

Please note:

This document was created in 2011.
Many other Daimler sites now have been equipped with Mobile Easykey. The text was only partially revised, comparing to the original version.



More efficiency and safety through innovative fleet management for forklift trucks

Implementation of Mobile Easykey at the Global Logistics Center of Daimler AG to avoid impact damage, for fleet optimization and dynamic maintenance planning

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In short

The planning for the introduction of a fleet management system for forklifts at the Germersheim plant of Daimler AG began in 2004. By the end of 2011, approximately 430 vehicles in Germersheim and the other logistics locations of Daimler AG will be equipped with Mobile Easykey.

The following describes the companies involved, the reasons for the decision, the benefits and the implementation experience:

1. Profile Domnick + Müller

- 1.1. Corporate development and profile
- 1.2. Mobile Easykey

2. Profile Daimler, Global Logistics Center Germersheim

- 2.1. Profile and key figures
- 2.2. Reasons for a fleet management system
- 2.3. System benefits
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1. Profile Domnick + Müller

1.1 Corporate development and profile

Domnick+Müller is a family business that has been selling and servicing industrial trucks for 55 years. Founded in Frankfurt am Main in 1956, the company relocated to Friedrichsdorf in 1982. The two families Domnick and Müller are still involved in the company. The management was until 1995 in the hands of Walter Müller, followed by his son Jochen Müller, who still holds the management today. More than 50 employees – some of whom have been working there for many years - are currently employed by Domnick+Müller.

A drastic change took place in 2001 when the Steinbock brand disappeared from the market after 45 years of cooperation. The realignment was carried out with the Manitou, Yale and Clark brands as well as with the strengthening of the rental and second-hand business.

In the same year, the development of fleet management technologies was promoted as the core objective of the reorientation.

1.2. Mobile Easykey

Mobile Easykey is a system for the contactless activation and user registration of vehicles and machines. As early as the mid-1990s, the development of the system was started. At that time a fleet operator at Frankfurt Airport was struggling with immense damage to equipment and especially to facilities - mainly caused by forklift trucks and similar equipment. The timely recognition of damage as well as the allocation to the causing device ranked first in the specifications of the fleet operator. The basis of the pure access con-

trol system was extended by a sophisticated dual crash sensor with motion sensor and structure-borne sound microphone.



The exclusion of unauthorised use, the drastic reduction of impact damage and extensive vehicle fleet analyzes have made Mobile Easykey the market leader in multi-vendor systems.

The system:

- In the **module**, the hybrid controls all functions such as access control, events, storage and configuration.
- The **transponder** - as electronic „ignition key“ – works without a battery and unlocks the device with appropriate authorization.
- Der **Zugang** kann sowohl zeitlich begrenzt als auch auf Geräte, Gerätegruppen oder Abteilungen reduziert werden.
- The **access** can be limited in time as well as reduced to devices, device series or departments.
- There are numerous options for the **communication** with the „Mobile Easykey Manager“ software, from cable or Bluetooth up to WLAN.
- The **software** controls the fleet and processes the data in a database that can be protected against unauthorised access.

2. Profile Daimler, Global Logistics Center, Germersheim

2.1. Profile

The Global Sales & Parts / After Sales Logistics division is responsible for supplying parts worldwide for the brands Mercedes-Benz (passenger cars and commercial vehicles), Maybach, smart, Dodge, Chrysler, Jeep, UNIMOG and FUSO.

On an area of more than 1.7 million square meters, 560,000 parts are available at any time. Another 360,000 parts are obtained on customer request. The parts range from the smallest screw to the complete body shell. In two-shift operation, up to 58,000 delivery note items with a transport volume of 12,000 m³ are handled daily.

The supply of parts by the Global Logistics Centre takes place in a three-stage concept:

- Stage 1: Global Logistics Center, Germersheim
- Stage 2: Wholesale Locations
- Stage 3: Retailers and Workshops

In total, approximately 430 industrial trucks in Germersheim and another approximately 600 at the five German wholesale locations are serviced by Global Sales & Parts / After Sales Logistics.

2.2. Reasons for a fleet management system

In 2004, planning began for the introduction of a fleet management system for the Germersheim plant and for the German wholesale locations. The focus of the considerations was the question of how existing resources can be used even more efficiently. In addition, cutting costs by reducing damage and increasing operator safety were key issues.

