct a group of performing dealers but after 2006 they will have a new range from Korea to offer, as well as the new corporate name of **Doosan**.

It is noticeable that the list of sellers of 2005 contains a number of suppliers credited with apparently small shares of the overall market. They are manufacturers of 7.5 tonne and larger midi crawler excavators. Given that the whole sector is worth about 1,000 units in 2005 **Yanmar** has about 10 per cent of the sector with its ViO design, ahead of **Takeuchi's** 8 per cent and the 7 per cent of **Neuson.** There are more players than three years ago, so one must reckon with most of the majors having a share of this growing business, notably **Caterpillar**, **Komatsu** and **Case** and **Hitachi**.

MARKETING AND DISTRIBUTION

Dealer networks are looking for customers for new machines but primarily they exist for the servicing of the needs of regular operators of the machines, which have a working life of about eight years. A national presence implies a network of about 25 points as a minimum. Interestingly, the number of depots has grown in recent years. In the broadest terms, the number of depots of all brands that have hydraulic excavators for sale has gone up from 400 to 500 since 2003. Partly this is because of a wish on the part of the OEMs and the existing dealers to get nearer to the customer; partly it is a result of having to offer midi excavators, thus employing some small machinery specialists to sell a few units of machines bigger than they normally sell; and partly it is a result of the good trend of the market since 2003.

Table 16. France: Distribution Systems of Hydraulic Excavator Suppliers, 2006

Manufacturer	Company Subsidiary	Independent Importer	Branches	Independent Dealers or Agents	Depots
Bobcat	No	No	-	29	40
Case	Yes	No	-	21	40
Caterpillar	No	Yes	14	-	50
Doosan Daewoo	Yes	No	-	22	30
Hitachi	Yes	No	-	15	15
Hyundai	No	No	-	12	12
JCB	Yes	No	1	34	34
Kato	No	Yes	-	-	-
Komatsu	Yes	No	5	12 + 1 Utility Line dealer	24+4
Kubota	Yes	No	1	40	41
Liebherr	Yes	No	7	15 + 1 workshop	41
Mecalac	Yes	No	1	9	28
Neuson	No	No	-	40	-
New Holland	Yes	No	-	25	25
Takeuchi	Yes	No	1	16	17
TEREX-Atlas	No	No	-	13	14
TEREX-Schaeff	Yes	No	1	20	21
Volvo	Yes	No	-	9	36
Yanmar	No	Yes	4	26	32

Source: Company Information

Case has one of the best dealer networks in the industry, developed from the days of Poclain, the local manufacturer acquired by Case. The businesses are recognised by everybody as prime sources for excavators and are very efficient recyclers of used machines, for which the prices are always very good.

Caterpillar has worked with Bergerat Monnoyeur for over 60 years. The branch network can reasonably be described as superb. Each of the 14 regional offices, which are major service

centres for important market areas, has a director with three or four salesmen and a similar number of servicemen. Within the regions are 36 satellite workshops, which are responsible only for service and the supply of spare parts. They offer a full service capability for competitive makes and are not justifying their existence purely by their work on Caterpillar machinery. The company recently announced that its light machinery would in future be marketed additionally through the rental branches, known as BM Location.

Doosan-Daewoo has made a major effort through its subsidiary in Trappes, near Paris, to improve the quality and size of its dealer network in the last two years. The new dealer network consists of 22 dealers covering most of France except for the Vendée and the eastern Pyrenees. The company also has no dealer presence in the Ile-de-France region surrounding Paris, although it does try to sell directly to rental companies.

Hitachi had a major task to build up a network in France after the summer of 2002, but by February 2003 it already had 14 of the 21 dealers that are now in place. For excavators it has a complete network of 15 dealers in mainland France signed up (only four of them being former Fiat Kobelco dealers). It has a solid reputation for its excavator technology but dealers cannot live from that alone. Mini excavators offer tiny profit margins, so the new wheeled loaders to be made in France need to be rapidly accepted.

JCB has benefited from having a powerful and stable dealer network. The dealers are nearly all independent but JCB controls the marketing in the Ile-de-France region itself from two retail branches, north and south of Paris, and owns the dealership in Lyon.

In six of the territories JCB has appointed sub-dealers, primarily for parts and service. They are there to catch a maximum of small owner-drivers where they are remote from the main dealer. The main dealer in such cases usually handles sales.

The large presence at Sarcelles, the headquarters of JCB France near Paris, is a major asset to the sales effort. On the site JCB has built its European Training School and put it into a unit called JCB Euro Services, where they can even send drivers there for training if they wish. Similarly the dealers benefit from a stock of parts kept there, which gives 92 per cent availability within 24 hours. Dealers now have to keep a permanent stock of 200 fast moving items.

Komatsu has suffered the most publicised difficulties of all in trying to build and maintain its presence in France. Its efforts to build a network based on the totally revamped company at Aubergenville, near Paris, were regularly frustrated by the financial weakness of its dealers,

which disappeared regularly during the 1990s. Since 2002 it has made great strides in changing that, building two company branches and raising the number of independent dealers in mainland France from eight to 17 (and four in the DOM-TOM).

The latest recruit at the time of writing is Comequip Normandie, part of a group that has long covered the Lille and Calais regions in the north for Komatsu. It extended its operations into Normandy in 2005 with branches in Le Havre and Rouen.

