

High Reach Demolition Business in Germany. Market trends and tendencies from a distributors/manufacturers perspective

By
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Self introduction: Burkhard Janssen



- Dipl.-Ing. Degree in Mechanical Engineering
- Degree in Sports and Geography
- In Construction / Demolition business since 20 years
- Product Marketing, Product Development, Area Manager
 - Komatsu Volvo Kiesel/Hitachi (since 7 years)
- Member of DA (German Demolition Association)
- Member of the DA committee for demolition technology and machine technology. Working on:
 - VDI 6210 Guideline „Demolition of civil constructions and technical facilities“
 - „High Reach Demolition Rig – Guidance notes -



- **Market situation in Germany**
 - Market size High Reach Demolition
 - Structure of German Demolition Companies,
 - Preferred demolition tools
- **Environment**
 - Typical jobsites,
 - Transport conditions
 - Legal limitations
- **How has Kiesel met the demands of its customers over the last 5-10 years**
 - Excavator as a single-purpose demolition machine or as a multi-purpose tool carrier (multi carrier) for various demolition applications?
- **Customer expectations:**
- **Outlook:**
 - Trends regarding versatility, high reach dimensions, tool weights
 - Environmental requirements (noise, dust, emissions)



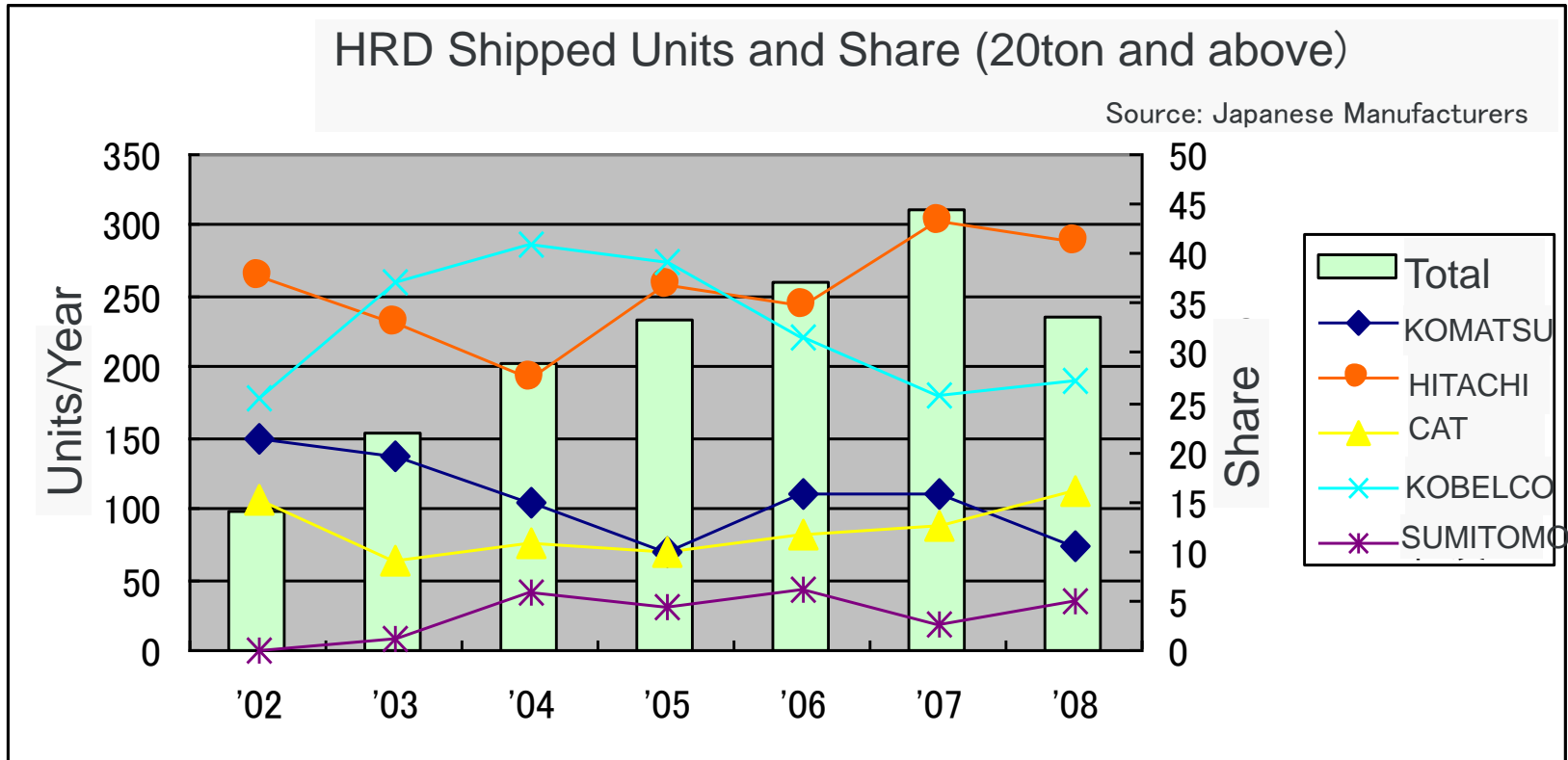
Definition: High Reach Demolition (HRD)

Most of these machines are High Reach Demolition machines.

But: There is no clear definition in place.

Usually, high reach demolition starts at approx. 20 m working height (pin height)





Beginning of 1990 HRD technology was introduced from Japan to Europe and to Germany.

Japan is still dominating the World Market regarding production of HRD machinery

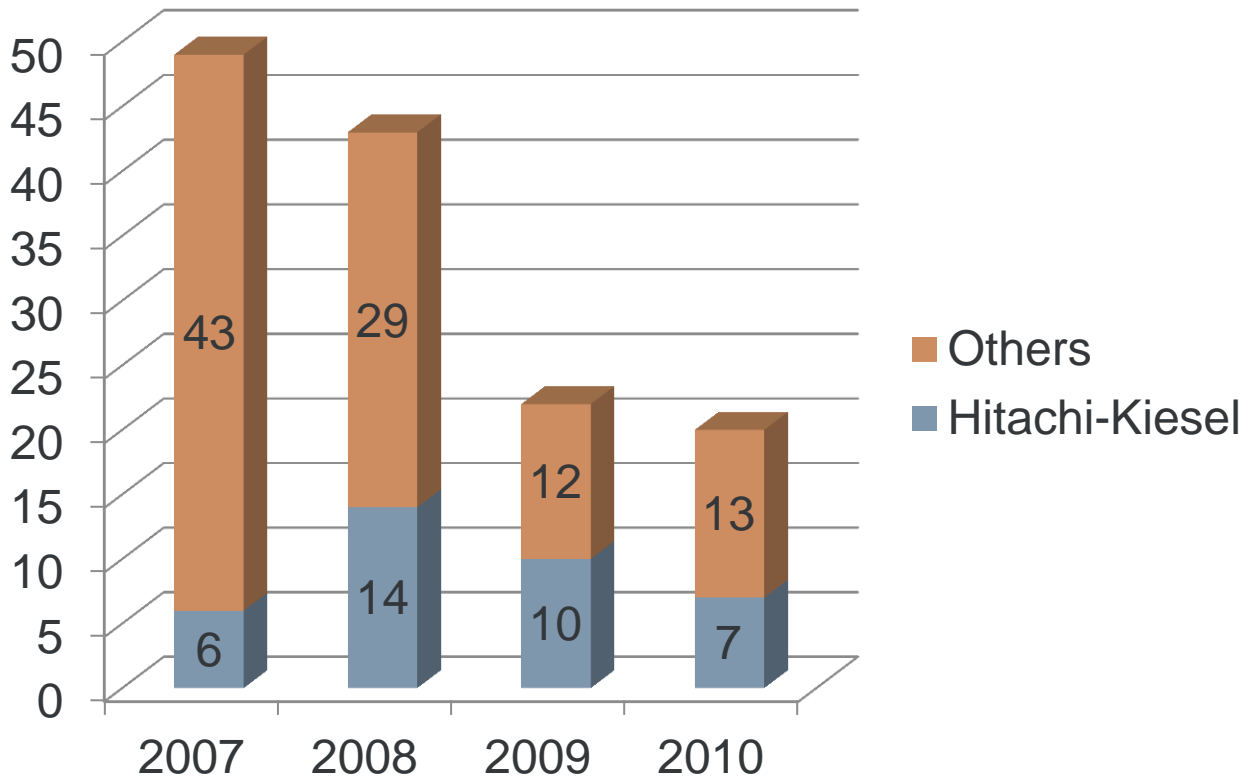
HITACHI produces more than 40% of the whole Japanese HRD production

