

BATTERY INNOVATIONS – MADE IN GERMANY  
CAR | TRUCK



# mOLL *Products*

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## MOLL Batteries – 75 years success story “Made in Germany”

### More than 75 years ago, the first MOLL battery made a good start.

Since then, millions of MOLL batteries have left the factory in Bad Staffelstein / Bavaria for application all over the world.

Pioneering technical developments with numerous own patents and highest quality standards in production have been the company's guidelines right from the beginning. They have given distinction to the MOLL corporate philosophy to date and they will guarantee premium quality of the brand MOLL in the future as well.



## MOLL – Original Equipment Manufacturer for the Automotive Industry

As an expert, MOLL has essentially influenced the entire battery technology by innovations. For more than 70 years, the success of the medium-sized company is based upon technical expertise, practical and future-oriented development as well as a constantly high quality level. MOLL has been supplying the premium brands of the German automotive industry with premium Original Equipment batteries for decades.

### Premium quality for premium brands

MOLL supplies well-known automotive and commercial vehicle manufacturers with original equipment batteries. These manufacturers are e.g.:

Audi, Daimler, Porsche, Seat, Škoda, Volkswagen, Amman, Delko, Frankia, Hamm, Hammelmann, Holmer, Kaeser, Liebherr, Tadano Faun, Prinoth, Weber MT and many more.



# MOLL *Philosophy*

## Sense of responsibility inside Company MOLL

### Corporate Social Responsibility

Ever since the company was founded in 1945, MOLL has demonstrated corporate social responsibility. In addition to sheer economic aspects, social issues, common good and environmental concerns are taken into consideration by the corporate management.



### What we believe in and what we stand for

- we respect people, environment and nature – without exception
- we respect the laws and culture of those countries we operate in
- we live and work according to ethnic and generally recognized legal principles
- we always act honestly and uprightly
- we engage in open and constructive dialogues with all social groups
- we respect the interests of our customers, shareholders, employees, partners and suppliers and let them take part in our success to a reasonable extent
- we act in an environmentally conscious way and thus sustainably protect climate and resources
- we constantly strive to be an excellent enterprise

## Environmentally conscious handling of resources

Protection of the environment and careful and considerate handling of our resources by means of continuous improvement of our manufacturing processes is an elementary component of our corporate objectives. Protection of the environment stands on an equal footing with other important objectives such as cost-effectiveness and our quality policy. By means of an open communication policy, regular training courses and instructions, we motivate all employees to act safely and responsibly. We also engage in an open dialogue with public and authorities.

All resources are used in a responsible and environmentally sustainable way. MOLL takes back used batteries and guarantees proper recycling.



**3x PRO ENVIRONMENT**

**Less emissions** – the MOLL EFB is the ideal battery for eco-friendly start|stop vehicles.

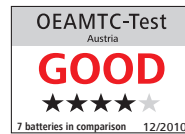
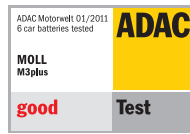
**Sustainable** – the extremely long lifetime of the MOLL EFB saves valuable resources.

**Environmental certification** – MOLL operates according to state-of-the-art environment and energy management systems.

# The high Quality Standard of MOLL

## MOLL is regularly among the best in test in independent battery tests

For decades, independent product testers regularly and constantly confirm the high quality and reliability of MOLL products. Numerous battery tests – passed good and very good – prove the excellent quality of MOLL batteries.



## Automotive manufacturers trust in MOLL

Numerous automotive manufacturers trust in MOLL original equipment batteries for their vehicles for decades.

MOLL has received many awards:

- 6 times Audi Quality Award
- highest supplier award of the Volkswagen Group (Value to the Customer Award)
- 5 times Porsche Supplier Award

Further automotive manufacturers trust in the premium quality of MOLL.