Liebherr has an exceptionally stable dealer network, displaying no change in the last ten years. The main branches in Colmar (Alsace), Paris, Marseille and Bordeaux continue to play a major role in the selling of construction equipment, the last recently having taken over the territory of a retiring dealer to the south. Whilst this was considered a weakness at one time, the diminishing role of the independent dealer and the entry of rental upon the scene in standard hydraulic excavators make the branches appear much more of an asset today. The rental company which started in 2001 finds the branches indispensable and the needs of that operation were to the fore when the company decided to build a new Paris region office in 2006, at Fontenay-Trésigny, to the east of the capital.

The only significant change among the independent dealers is the change of ownership in Lyon, so that Richard-Vitton became Tecmat in 2004. The new owners, HBI, added service points at Grenoble and Valence in 2005 and later moved the HQ into new premises on the eastern bypass of Lyon in that year.

Mecalac has eight dealers in the whole country, the most important being Framateq in the Ile-de-France, Rhone-Alpes and South-Ear regions. Framateq has always been the seller of most of the Mecalac units in France, having been created by M. Lecluse, the commercial partner of M. Pingon, the inventor of the machine, since the earliest days. It has been a very expansive company and the three businesses around the country hold many different construction equipment franchises and have different owners. Mecalac has never been a problem to other suppliers – there is no direct competition to the Mecalac idea. In Alsace the product is in the hands of the Hitachi dealer; in the south west Van de Velde is a large Volvo dealer; as is M3, the dealer in the West.

The **New Holland** network of 2006 is extensively changed from that noted for Fiat Kobelco in the last report of 2003. Of the 19 dealers who sold Fiat Kobelco Heavy Line products, nine have continued with New Holland, four have gone to work with Hitachi, doubtless because of the more important hydraulic excavator line, and six have been changed for other reasons.

Volvo has a sales subsidiary near Paris to market all Volvo group construction equipment products, with a sales office of its own for the region. Volvo reorganised its network several years ago in view of the decision to attack the volume excavator market. Some dealers have been dropped and others changed ownership and commercial policy. Nine large territories cover France entirely but one is a group, with two companies and four branches and seven of the others have multiple branches.

PRICING

Low inflation was the norm in the second half of the 1990s and excavator prices did not move in five years. From 2000 to 2003 prices moved up two per cent in three years. Some suppliers disputed this because they claim that certain suppliers offered low prices to buy themselves into the market and would analyse the position as unchanged on balance. After that suppliers had to absorb the cost increases associated with the installation of Stage II engines, as they are not seen as an improvement at all.

Table 17. France: Average Transaction Prices of Hydraulic Excavators, 2003-2006

(€'000)

Type	Service Weight (Tonnes)	2003	2006
Wheeled	11-13	78-86	86-95
	13-15	86-102	95-112
	15-18	102-117	112-129
	20	117-132	129-145
Crawler	16-19	81-90	90-100
	19-25	86-93	95-102
	25-35	109-117	120-130

Source: Off-Highway Research

Then came a period of steep price increases for raw materials, especially steel. Manufacturers could not escape the simple fact that a massive proportion of the modern excavator is steel. Prices have risen 10 per cent, with some manufacturers imposing two price increases during 2005.

Any supplier, however powerful, has to consider the real value of the trade-in machine, as well as the value that his customer believes it merits. On the other hand, one cannot assume that every deal implies a user going to a dealer with the keys to an old hydraulic excavator in his hand. Contractors do like to trade in the larger machines, but at the same time those owners are

the prime source of material for the used construction equipment specialists, who pester them continually to find stock. Just over half of large excavators are destined to go back to the seller of the original machine, and most of the rest goes to specialised used construction equipment dealers. These used construction equipment dealers have certain prejudices, in favour of the machines which they believe have international potential and give them a wider market.

Rental companies increasingly favour buy back contracts from the manufacturer, with a usage period of one to two years. The manufacturer then has to resell the machinery, and it is usually routed to a broker or a used construction equipment specialist. This implies that by 2004 the used construction equipment trade will be trying to dispose of several hundred midi excavators, to a group of buyers who have never used them in their lives.

One of the most frequent routes for selling is to place a small advertisement in the mass circulation "La Centrale du Matériel", which is available as a magazine and as a website. The law demands that the sold machine has to be in conformity to the CE machines directive, with any work being done at the seller's expense, and the seller has to pay for a certificate to be prepared to that effect.

On the other hand, there are changes of law which affect long lived machines; so that by the time they come to be resold they are no longer legal for sale in the European Union. Those machines are often sold to used construction equipment exporters, who are warned very strictly not to sell them in Europe.

Dealers in new construction equipment like to resell used machinery that is in good condition, preferably into their own territory. Notwithstanding the good sense of this, they do not always have a large enough local market, so they sell to brokers and used construction equipment specialists. Dealers are open to selling abroad, and exports tend to go at present to Portugal as the first destination, followed by Spain and then North Africa. Brands like Caterpillar and Komatsu can go anywhere but Liebherr machines, for example, either stay in France or go, unsurprisingly, to Germany.

POPULATION AND END-USERS

The size of the excavator population can rise and fall in the medium term, since in busy periods contractors earn more income from their machines and replace them more quickly. In hard times, such as at the beginning of the 1990s they keep their machines for much longer and the population grows, with the oldest machines not being scrapped or exported.