Accumulated Production : 1,400 units (As of Feb. 2010)

50% of Japanese Hitachi HRD production goes to Europe and US



Shipments of HRD Machines (> 20 m) to the German Market



Reporting companies:

CNH
Doosan
Hitachi
Komatsu
Liebherr
Volvo
CAT/Zeppelin

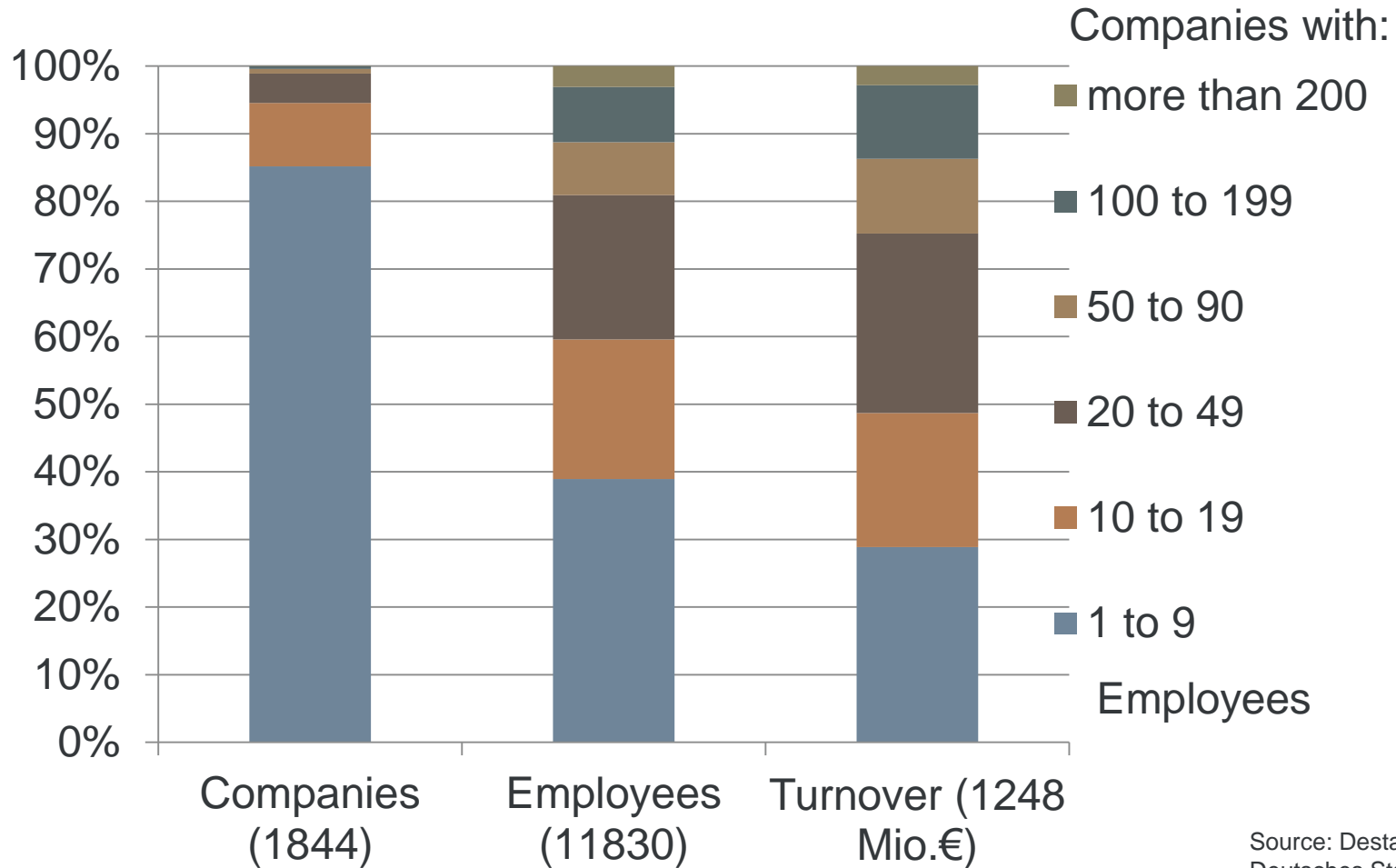
Class:

HRD machines of more than
15 m working height

Source: VDMA Reports

- Regular annual sales into German High Reach Demolition is 30 to 40 units
- 2009 and 2010 was impacted by the economical crisis, but Kiesel increased it's market share to 50 %
- From 2011 these VDMA reports are no longer available

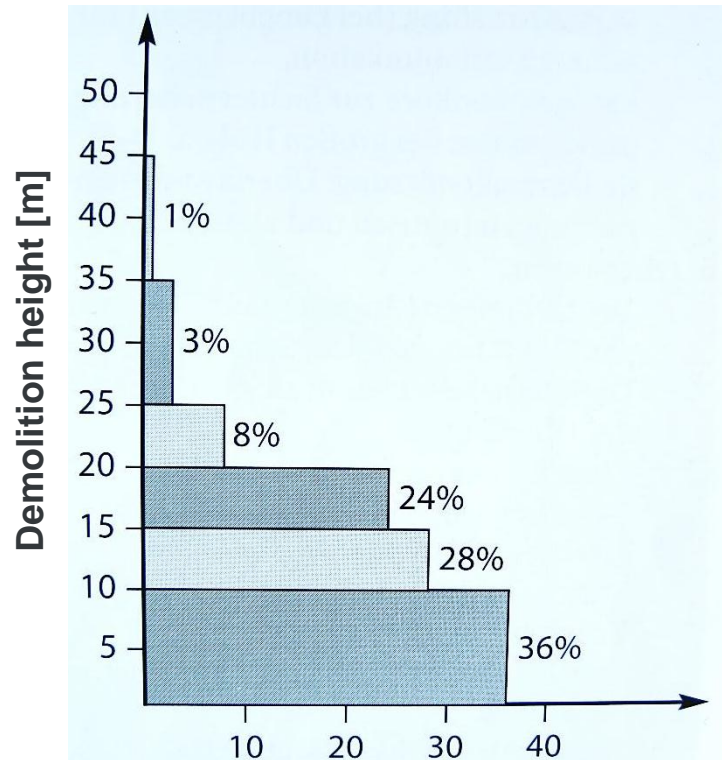




Source: Destatis
Deutsches Statistisches
Bundesamt 2012

94 % of the 1844 demolition companies have 1 ~ 19 employees
81 % of the 11830 employees work in companies of 1 ~ 49 employees size
Most demolition companies are medium-sized and small enterprises