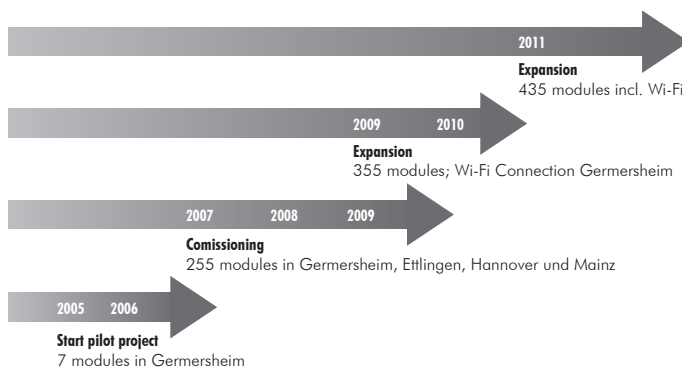
After an intensive review of the systems available on the market, the choice fell on Mobile Easykey. The manufacturer-independent solution, the sophisticated crash sensors, the user-friendly software as well as the problem-free integration into the existing software architecture were the decisive reasons.

2.3. System benefits

Clearly controlled access to the forklift fleet precludes unauthorised use, increasing the safety and responsibility of employees. Employees are sensitized to the capital asset industrial truck. Impact damages to equipment and (safety) facilities are avoided and the operating costs are reduced. If damage is caused to

(safety) equipment, it can be located immediately and rectified promptly. Damage to the trucks is immediately apparent. The vehicle, which was initially shut down by the crash sensor, is displayed and released by a responsible employee, or prompts the repair (see also 3.1.). The usage analysis with the Mobile Easykey software offers the perfect basis for investment decisions (see also 3.2.)

2.4. Step by step implementation



The launch took place in 2005 with a pilot project and seven modules. By the year 2009, a total of 235 devices were equipped with the Mobile Easykey modules at the Gernersheim site and the Wholesale sites in Ettlingen, Hanover and Mainz. The economic crisis of 2008/2009 delayed the further equipment of the forklift fleet. During this time the conversion of the connection to WLAN technology took place. The wireless communication could build on the existing WLAN infrastructure. By the end of 2011, 435 vehicles in Gernersheim and at the German Wholesale locations will be equipped with Mobile Easykey.

2.5. Introduction to the individual areas

Very early on, the works council was informed and involved in the planning, as the handling of personal data is a sensitive issue in each company. A concrete agreement with the works council stipulates that personal data may only be read out in the presence of a works council representative. This is e.g. the case when a driver leaves the unit after a crash and cannot be located. This has been the case three times since the introduction of Mobile Easykey. This shows how the employees were sensitized for the careful handling of the vehicles.

For each individual area where Mobile Easykey was introduced, there was a two-month pilot phase with three to five devices. In particular, the settings of the crash sensor are to be coordinated and optimized with the individual drivers. Also, the acceptance of the employees depends crucially on the participation in this pilot phase. After about two months, the roll-out will be done with 50 to 80 devices, depending on the size of the area.

3. Application areas

3.1. Reduction of impact damage

Video link: Video no longer online

Replacement: <https://youtu.be/jSfwHChKoXU>



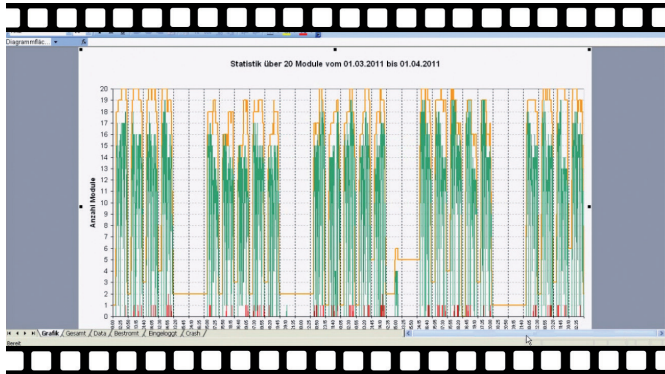
Text video (original):