The applications and the degree to which excavators were used did not change in the 1990s. The population grew by only 14 per cent in ten years, to 25,000 units, with most of the growth being at the end of the period. In the following three years conditions changed and the population rose to 32,000 in a very short time; in the next three years the growth was only 3,000 units but 35,000 is still the largest number of machines ever.

The reason for the doubling of the number of machines in use since 1990 is that the public works industry has changed from being characterised by large enterprises possessing impressive fleets of machines to a pattern of the project directing company giving contracts for earthmoving to others. These are the biggest owners of hydraulic excavators today. Some of them are specialists in the moving of earth and rock (like Razel, owning 6,000 heavy earthmovers) but many are small entrepreneurs owning at most five machines and looking for work in their locality. It is they who have probably been most responsible for the increase in the number of machines active.

In the north of France some of them find work in the early part of the winter handling beets and potatoes, an important activity for the wheeled excavator sector. The customers are not farmers but rather the transport companies used by the sugar refineries or excavator owners used by the transport companies to fill the trucks on the field.

Other significant users of excavators in industrial applications include scrap metal and timber. The scrap metal trade is fond of the simple wheeled excavator but it does have other methods such as electric handling arms and overhead travelling cranes. Equally wheeled loaders and rough terrain lift trucks can handle timber. The industrial applications of excavators have proved in France to be an interesting niche but a very small one with no great hope of growth.

Rental companies and their role in the population are a source of much debate. There were very few traditional rental companies involved in standard hydraulic excavators in the past, with the exception of Locarest in Alsace and Lorraine in the east. In the Paris area CFE, a small private company, tried with some success in the 1990s to introduce the concept with a mixture of machines from 12.0 to 70.0 tonnes but with no more than a dozen machines divided between nine sizes. It had two small competitors in Lheureux and Sofrac, while Bergerat Monnoyeur, the Cat dealer, had a number of Caterpillar excavators. The problem was that the supply was quickly exhausted, so potential users felt that they could not count on rental. They bought machines, as they had done before.

Then rental increased in respect of other products and contractors asked themselves why they could not adopt it as a method of laying hands on equipment when they needed it. The late 1990s witnessed a slow increase of manufacturer to end-user rental deals and rental-with-option-to-purchase. Finance companies like Loxxia would provide the funds to enable a dealer to rent a new excavator if the customer wanted that type of arrangement. Rental companies with adequate funds, such as Loxam, began to create fleets of 12 and 20 tonne excavators but not on a scale to create a complete change from the old pattern of buying, servicing and reselling. The manufacturer fleets such as Slevmi (Caterpillar) and Relmat (Komatsu) began to grow. The most enthusiastic, however, is Liebherr, which has created a fleet of 300 hydraulic excavators of all sizes up to 85 tonnes.

There is an increasing tendency for the user to ask if he can rent rather than buy a machine. Obviously dealers will be wary of committing themselves heavily with this type of relationship with the customer, as it does have drawbacks. He does not truly know what will happen to a machine at the age of 18 months if he puts it into rental, whereas if he has sold it with the help of a leasing deal, he knows that the machine will be in the hands of the first buyer, hopefully earning him enough money to pay the monthly leasing fee. Rental is much more likely to be suitable for manufacturers' operations like Bergerat Monnoyeur and Liebherr.

Even so, neither of these has gone into hydraulic excavators because of losing business to competitors. Whilst companies such as Loxam and Locarest offer crawler excavators from 12 to 25 tonnes and the main types of wheeled excavator, they will always tend to compare the return on investment with other machines and the rule of rental is still that the smaller the machine, the faster it pays back. For the moment they seem happiest with machines of 20 to 25 tonnes' service weight and they are not a serious threat. For the manufacturers there has also been a calculation to do concerning loyalty since 2004. For leading companies the creation of a loyal following is desirable but it also means that a loyal customer expects good treatment when he needs to renew machines. Sales Directors do not find it all a good idea to use the allocated machines from an overcrowded production schedule to fill up the company's rental fleet while keeping waiting a man who has done business with the firm for 20 years or more.

Thus the growth of rental has been a slow affair in respect of hydraulic excavators in general. There are at most 3,000 machines over six tonnes in rental. Nevertheless if one compares the figures of 2005 with those of a few years ago, then much of the unit growth has come from sales to rental. The 1,100 machines of 2005 are concentrated in the smaller sizes and if one looks only at the categories where rental buys its machines, then by 2005 those sales were 25 to 30 per cent of the total.