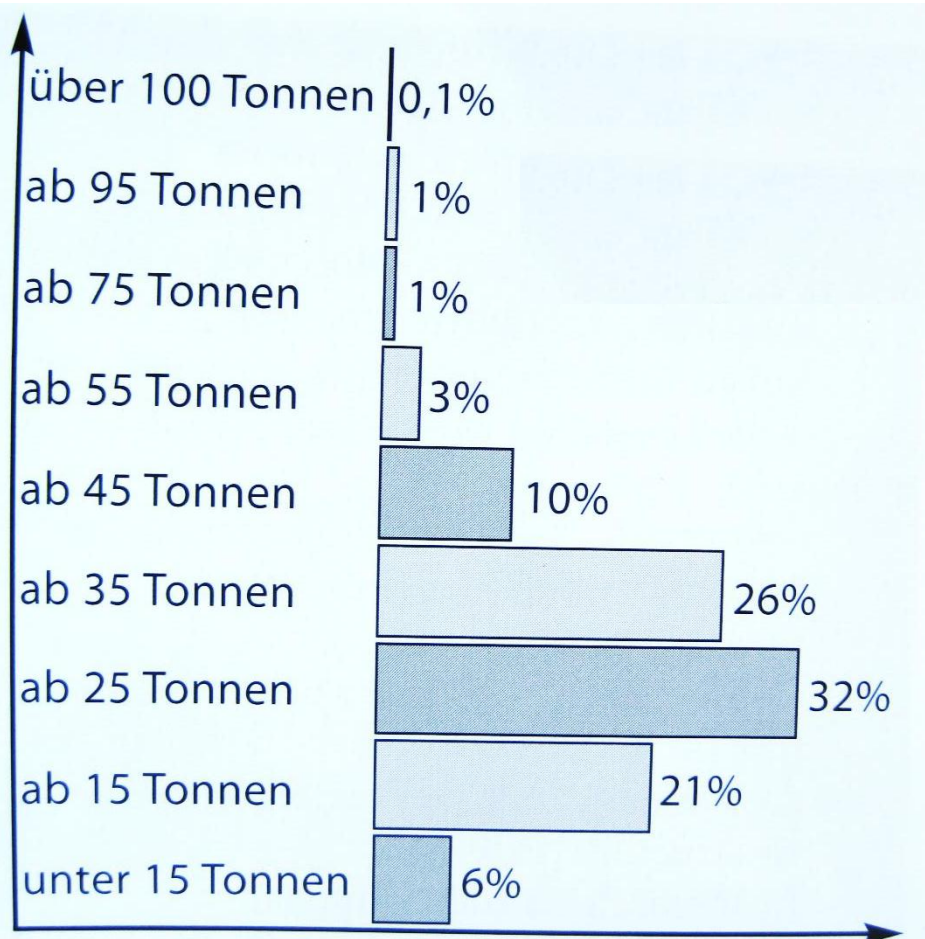


Percentage of whole demolition material volume

Source: Lippok/Korth: Abbrucharbeiten, page 141

88% of the demolition material volume is produced from building heights of up to 20 m





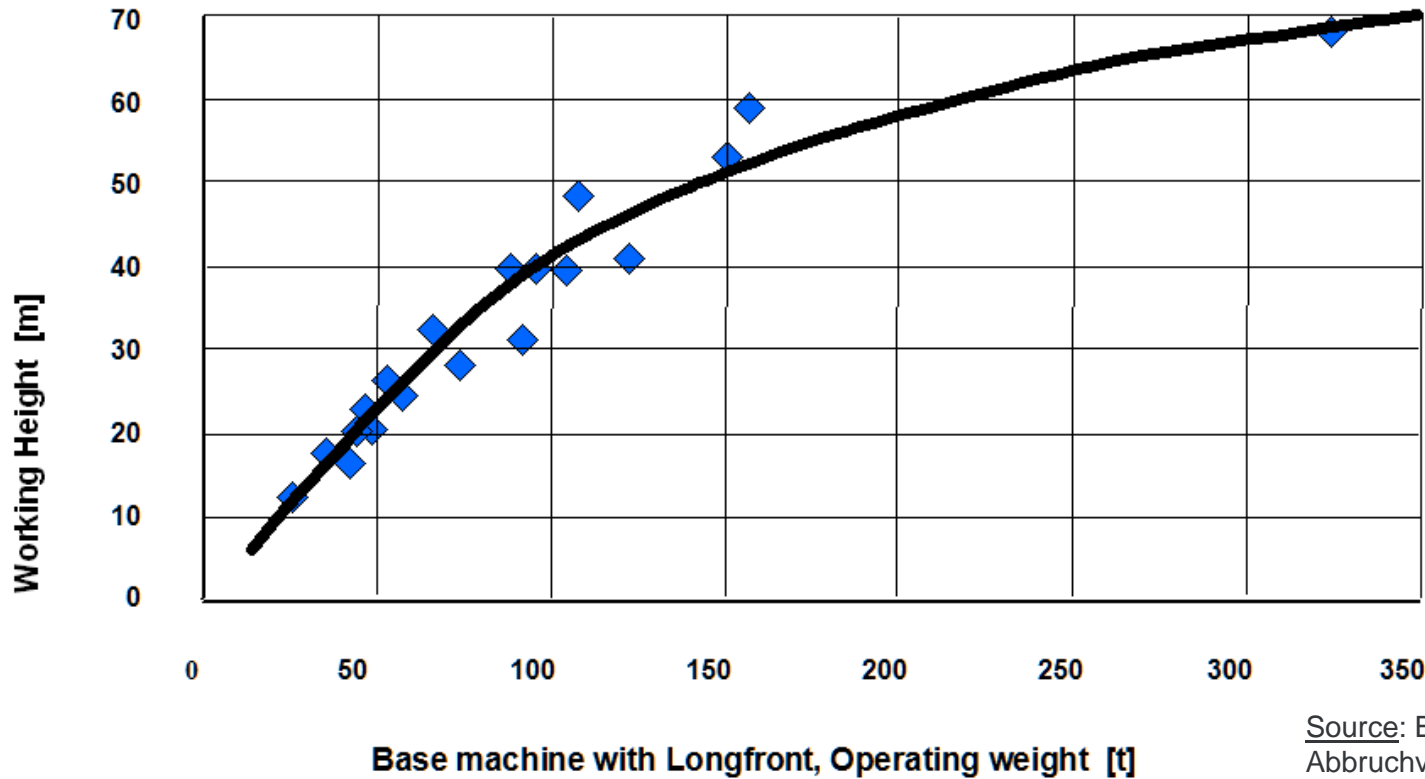
79% of the demolition excavators are in the 15 ~ 45 t machine weight class

Note: This numbers include all kind of excavators working in Demolition Applications (including HRD machines!)

Excavator classes used in Demolition Applications [%]