Mobile Easykey was implemented in the Gernersheim plant of Daimler AG in order to reduce the frequency of damage and to increase the safety of its employees. The contactless access control via transponder releases the truck for use. The device is logged in for a specific operator. Typical examples of accidents during operation are collisions with fire doors or other peripheral faults, for example on security bollards. Damage to forklifts and equipment can also be caused externally. In this case as well as in the other cases, the crash sensor triggers an alarm and blocks the device. Via a WLAN connection the message is transmitted to the central computer in the office of the fleet manager. He can now instruct an authorised person to check the device and release it via a master transponder. Checking the fork lift for damage increases operational safety and protects the following operators

3.2. Fleet- and equipment optimisation

Video link: Video no longer online

Replacement: <https://youtu.be/Z326wumTAxo>



Text Video (original):

The analysis of the actual stacker requirements for each individual area was one of Daimler AG's key objectives when introducing Mobile Easykey at the Gernersheim plant. The statistics module of the Mobile Easykey software provides all relevant data at the touch of a button. The fleet utilization can be recorded and analysed for an entire company or, as in this case, for a single unit. To obtain a meaningful picture, only vehicles with complete data in the individually selected period are taken into account. Depending on requirements, the time grid can be set coarse or fine. In this case, the fleet manager decides on a five-minute accurate evaluation.

The following are now visible at a glance:

- Yellow: the existing powered forklifts,
- Green: the logged-in, i.e. actually in used,
- and the red curve indicates the crashed forklifts in a crash event.

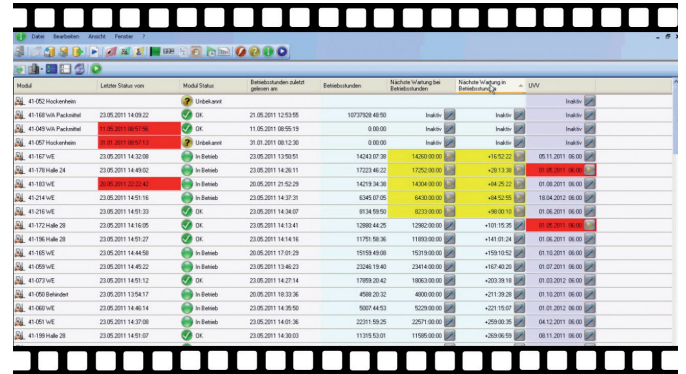
This analysis shows an ideal case with low overcapacity or sufficient reserves.

Another important tool of the Mobile Easykey software is the analysis of the charging cycles of fixed and removable batteries. The charging behaviour is optimized. Overcapacities in number and dimension of the batteries will be avoided.

3.3. Dynamic maintenance

Video link: Video no longer online

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Modell	Letzter Status von	Modell Status	Estimierter Stunden bis zur nächsten Wartung	Estimierter Stunden	Nächste Wartungstermin	Nächste Wartungszeit	Nächste Wartungsort
41-052 Hubstacker	23.05.2011 14:09:22	OK	21.05.2011 12:53:55	13773929 48:50	Inbetrieb	Inbetrieb	Inbetrieb
41-048 Hubstacker	23.05.2011 08:55:36	OK	11.05.2011 08:55:19	0:00:00	Inbetrieb	Inbetrieb	Inbetrieb
41-057 Hubstacker	23.05.2011 08:12:30	OK	21.05.2011 08:12:30	0:00:00	Inbetrieb	Inbetrieb	Inbetrieb
41-167 vE	23.05.2011 14:30:08	In-Betrieb	23.05.2011 13:50:51	14243 07:30	14:30:00	+15:52:22	05.11.2011 08:00:00
41-178 vE	23.05.2011 14:49:02	In-Betrieb	23.05.2011 14:26:11	17223 46:22	17:25:00	+08:13:34	05.11.2011 08:00:00
41-169 vE	23.05.2011 14:49:02	In-Betrieb	23.05.2011 14:26:11	14243 07:30	14:30:00	+15:52:22	05.11.2011 08:00:00
41-214 vE	23.05.2011 14:51:15	In-Betrieb	23.05.2011 14:37:25	6245 07:15	14:30:00	+04:52:50	15.04.2012 08:00:00
41-216 vE	23.05.2011 14:51:33	OK	23.05.2011 14:36:07	8134 59:50	14:30:00	+00:00:00	01.06.2011 08:00:00
41-172 vE	23.05.2011 14:16:05	OK	23.05.2011 14:13:41	12880 44:25	12:50:00	+15:15:25	05.11.2011 08:00:00
41-136 vE	23.05.2011 14:51:27	OK	23.05.2011 14:14:16	11751 56:36	11:50:00	+14:01:24	01.06.2011 08:00:00
41-165 vE	23.05.2011 14:44:58	In-Betrieb	23.05.2011 17:01:29	15159 49:58	15:20:00	+159:15:52	01.10.2011 08:00:00
41-059 vE	23.05.2011 14:45:22	In-Betrieb	23.05.2011 13:46:22	23246 19:40	23:40:00	+107:40:25	01.07.2011 08:00:00
41-077 vE	23.05.2011 14:51:12	OK	23.05.2011 14:27:14	17089 20:42	18:00:00	+05:39:18	01.08.2012 08:00:00
41-092 vE	23.05.2011 12:54:17	In-Betrieb	23.05.2011 18:32:36	4598 20:32	4:00:00	+21:29:28	01.10.2011 08:00:00
41-080 vE	23.05.2011 14:46:14	In-Betrieb	23.05.2011 14:35:50	5607 44:53	52:00:00	+221:15:57	01.07.2012 08:00:00
41-051 vE	23.05.2011 14:37:08	In-Betrieb	23.05.2011 14:01:36	22251 55:25	22:50:00	+259:00:35	04.12.2011 08:00:00
41-139 vE	23.05.2011 14:51:07	OK	23.05.2011 14:30:03	11315 53:01	11:50:00	+03:06:51	08.11.2011 08:00:00