Table 18. France: Sales of Hydraulic Excavators by Type of User, 2005

	Units	%
Construction		
– Civil Engineering	1,720	32
– Housebuilding, Factories, Offices	950	18
– Roads	850	16
– Landscaping and Water	550	10
Rental	1,100	21
Industry	80	2
Quarries	50	1
Total	**5,300**	**100**

Source: Off-Highway Research

FORECAST TO 2010

Table19. France: Forecast Sales of Hydraulic Excavators, 2006-2010

(Units)

	2006	2007	2008	2009	2010
Wheeled	1,900	1,600	1,400	1,400	1,400
Crawler	3,600	3,000	2,800	2,600	2,400
Total	**5,500**	**4,600**	**4,200**	**4,000**	**3,800**

Source: Off-Highway Research

In the short term one has to explain why, after a year in which the sales of crawler excavators broke all records, 2006 should see an increase in sales to 3,600 units and at the same time a modest growth in respect of wheeled excavators. 2005 did not generate optimism among professional earthmovers. Few large jobs were started and the economy was fairly stagnant. They did not earn money such as would precipitate a large expenditure on new plant during 2006 but work done this year may be more encouraging. The government has committed to spend the proceeds from selling its holdings in the motorway companies on transport. The sum discussed is €4 billion and its existence, together with a positive trend in local authority spending are the two factors leading to a forecast of real growth of at least three per cent in public works activity during 2006.

2006 is the year of the small civil engineering job. At the same time users know that machines are in very short supply and they have already placed 20 per cent more orders for crawler excavators and five to 10 per cent more for wheeled excavators in Spring 2006. The hydraulic excavator was particularly favoured, as it is known that overall new construction equipment sales went up by a little less than five per cent in the first half of 2006. Off-Highway Research is thus

predicting a good (if somewhat unjustified by events) increase in crawler excavator sales and a small rise in wheeled excavators. As in 2005, it may turn out that the increase comes mostly from midi excavators, causing backhoe loader sales to stagnate again.

For the ensuing four years the governing factor is that a large number of hydraulic excavators from a generally firm period of the market will come up for renewal. Apart from a weakness in 2003, all the years since 2000 have been good and so sales should stay firm, except for a possible tailing off in wheeled excavator sales at the end of the period.

Two more factors to consider are the multiplication of machines and the tendency of rental to turn over its stock faster than do the owner-drivers. It seems as if the earthmoving jobs are being done by more, smaller machines, if only because the work available has changed into many small projects. Secondly, a group of rental customers has formed itself, using either midi excavators of 8 to 12 tonnes or crawler excavators of 20 to 22 tonnes. They have given confidence to the rental companies who will continue their progress into the world of the hydraulic excavator.

MACHINES AVAILABLE

The table below shows only the machines available through permanently represented companies. The service weights are the maximum quoted in respect of each model type.

Table 20. France: Wheeled Excavators Available, 2006

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Case	WX95	99	Case	10.0	Germany
	WX125	117	Case	12.6	Germany
	WX165	141	Case	18.5	Germany
	WX185	158	Perkins	20.4	Germany
	WX210	173	Case	21.5	Germany
	WX240	173	Case	22.7	Germany
Caterpillar	M313C	115	Caterpillar	14.4	France
	M315C	129	Caterpillar	16.1	France
	M316C	138	Caterpillar	17.7	France
	M318C	151	Caterpillar	19.1	France
	M322C	164	Caterpillar	22.2	France
Doosan	Solar 140W-V	130	Doosan	13.1	Korea
	Solar 160W-V	130	Doosan	14.5	Belgium
	Solar 180W-V	152	Doosan	17.7	Belgium
	Solar 210W-V	156	Doosan	19.8	Korea

(continued)

Table 20. France: Wheeled Excavators Available, 2006 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Hitachi	ZX130W	117	Isuzu	13.4-15.3	Netherlands
	ZX160W	121	Isuzu	15.6-18.0	Netherlands
	ZX180W	121	Isuzu	19.2-21.5	Netherlands
	ZX210W	147	Isuzu	19.2-21.5	Netherlands
Hydrema	M1100C	101	Deutz	10.6	Germany
	M1100C Compact	101	Deutz	10.3	Germany
	M1400C	122	Deutz	14.1	Germany
	M1520C	122	Deutz	15.0	Germany
	M1700C	122	Deutz	17.0	Germany
Hyundai	Robex 140W-7	115	Cummins	14.0	Korea
	Robex 170W-7	116	Mitsubishi	17.5	Korea
	Robex 200W-7	166	Cummins	20.5	Korea
JCB	JS130W	85	Isuzu	13.0	UK
	JS145W	96	Isuzu	14.1	UK
	JS160W	96	Isuzu	16.8	UK
	JS175W	128	Isuzu	17.0	UK
	JS200W	128	Isuzu	20.5	UK
Komatsu	PW75R-2	68	Komatsu	7.2	Italy
	PW95R-2	83	Komatsu	8.8	Italy
	PW110R-1	95	Komatsu	10.0	Italy
	PW130-7	105	Komatsu	13.1	UK
	PW150ES-6	109	Komatsu	15.3	UK
	PW160-7	121	Komatsu	15.3	UK
	PW180-7	143	Komatsu	16.2	UK
	PW200-7	158	Komatsu	18.9	UK
	PW220-7	158	Komatsu	19.5	UK
Liebherr	A 309	86	Deutz	10.6	Germany
	A 311	91	Deutz	11.6	Germany
	A 312	100	Deutz	12.5	Germany
	A 314	109	Deutz	15.2	Germany
	A 316	117	Deutz	16.6	Germany
	A 900C	129	Liebherr	17.4	Germany
	A 904C	143	Liebherr	18.6	Germany
	A 914B	152	Liebherr	21.7	Germany
	A 924B	152	Liebherr	24.3	Germany
	A 934C	204	Liebherr	36.9	Germany
	A 944C	258	Liebherr	58.5	Germany
	A 954C	326	Liebherr	77.1	Germany
	A 974B	490	Liebherr	127.0	Germany
Mecalac	10MSX	77	Cummins	7.1	France
	12MSX	82	Cummins	8.8	France
	12MXT	102	Cummins	8.8	France
	14MBX	111	Cummins	12.8	France