Source: Lippok/Korth: Abbrucharbeiten, page 141





Source: Bauhaus Universität Weimar, Abbruchverfahren

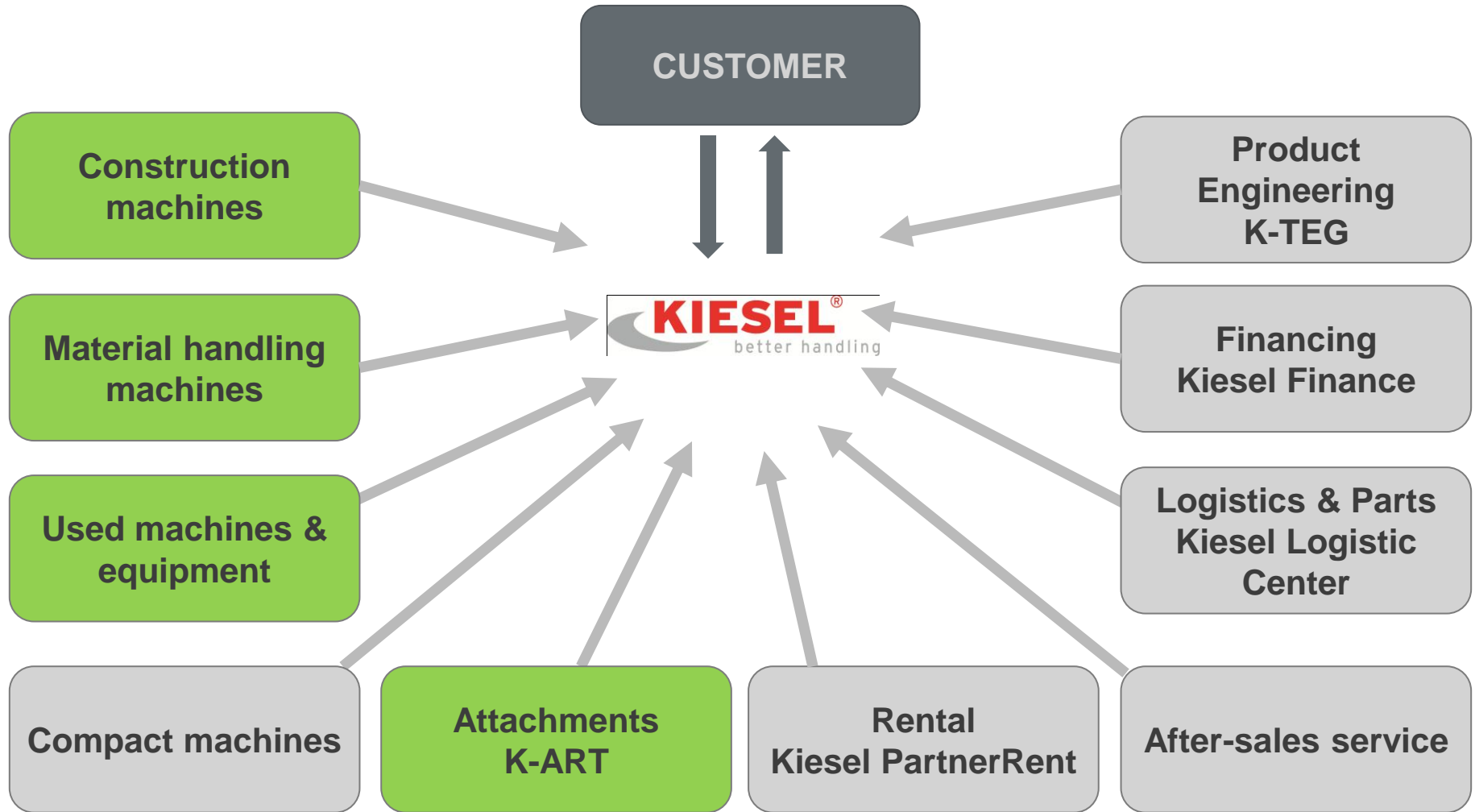
- The usable size of HRD machines ends at 150 ton and 50/60 m working height
- Most popular HRD machine sizes in Germany are from 30 to 70 ton weight
- And their working heights are 16 to 30 metres.
- Working tools weigh 2200 kg to 3000 kg, including quick-coupler



- **Approx. 730 employees**
- **Headquarters in Southern Germany**
- **Used machine centers**
- **Technic center & training center in Stockstadt/Rhein**
- **Application center in Geisingen**
- **Kiesel logistic center in Stockstadt/Rhein**

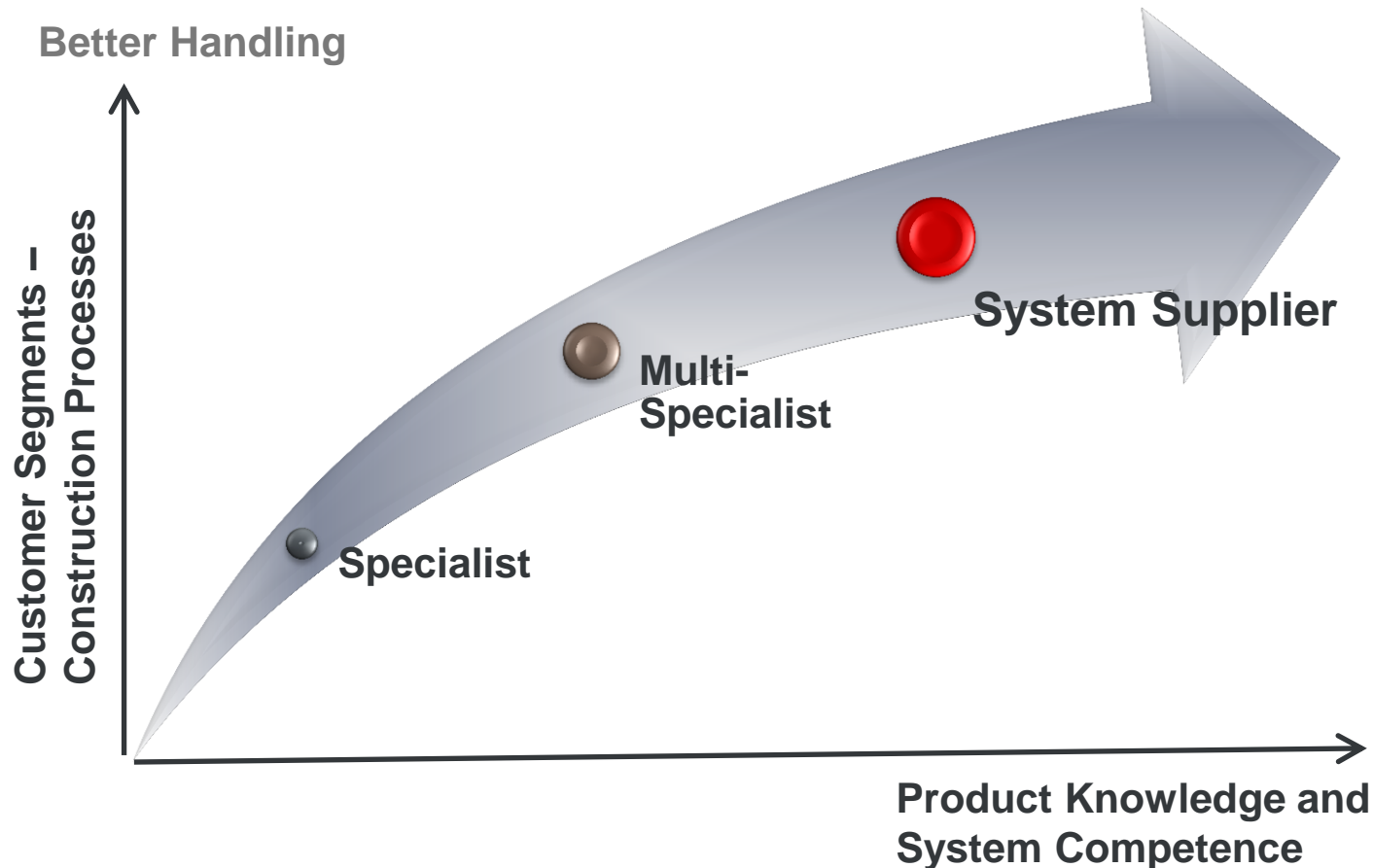
- **34 branches in 6 areas**
- **5 cooperation partner construction machinery**
- **25 compactline partner construction machinery**
- **2 cooperation partner material handling machines**