Text Video (original):

With the introduction of Mobile Easykey, Daimler AG is also aiming for optimized and more efficient maintenance of the forklift fleet. The previously used system of static maintenance is based on a projection based on the operating hours from previous maintenance intervals. Dynamic scheduling, on the other hand, calculates daily maintenance dates according to effective operating hours. At a glance the fleet manager or the employees of the workshop can see the due maintenance. In addition, the Mobile Easykey software displays the due UVV deadlines and ensures reliable compliance with the required tests. Yellow markings indicate the upcoming maintenance or UVV deadlines. Red markings stand for due and red-blinking for overdue, which does not exist in this example. Authorised personnel can set or change maintenance and inspection intervals and reset the operating hours counters after maintenance has been performed. Dynamic maintenance scheduling with Mobile Easykey allows you to comply with necessary and mandatory maintenance and testing and prevents unnecessary workshop visits.

4. Results in figures

Costs due to **impact damage** at the Germersheim plant could be reduced by **up to 20 %**, depending on the area and the amount of damage incurred so far. Without curtailing the processing and maintaining the system load, the **fleet at Hanover was reduced by 10 %**.

With the Mobile Easykey software figures, battery usage can also be optimised: Misconduct during recharging and the use of oversized, expensive batteries is avoided. The topic of dynamic maintenance planning is currently in the planning phase. A **savings volume of 5 to 10 %** is expected. On-demand maintenance and the necessary statutory tests are to be optimised with Mobile Easykey.

5. Cooperation in the further development

The **close cooperation** between customer and manufacturer was and is a recipe for success for the development and application of Mobile Easykey. The modular design of the system („toolbox“) allows the Daimler AG to select exactly the components that are necessary to achieve the goals set.

Together the **„Toolbox“** of Mobile Easykey will be further developed and will be added bit by bit. The customer-specific requirements form the basis for all new modules and product features.

The **speed of the introduction**, the approach and the individual goals are strongly influenced by the conditions of the respective framework in the company and its individual areas.

In order to meet **customer-specific requirements**, regular **innovation workshops** take place. Experiences in handling Mobile Easykey are discussed and suggestions of the customer are incorporated.

One result of an innovation workshop is the in-house location, which is expected to start with a pilot project in late 2011. The aim is to analyse the main traffic areas in order to increase safety and improve the material flow.

6. Conclusion

Since 2004, Daimler AG has been working on the topic of fleet management systems at the Germersheim plant. Since 2005 Mobile Easykey is in use. The building blocks used so far are:

- Access authorisation
- Crash sensor
- Fleet and equipment optimisation (basis: switch-on times and condition detection)
- Dynamic maintenance

In all subject areas - depending on the area - significant improvements could be achieved. The close cooperation between customer and manufacturer led to the continuous development of the system - based on the modules and software used. Further optimisation potential in terms of efficiency and safety will be gradually become visible and realised by new or changed product features.