(continued)

Table 20. France: Wheeled Excavators Available, 2006 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Mecalac (continued)	714 MW	117	Deutz	13.5	France
	714 MW Rail Route	117	Deutz	16.0	France
New Holland	MH3.6	117	Deutz	12.6	Germany
	MH4.6	118	Deutz	16.0	Germany
	MH5.6	160	Deutz	20.4	Germany
	MH6.6	173	Deutz	21.5	Germany
	MH8.6	173	Deutz	22.7	Germany
	MHPlus C	160	Deutz	18.1	Germany
	MH City	117	Deutz	15.3	Germany
	MH Plus	143	Deutz	18.5	Germany
Takeuchi	TB175W	66	Yanmar	8.1	Japan
TEREX Atlas	1305M	91	Deutz	14.2	Germany
	1404MK	93	Deutz	16.0	Germany
	1505M	109	Deutz	15.4	Germany
	1604MK	126	Deutz	19.0	Germany
	1605M	143	Deutz	16.2	Germany
	1705M	143	Deutz	17.2	Germany
	1905M	156	Deutz	20.0	Germany
	2205M	173	Deutz	24.0	Germany
TEREX Schaeff	HML 32	72	Deutz	9.0	Germany
	HML 42	94	Deutz	10.0	Germany
Volvo	EW140B	120	Volvo	15.7	Germany
	EW 160B	140	Volvo	17.5	Germany
	EW 180B	153	Volvo	19.8	Germany

Source: Company Information

Table 21. France: Crawler Excavators Available, 2006

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Bobcat	442	72	Deutz	7.0	Germany
Case	CX75SR	53	Isuzu	8.0	Japan
	CX80	54	Isuzu	8.3	Japan
	CX130	94	Isuzu	12.2	Japan
	CX160	106	Isuzu	16.7	Japan
	CX180	106	Isuzu	17.5	Japan
	CX210	141	Isuzu	20.5	Japan
	CX225SR	138	Isuzu	23.0	Japan
	CX230	141	Isuzu	22.4	Japan
	CX240	167	Isuzu	23.5	Japan
	CX290	188	Isuzu	28.4	Japan

(continued)

Table 21. France: Crawler Excavators Available, 2006 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Case (continued)	CX330	248	Isuzu	34.0	Japan
	CX350	271	Isuzu	39.0	Japan
	CX460	335	Isuzu	47.0	Japan
	CX700	444	Isuzu	69.0	Japan
	CX800	444	Isuzu	78.6	Japan
Caterpillar	307C	56	Mitsubishi	7.2	France
	308C CR	56	Mitsubishi	8.0	France
	311C Utility	80	Perkins	12.0	France
	312C L	96	Perkins	13.7	France
	314C LCR	90	Perkins	14.8	France
	315C L	107	Perkins	17.0	France
	318C L	127	Caterpillar	20.9	France
	319C LN	128	Caterpillar	20.6	France
	320C L	138	Caterpillar	22.0-23.9	France
	323D L	140	Caterpillar	23.0	France
	324D L	169	Caterpillar	25.3-27.1	Belgium
	325D L	190	Caterpillar	28.4-30.4	Belgium
	330D L	270	Caterpillar	35.3-37.5	Belgium
	345C L	325	Caterpillar	48.0	Belgium
	365C L	411	Caterpillar	70.3	Belgium
	385C L	530	Caterpillar	88.3	Belgium
Doosan	Solar 140LC-V	96	Doosan	13.9	Korea
	Solar 175LC-V	120	Doosan	17.4	Belgium
	Solar 220LC-V	147	Doosan	21.5	Belgium
	Solar 225LC-V	150	Doosan	21.5	Belgium
	Solar 255LC-V	165	Doosan	24.6	Belgium
	DX300LC	200	Doosan	29.3	Belgium
	Solar 300LC-V	200	Doosan	29.6	Belgium
	Solar 340LC-V	250	Doosan	33.9	Korea
	DX340LC	250	Doosan	34.3	Korea
	Solar 420LC-V	285	Doosan	41.2	Korea
	Solar 470LC-V	316	Doosan	46.9	Korea
	DX420LC	297	Doosan	40.9	Korea
	DX480LC	333	Doosan	47.5	Korea
	Solar 500LC-V	316	Doosan	49.9	Korea
Hitachi	ZX70	52	Isuzu	6.4	Japan
	ZX80SB	52	Isuzu	7.4	Japan
	ZX110	85	Isuzu	10.4	Netherlands
	ZX130	88	Isuzu	12.4-14.1	Netherlands
	ZX135US	88	Isuzu	13.2	Netherlands
	ZX160LC	110	Isuzu	15.7	Netherlands
	ZX180LC	119	Isuzu	17.9	Netherlands
	ZX210LC	147	Isuzu	19.6-21.1	Netherlands
	ZX225US/USR	147	Isuzu	22.0-23.0	Netherlands
	ZX250LC-3	168	Isuzu	23.8-26.3	Netherlands
	ZX280LC-3	178	Isuzu	27.9-29.5	Netherlands