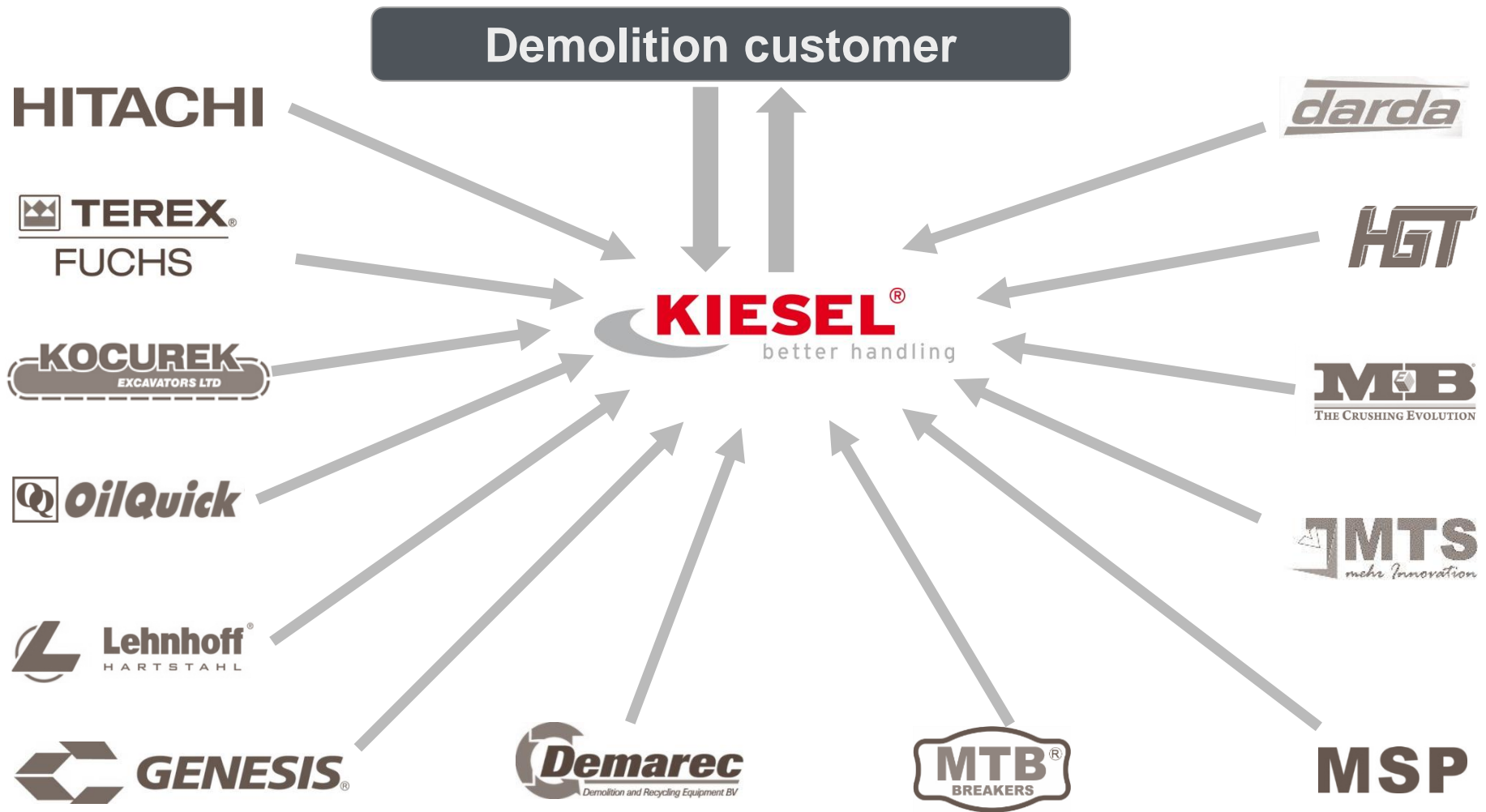


How has Kiesel met the demands of its customers over the last 5-10 years?

- By **listening, talking** and **quick responding** to customer needs
- By developing the company from a pure segment specialist to a **System Supplier**
- By developing products which are usefull, but not yet available in the market



How has Kiesel met the demands of its customers over the last 5-10 years?



K-TEG's main tasks:

- System solutions for all brands and main industry segments
- Investigate for technical innovations
- Target: Reduce customer's cost of ownership

Examples:

- Kiesel Quick Connect for excavator booms
- Kiesel Tritec - speed & power for excavators
- Kiesel Quadro - speed & power for shears
- K-TEG Telematik



Special solution: Kiesel quick connect - full-hydraulic quick coupling system

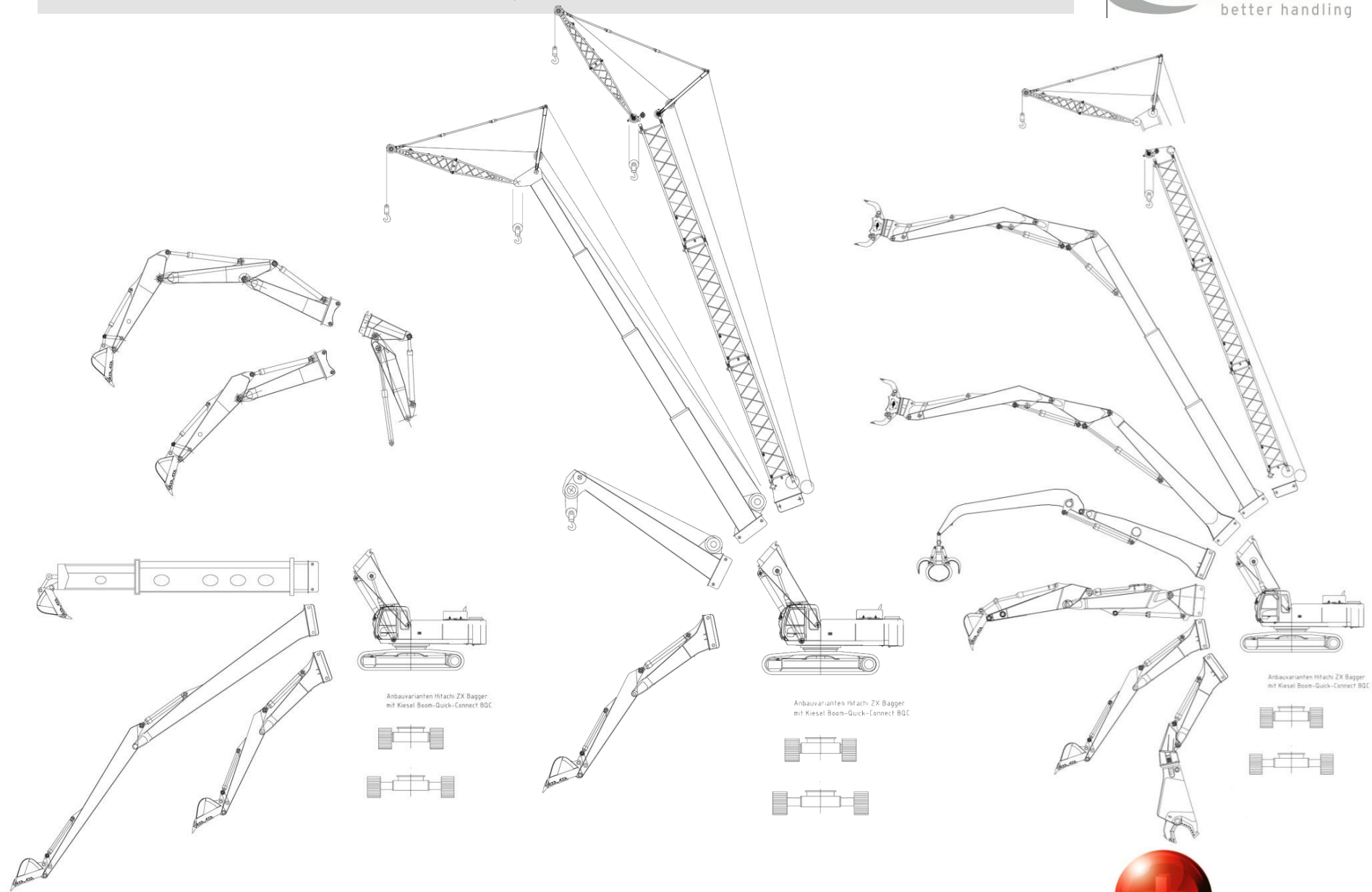


K-TEG: ZX870 XXL-3 High Reach Demolition

KIESEL[®]
better handling



K-TEG – Kiesel TriTec and QuickConnect

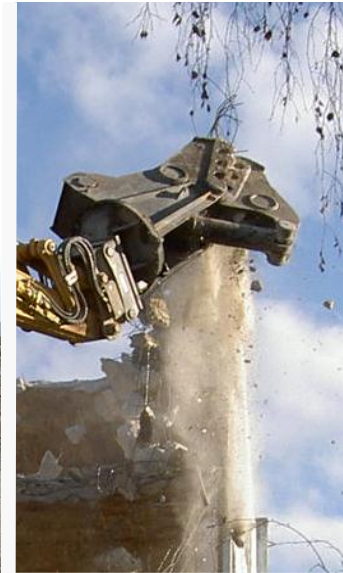


Best investment, short payback time, long lifetime:

- Quick coupler will survive up to 2~3 base machines during it's lifetime
- 10 seconds for a tool change (quick and safe)



Quick Coupler for demolition tools



Demolition machines: Reinforced standard machines

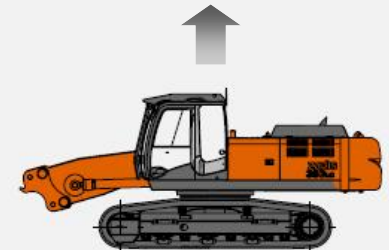
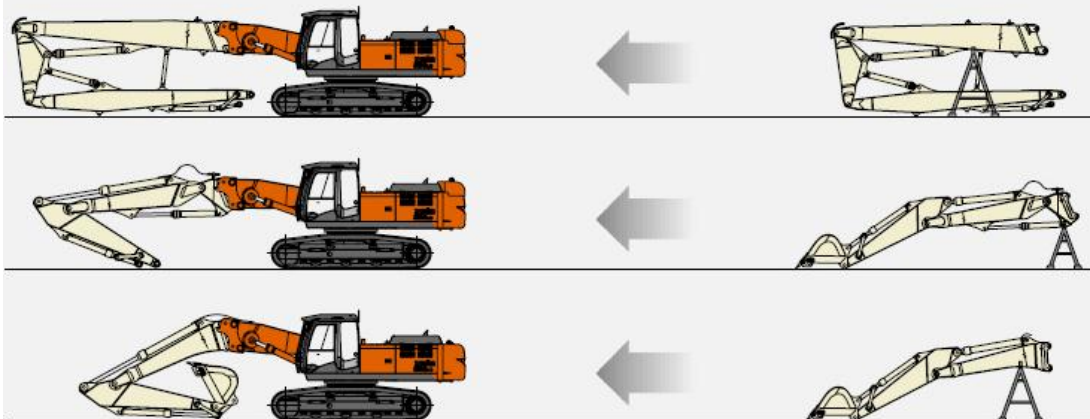


Why boom connect systems?

- Different front equipments (HRD / TAB / MONO) give flexibility
- Easier transport (height and weight may require road permits)
- Quick assembly at the job site
- One front equipment can be used for more than one base machine



System 1: Mechanical or Hydraulic pin remove



System 2: Fully hydraulic QuickConnect System

Practical experience

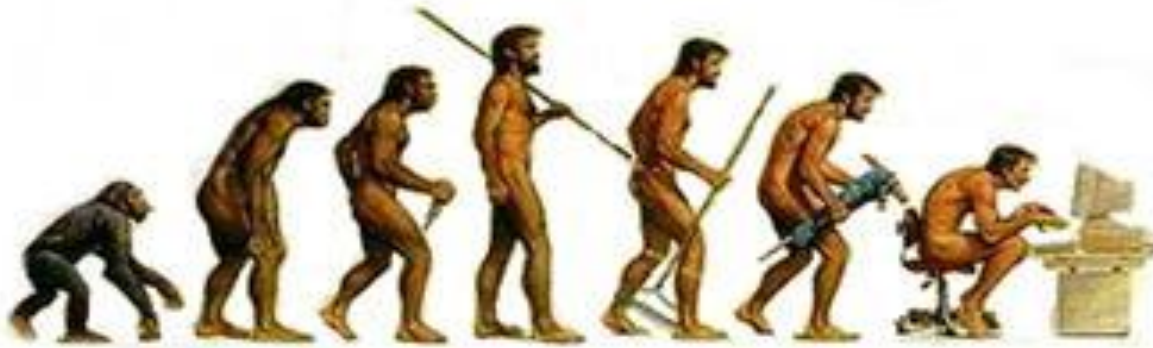
System 1: Change-over time 30 to 180 minutes, 2 worker

Ready for transport: 60 to 120 minutes, 2 worker

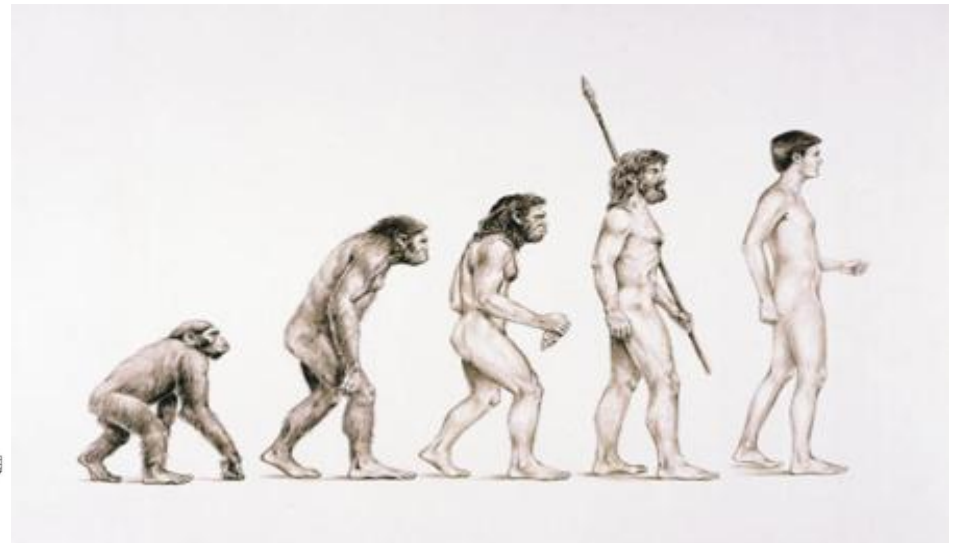
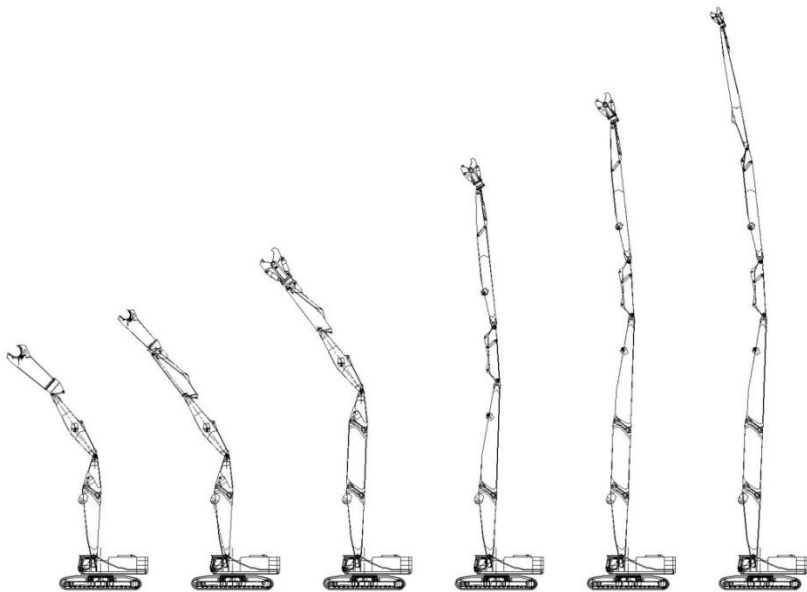
Change-over time System 2: 5 minutes, 1 worker (operator)

Ready for transport: 30 minutes, 1 (2) worker





EUROPE





Mono-Boom

- Strong for taking up heavy demolition tools
- For „rough“ demolition jobs

Demolition Two-Piece-Boom (TAB)

- For demolition of 2-3 storey buildings
- Can take up heavy tools
- Suitable for „light“ digging jobs
- Flexible working range



System solution – Easy Transport



Demolition machines: Basic High Reach Demolition machine



Demolition machines: Multi carrier with HRD front and standard excavator



Demolition machines: HRD 35 m reach, based on 67 t machine





HRD front and Standard machine



HRD based on 50 t machine



Straight boom and HRD front



Mono boom



Demolition machines: Small demolition longfront 13 m



Typical demolition situation: 1 ½ to 2 storey private building



Demolition at lower heights (12 ~ 15 m) – No HRD machine!