(continued)

Table 21. France: Crawler Excavators Available, 2006 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Hitachi (continued)	ZX350LC-3	247	Isuzu	32.8-34.4	Netherlands
	ZX460LCH	315	Isuzu	45.8-47.0	Netherlands
	ZX500LC	315	Isuzu	50.0	Japan
	ZX600/LC	395	Isuzu	57.0	Japan
	ZX650	395	Isuzu	57.5	Japan
	ZX800	453	Isuzu	73.9	Japan
	ZX850	453	Isuzu	75.9	Japan
	EX 1200-5	650	Hitachi	108.0	Japan
	EX 1900BE	965	Hitachi	181.0	Japan
	EX 2500-5	1,250	Cummins	239.0	Japan
	EX 3600-5	1,900	Hitachi	348.0	Japan
	EX 5500	2,638	Cummins	515.0	Japan
	EX 8000	3,752	Hitachi	780.0	Japan
Hyundai	Robex 110-7	85	Mitsubishi	11.2	Korea
	Robex 140LC-7	115	Cummins	14.0	Korea
	Robex 160LC-7	126	Mitsubishi	17.4	Korea
	Robex 180LC-7	126	Mitsubishi	18.2	Korea
	Robex 210LC-7	150	Cummins	21.7	Korea
	Robex 210LC-7	150	Cummins	24.4	Korea
	Robex 250LC-7	178	Cummins	25.2	Korea
	Robex 290LC-7	213	Cummins	29.3	Korea
	Robex 320LC-7	259	Cummins	32.2	Korea
	Robex 360LC-7	280	Cummins	36.5	Korea
	Robex 450LC-7	353	Cummins	44.9	Korea
	Robex 500LC-7	325	Cummins	48.8	Korea
JCB	JZ70	58	Isuzu	7.5	UK
	JS130	85	Isuzu	13.6	UK
	JS160L	96	Isuzu	16.5	UK
	JS180L	96	Isuzu	18.5	UK
	JS200L	128	Isuzu	20.7	UK
	JS210L	138	Isuzu	21.7	UK
	JS220LR	138	Isuzu	22.1	UK
	JS220	138	Isuzu	23.1	UK
	JS240S/NL/L	154	Isuzu	24.6	UK
	JS260XD	154	Isuzu	25.8	UK
	JS260S/NL/L	154	Isuzu	27.8	UK
	JS330L/NL	239	Isuzu	32.6	UK
	JS330XD	248	Isuzu	32.9	UK
	JS460	305	Isuzu	46.8	UK
Kato	HD307	57	Isuzu	6.8	Japan
	HD512	88	Mitsubishi	11.9	Japan
Komatsu	PC75R-2	68	Perkins	7.6	Italy
	PC78MR-6	54	Komatsu	8.3	Italy
	PC95R-2	83	Komatsu	9.1	Italy

(continued)

Table 21. France: Crawler Excavators Available, 2006 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Komatsu (continued)	PC110R-2	95	Komatsu	10.8	Italy
	PC130-7	88	Komatsu	13.0	UK
	PC160LC-7	111	Komatsu	16.4	UK
	PC180LC-7	111	Komatsu	17.7	UK
	PC210LC-7	145	Komatsu	23.3	UK
	PC230NHD-8	148	Komatsu	22.8	UK
	PC240LC-8	168	Komatsu	24.6	UK
	PC290LC-8	188	Komatsu	29.4	UK
	PC340LC-7	242	Komatsu	33.4	UK
	PC450LC-7	345	Cummins	44.0	UK
	PC600-8	425	Cummins	57.6	UK
	PC800-8	487	Komatsu	78.4	UK
Liebherr	R 317	117	Deutz	19.1	Germany
	R 900 C	120	Liebherr	19.4	Germany
	R 904 C	125	Liebherr	21.7	France
	R 914 B	152	Liebherr	24.6	France
	R 924 Compact	164	Liebherr	23.9	France
	R 924 B	173	Liebherr	26.0	France
	R 934 C	203	Liebherr	33.1	France
	R 944 C	258	Liebherr	41.1	France
	R 954 C	326	Liebherr	56.9	France
	R 964 C	367	Liebherr	67.6	France
	R 974 C	490	Cummins	86.5	France
	R 984 C	685	Cummins	118.1	France
	R 994 B	1,500	Cummins	302.0	Brazil
	R 995	2,140	MTU	432.0	France
	R 996	3,000	Cummins	652.8	France
Mecalac	712 MC	102	Deutz	11.0	France
	714 MC	117	Deutz	13.5	France
Neuson	75Z3	70	Yanmar	7.3	Austria
	8003	70	Yanmar	7.6	Austria
	12002	113	John Deere	11.5	Austria
New Holland	E70SR	55	Isuzu	8.1	Japan
	E80MSR	55	Isuzu	8.3	Japan
	E115SR	81	Isuzu	12.8	Italy
	E135SRL/LC	85	Isuzu	14.7-16.8	Italy
	E145	101	CNH	15.2	Italy
	E175	112	CNH	18.7	Italy
	E195	130	CNH	20.0	Italy
	E200SR	125	CNH	21.0	Italy
	E215/LC	160	CNH	23.3-24.2	Italy
	E245	160	CNH	24.4	Italy
	E235SR	158	CNH	24.9	Italy
	E265/LC	186	CNH	28.3-28.8	Italy