Example:

Hitachi ZX250LC-3 with hydraulic-lift cabin & quick coupler to pick up a hydraulically driven magnet or an additional arm extension (3 m)



Quick coupler



Hitachi ZX250LC-3



Hitachi ZX250LC-3



The Japanese style...



Small machines – high risks?



Cost ? Safety ? Available space ? Useful machinery ? Efficiency ?





HRD machine 64 ton at front side

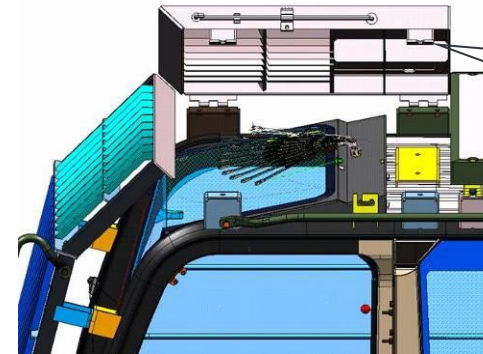
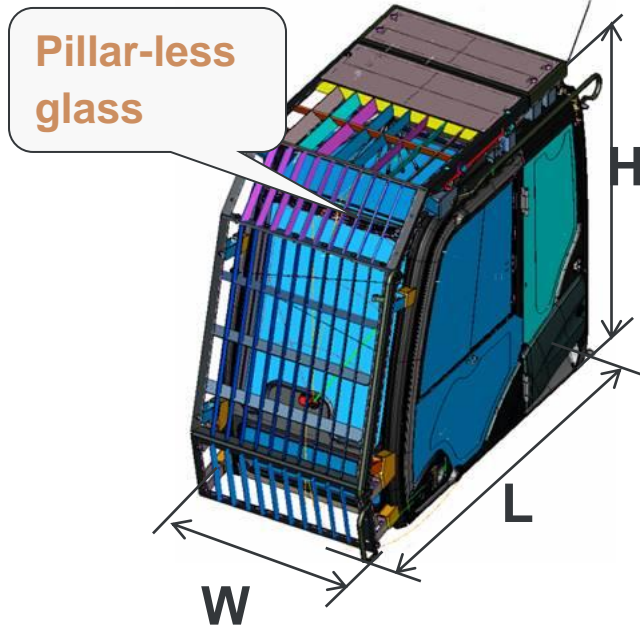


Big machine (87 ton) for rough jobs

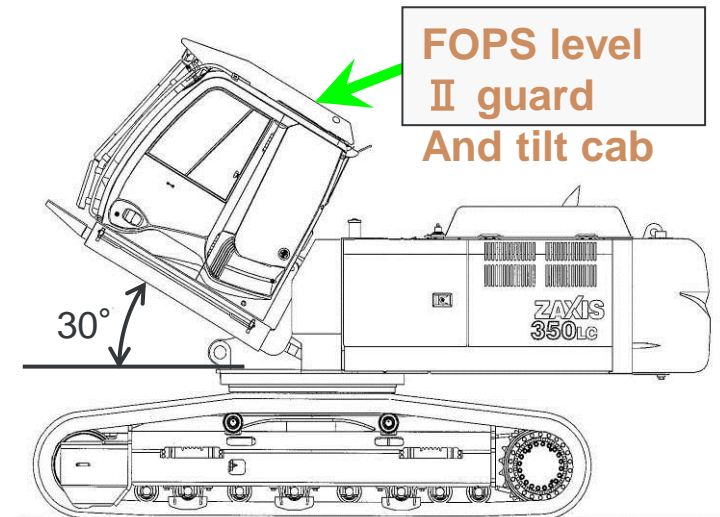


Demolition two-piece-boom (back side)

Important features of HRD machines: Demolition Cab



Enough space for cleaning



Other important features of HRD machines:



Cylinder protection



Undercovers



Protection of crawlers



Side protection



Rear view camera



Additional counterweight



Customer Requirements:

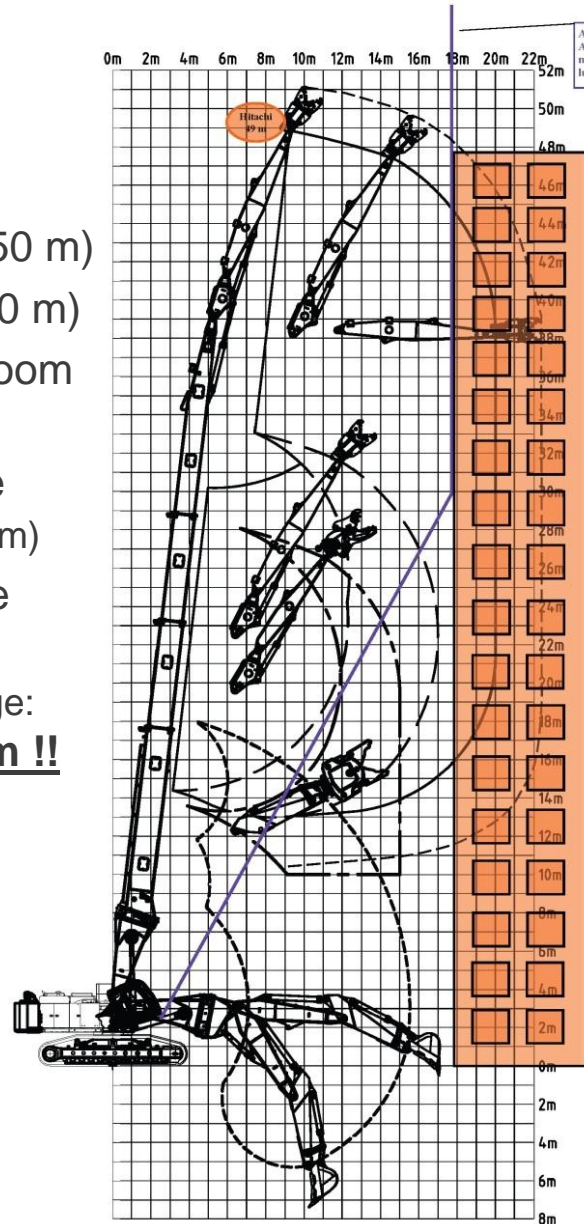
- Versatile tool carrier system with wide working range (50 m reach), best stability, ultimate safety and operator comfort
- Optimized usage of demolition tools for highest productivity during demolition jobs.
- Alternatively the machine must be used for backhoe operation.
- Easy transport and short assembly time even on narrow job sites.
- Boom change within 10 minutes time.
- Reduced manpower for initial assembly (max. 2 persons) and permanent operation / boom change / tool change on job site (1 person = driver).



ZX870XXL-3 with QuickConnect OQ180 and TRITEC-System

HITACHI ZX870XXL-3

- Boom Quick Connect OQ180 (30 ports)
- Tele demolition boom (50 m)
- HD-demolition boom (30 m)
- Demolition two-piece-boom (18 m)
- Hydraulically adjustable undercarriage (± 1660 mm)
- Hydraulically removable counterweight (20 t)
- Extreme wide working range: + 50 m to - 7 m = **57 m !!**



18 Stock 48,0 m

Tele
50 m

3 t

Tele
in

4 t

6 t

HD-Boom
30 m

10 t

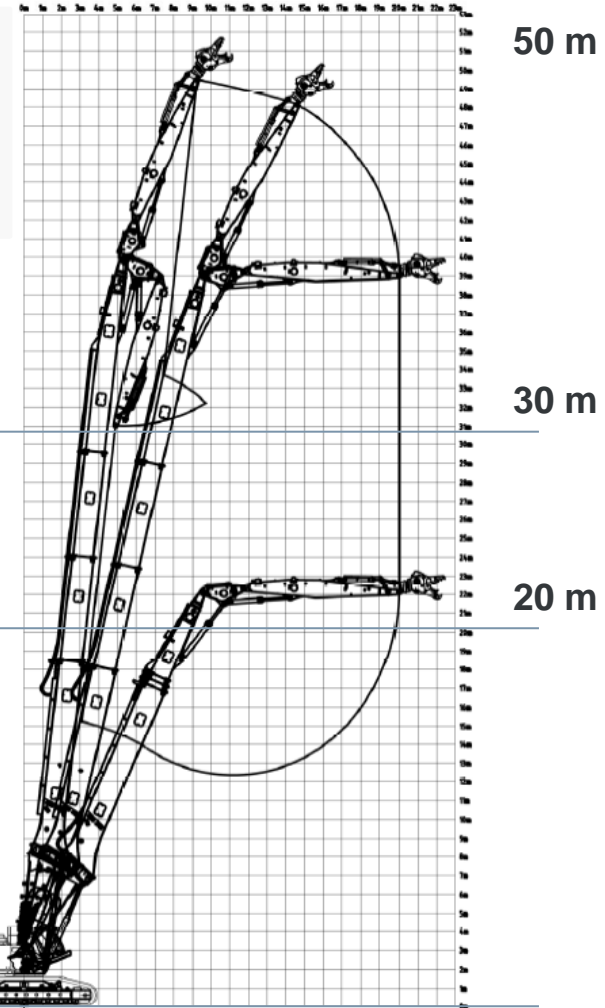
Demolition
Two-Piece-Boom
18 m

WORLD
DEMOLITION
AWARDS 2012
WINNER
MANUFACTURERS' INNOVATION AWARD

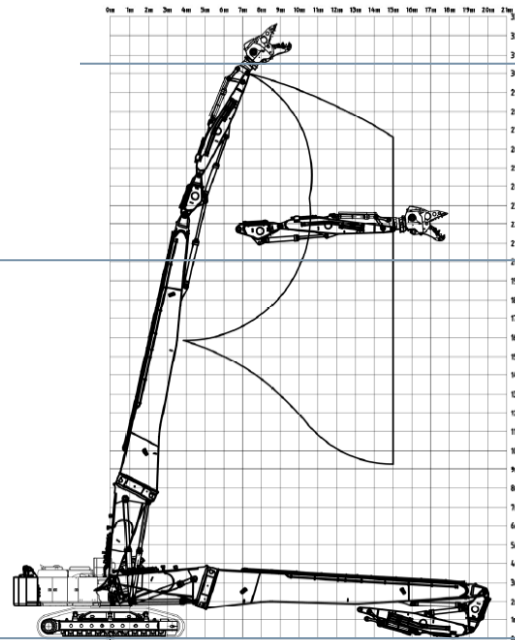


ZX870XXL-3 Working Ranges Front Equipment

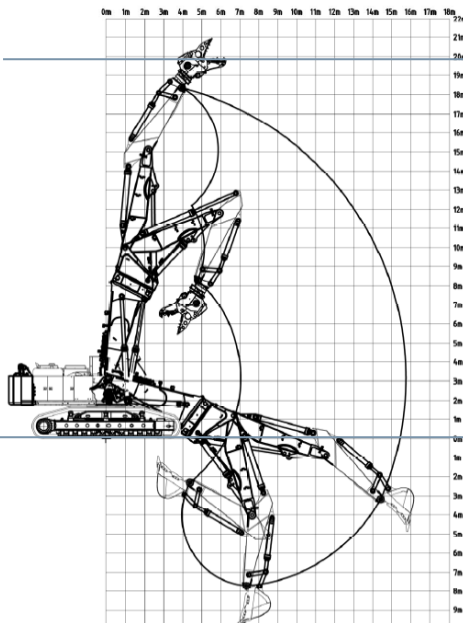
Telescopic HRD Boom 50 m



HD Demolition Boom 30 m



TAB Demolition Two-Piece-Boom 18 m







OQ180 QuickConnect Adaptor
with up to 30 connectors/couplings



Three booms (from left to right):

- Demolition Two-Piece-Boom TAB
- Telescopic demolition boom (50 m)
- HD demolition boom (30 m)



ZX870XXL-3: Demolition of a 14- storey building in Heidelberg



- Up to which height [m] can an existant demolition tool be safely used?
- Which base machine (tool carrier) is suitable for this weight/tool combination?
- Which front equipment?
- Wider undercarriage?

Answers, see below:

| | ZX470, OQ125, Var. Undercarriage | | | | ZX670, Std Undercarriage | | | | ZX670, Var. Undercarriage, Modular Joint | | | | ZX870, OQ180, Var. Undercarriage | | |
|--------------|----------------------------------|-----------------|----------------|--------------------|--------------------------|-----------------|----------------|--------------------|--|-----------------|----------------|----------------------|----------------------------------|----------------|----------------------|
| | Mono-Boom | Demol. 2PB, TAB | HD- Long-front | Standard-Longfront | Mono-Boom | Demol. 2PB, TAB | HD- Long-front | Standard-Longfront | Mono-Boom | Demol. 2PB, TAB | HD- Long-front | Telescopic Longfront | Demol. 2PB, TAB | HD- Long-front | Telescopic Longfront |
| 3 ton OQ80 | I | I | I | 30 | | | | 32 | | | | 35 | | I | 50 |
| 4 ton OQ80 | I | I | 26 | - | | | 29 | - | | | 32 | 29 | | I | 34 |
| 6 ton OQ90 | 10 | 13 | 20 | - | 10 ¹⁾ | 15 | 23 | - | 15 | 17 | 25 | - | I | 30 | - |
| 10 ton OQ120 | - | - | - | - | 9 ²⁾ | 11 | - | - | 10 ¹⁾ | 13 | - | - | 18 | - | - |

| Class | Weight of: Demolition Tool + Quick Hitch + Adaptor | Tools at customer | |
|--------|--|-------------------|--------|
| 3 ton | 2500 kg Demolition Tool + 520 kg OQ80 QuickHitch/Adaptor | CC2500 | MG2100 |
| 4 ton | 3500 kg Demolition Tool + 520 kg OQ80 QuickHitch/Adaptor | | |
| 6 ton | 5000 kg Demolition Tool + 930 kg OQ90 QuickHitch/Adaptor | CC4700 | MG2700 |
| 10 ton | 8500 kg Demolition Tool + 1600 kg OQ120 QuickHitch/Adaptor | HB7000 | |

- = Designed, manufactured, delivered
- = Designed, calculated, adaptation might be necessary
- = Complete new design, not yet calculated



- **Dust and noise (followed by engine emissions) are the main challenges on demolition job sites in Germany.**
- **TA „LAERM“ (Technical Advice „Noise“) was already set in place by the ministry for environment in the 1980, but only recently followed up.**
 - Conclusion: Without special noise reduction measures (noise absorbing walls, silent machines and a „noise time plan“...) most of the German cities do not give the permit for demolition works anymore.
- **Dust reduction**
 - Always required for HRD demolition works.
 - Water spray can be done from the top of the excavator
 - Or by another person with a water hose
 - Alternatively water suppression systems are used (similar technology as the „snow cannons“ in the ski sports areas)
- **Engine emissions**
 - Since major demolitions projects in Germany are observed by green party people, a lot of cities ask for machinery with Diesel Partikel Filter (DPF). Example: Stuttgart, Berlin.



Thank you for your attention