(continued)

Table 21. France: Crawler Excavators Available, 2006 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
New Holland (continued)	E305	201	CNH	31.6	Italy
	E385	253	Isuzu	38.5	Italy
	E485	340	Isuzu	50.0	Italy
	E805	462	Isuzu	82.0	Japan
Takeuchi	TB175	59	Yanmar	7.3	Japan
	TB80FR	56	Yanmar	7.9	Japan
	TB1140	83	Isuzu	14.2	Japan
TEREX Atlas	1305 LC	102	Deutz	17.4	Germany
	1605 LC	150	Deutz	19.7	Germany
	TC 210	141	Cummins	22.2	Germany
	TC 225	158	Cummins	23.7	Germany
	TC 240	170	Cummins	25.1	Germany
	TC 260	170	Cummins	26.6	Germany
TEREX Schaeff	HR 32	72	Deutz	8.0	Germany
	HR 42	94	Deutz	13.0	Germany
Volvo	EC140B LC	94	Volvo	15.2	Germany
	EC140B LCM	94	Volvo	15.6	Germany
	EC160B LC	110	Volvo	18.8	Korea
	EC160B NLC	110	Volvo	18.7	Korea
	EC180B LC	110	Volvo	19.0	Korea
	EC210B LC	145	Volvo	22.3	Germany
	EC210B NC	145	Volvo	21.8	Germany
	EC210B NLC	145	Volvo	22.2	Germany
	EC240B LC/NLC	170	Volvo	26.1	Korea
	EC290B LC	195	Volvo	30.0	Korea
	EC290B NLC	192	Volvo	29.7	Korea
	EC360B LC	250	Volvo	39.2	Korea
	EC360B NLC	247	Volvo	38.9	Korea
	EC460B LC	320	Volvo	46.9	Korea
	EC700B LC	430	Volvo	70.6	Korea
Yanmar	ViO 75V	56	Yanmar	7.7	Japan
	B7Σ	56	Yanmar	8.0	Japan
	SV100	76	Yanmar	9.4	Japan

Source: Company Information

DOMESTIC MANUFACTURERS

Caterpillar

Caterpillar France SA
40 avenue Leon Blum
BP 55
F-38041 Grenoble Cedex 9

Tel: 04 76 23 70 60
Fax: 04 76 23 72 02
www.cat.com

Liebherr

Liebherr-France SA
2 rue de l'Industrie
68005 Colmar

Tel: 03 89 22 31 21
Fax: 03 89 23 30 14
www.lfr.liebherr.com

Mecalac

Mecalac SA
2 avenue de Pré de Challes
PAE des Glaisins
BP230
F-74942 Annecy-le-Vieux

Tel: 04 50 63 4 01 63
Fax: 04 50 64 07 70
www.mecalac.com

IMPORTERS

Importer's Location	Supplier's Location
Bobcat	
All dealers import directly from the import centre in Belgium	Bobcat International 112 North University Drive Fargo North Dakota 58102 USA Tel: +1 701 293 3220 Fax: +1 701 293 870 www.bobcat.com
Case	
CNH France SA Centre d'Affaires EGB 5 avenue Georges Bataille BP 41010 60671 Le Plessis-Belleville Tel: 03 44 74 21 00 Fax: 03 44 74 23 40 www.casece.com	CNH Europe SA Centre d'Affaires EGB 5 avenue Georges Bataille BP 41010 60671 Le Plessis-Belleville Tel: 03 44 74 21 00 Fax: 03 44 74 23 40 www.casece.com

Importer's Location	Supplier's Location
Caterpillar	
Bergerat Monnoyeur 117 rue Charles Michels 93208 St Denis Tel: 01 49 22 60 61 Fax: 01 42 43 51 96 www.b-m.cat.com	Caterpillar Overseas SA PO Box 456 76 Route de Frontenex 1208 Geneva Switzerland Tel: +41 (0)22 849-4444 Fax: +41 (0)22 849-4984 www.cat.com
Doosan	
Doosan Infracore Europe SA France Office 2/4 rue Pavlov ZI des Bruyeres 78190 Trappes Tel: 01 30 16 21 41 Fax: 01 30 16 21 44 www.edsa.be	Doosan Infracore Europe SA 1A rue Achille Degrace, B-7080 Frameries Belgium Tel: +32 (0)65673373 Fax: +32 (0)65 677338 www.edsa.be
Hitachi	
Hitachi Construction Machinery (Europe) NV France 13 rue Camille Desmoulins 92441 Issy-les-Moulineaux Cedex Tel: 01 58 04 25 72 Fax: 01 58 04 23 00 www.hcme.com	Hitachi Construction Machinery (Europe) NV Siciliëweg 5 Havennummer 5112 1045 AT Amsterdam Netherlands Tel: +31 (0)20 44 76 700 Fax: +31 (0)20 33 44 045 www.hcme.com
Hydrema	
Hydrema France SARL Les Marches de l'Oise 100 rue Louis Blanc 60765 Montataire Tel: 03 44 28 27 00 Fax: 03 44 28 22 66 www.hydrema.com	Hydrema Baumaschinen GmbH Kromsdorfer Strasse 18 D-99427 Weimar Germany Tel: +49 (0) 3643-46 14 00 Fax: +49 (0) 3643-46 14 02 www.hydrema.com

Importer's Location	Supplier's Location
Hyundai	
All dealers buy directly from Belgium	HHI Europe NV Vossendaal 11 2440 Geel Belgium Tel: +32 (0)14 593001 Fax: +32 (0)14 594302 www.hyundai.be
JCB	
JCB SA 3 rue du Vignolle Zone Industrielle BP 671 95206 Sarcelles Tel: 01 34 29 20 20 Fax: 01 39 90 93 66 www.jcbfrance.com	JCB Sales Ltd. Rocester Staffordshire ST14 5JP UK Tel: +44 1889 590312 Fax: +44 1889 590588 www.jcb.co.uk
Kato	
Imer France SA BP 34 ZI de l'Espère 38450 Vif Tel: 04 76 72 52 69 Fax: 04 76 72 46 97 www.imer.fr	Kato Works Co. Ltd 9-37 Higasho-ohi 1-chome Shinagawa-ku Tokyo 140 Japan Tel: +81 (0)3 3458 1111 Fax: +81 (0)3 3458 1151 www.kato-works.co.jp
Komatsu	
Komatsu France SA 21-29 rue du Clos Reine 78410 Aubergenville Tel: 01 30 90 51 00 Fax: 01 30 90 35 40 www.equipmentcentral.com/europe	Komatsu Europe NV Mechelsesteenweg 586 B1800 Vilvoorde Belgium Tel: +32 2 255 2411 Fax: +32 2 252 198 www.equipmentcentral.com/europe

Importer's Location	Supplier's Location
Kubota	
Kubota Europe SA 19-25 rue Jules Vercruysse BP 88 95100 Argenteuil Tel: 01 34 26 34 34 Fax: 01 34 26 34 99 www.kubota.fr	Kubota Baumaschinen GmbH D-66482 Zweibrücken Steinhauser Str. 100 Germany Tel: +49 6332 470 Fax: +49 6332 44059 www.kubota-baumaschinen.de
Liebherr	
Liebherr-France SA 2 rue de l'Industrie 68005 Colmar Tel: 03 89 22 31 21 Fax: 03 89 23 30 14 www.lfr.liebherr.com	Liebherr-Hydraulikbagger GmbH D-88457 Kirchdorf a.d. Iller Germany Tel: +49 (0)7354-80364 Fax: +49 (0)7354-80535 www.lhb.liebherr.com
Neuson	
Regional dealers import directly from Austria	Neuson Baumaschinen GmbH Haidfeldstrasse 37 A-4060 Linz-Leonding Austria Tel: +43 732 90 59-0 Fax: +43 732 90 59-200 www.neuson.com
New Holland	
CNH France SA 16-18 rue des Rochettes 91150 Morigny-Champigny Tel: 01 60 80 70 44 Fax: 01 60 80 72 61 www.construction.newholland.com	CNH Italia SpA Strada Settimo 323 10099 San Mauro Torinese Italy Tel: +39 011 26121 Fax: +39 011 2735800 www.construction.newholland.com

Importer's Location	Supplier's Location
Takeuchi	
Takeuchi France SAS BP 9068 95072 Cergy-Pontoise Tel: 01 34 64 30 30 Fax: 01 34 64 08 95 www.takeuchi-mfg.co.jp	Takeuchi Mfg. Co. Ltd. 205 Uwadaira Sakaki-Machi Hanishina-Gun Nagano 389-0605 Japan Tel: + 81 (0) 268 81 1112 Fax: + 81 (0) 268 81 1121 www.takeuchi-mfg.co.jp
TEREX Atlas	
14 regional dealers buy directly from Germany	TEREX GmbH PO Box 207 324 Stedinger Str D-27751 Delmenhorst Germany Tel: +49 (0)4221-4910 Fax: +49 (0)4221-491213 www.atlas-terex.de
TEREX Schaeff	
Terex Construction France 39 rue des Peupliers Batiment K 92572 Nanterre Tel. : 01 56 83 83 50 Fax : 01 56 83 83 51 www.terexcompactequipment.com	Schaeff-Terex GmbH & Co. PO Box 61 D-74595 Langenburg Germany Tel: +49 (0)7905 580 Fax: +49 (0)7905 58114 www.schaeff-terex.de
Volvo	
Volvo Construction Equipment Europe SA 37 av. G. Politzer F-78190 Trappes-Elancourt Tel: 01 30 69 28 28 Fax: 01 34 82 96 92 www.volvoce.com	Volvo Construction Equipment Group Chaussée de la Hulpe 130 B-1000 Brussels Belgium Tel: +32 2 674 7611 Fax: +32 2 675 1570 www.volvoce.com

Importer's Location

Yanmar

Ammann France SA
ZI Les Petites Haies
31 rue de Valenton
94046 Créteil

Tel: 01 45 17 08 88
Fax: 01 48 98 51 45
www.ammann-france.com

Supplier's Location

Yanmar Diesel Engine Co. Ltd
1-32, Chayamachi
Kita-ku
Osaka 530-8311
Japan

Tel: +81 (0) 6 6376 6299
Fax: +81 (0) 6 6372 2455
www.yanmar.co.jp