## Certified Quality, Environment and Energy Management

Quality management according to IATF 16949

Quality management according to ISO 9001

Environmental management system according to ISO 14001

Energy management system according to ISO 50001



# MOLL High-Tech

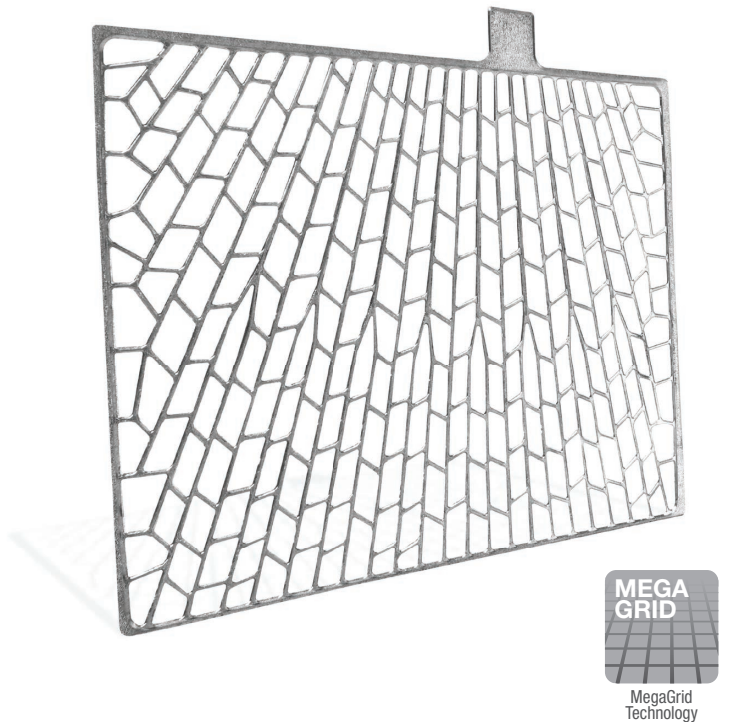
## Latest Innovations of MOLL

### Electrodes in MegaGrid Technology

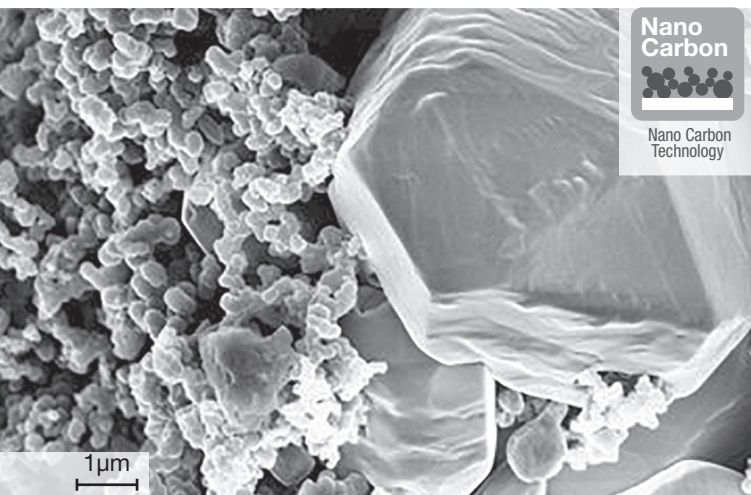
The MOLL grid designs in MegaGrid Technology developed by MOLL allow an ideal voltage distribution in the battery due to their unique design. Therefore stratification effects of the electrolyte, which considerably reduce the service life of the battery, can be avoided to a large extent. This applies in particular for micro-hybrid applications (start|stop and recuperation) and for truck batteries, as such applications are subject to a markedly higher cyclisation. In addition to an ideal design, grids in MegaGrid Technology feature an excellent corrosion resistance. This corrosion resistance is achieved by the use of newly developed special alloys as well as by an optimized manufacturing process leading to an especially favourable crystalline structure and thereby to a high corrosion resistance.

### Customer benefit of the MegaGrid Technology

- very high corrosion resistance of the grids and therefore a long lifetime of the battery
- ideal voltage distribution over the entire electrode. This leads to excellent cold cranking characteristics and fast charge acceptance.



- excellent mass adhesion for very high cycling performance
- identical to MegaGrid Technology applied for OE batteries. This was developed for the new, very high demands of the German car manufacturers such as e.g. Audi, Daimler and Volkswagen



### Nano Carbon Technology

To increase the battery lifetime in micro-hybrid applications (start|stop and recuperation), special recipes of active masses for electrodes were developed. These contain Nano Carbon particles that give rise to a considerable enlargement of the reactive surface of the active masses and a particularly favourable pore structure. This leads to a markedly improved performance of the battery and to a massive increase of cycle lifetime and chargeability.

# mOLL Starter Batteries

## Performance parameters and field of application



**mOLL**  
**start|stop**  
EFB Technology



**mOLL**  
**X-TRA Charge**

Micro-Hybrid lifetime	████████	██████□□□□
Braking energy recuperation	████████	████████□
Cranking performance	████████	████████□
Capacity	████████	████████
Maintenance-free	████████	████████
Cycle lifetime	████████ >400%	████████ 150%
Electrolyte level indicator (ELI)	█ yes	█ yes
Central degassing	█ yes	█ yes
Spill-proofness	████████□	████████□
Hot location of installation	████████□	████████□
Application	Vehicles with micro-hybrid systems (start stop and recuperation)	Vehicles with numerous electrical consumers / Diesel-engined vehicles
Passenger car/vans	✓	✓
Taxi	✓	
Vehicles for special applications	✓	
Construction machines	✓	✓
Off-road	✓	✓
Caravans	✓	
Motorboats	✓	✓

\* applies to DIN types only

# MOLL start|stop

## MOLL EFB Technology

### Technological leader in micro-hybrid technology for modern cars

The **MOLL EFB Technology** combines the advantages and robustness of the classic lead battery with excellent capacity and more than fourfold cycle lifetime. Moreover, the MOLL EFB features an extremely high micro-hybrid cycling performance with respective long lifetime. Therefore it is ideal for the use in vehicles with start|stop and recuperation systems and vehicles with many electrical consumers. Its strong thermal stability qualifies the MOLL EFB in particular for installation in the engine compartment and for use in very hot climate zones.

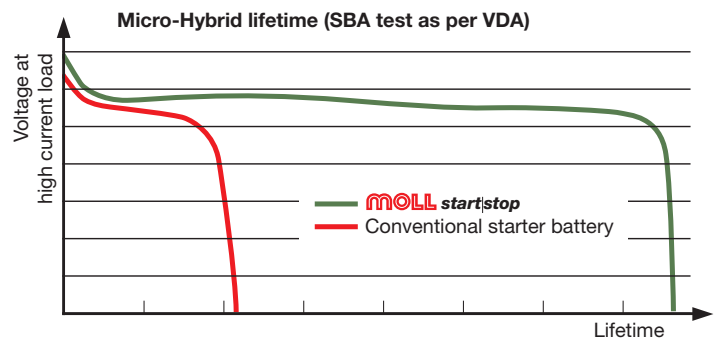


#### Customer benefits of MOLL EFB Batteries

- very high cycling performance
- extremely high number of cycles during micro-hybrid operation for long service life
- absolutely maintenance-free
- longer shelf life due to Ca/Ca Technology
- electrolyte level indicator (ELI) according to OE requirements

#### MOLL EFB – main features at a glance

 original equipment quality	 MegaGrid Technology	 Nano Carbon Technology	 start stop Technology	 4x long cycle lifetime
 high cold cranking performance	 capable of recuperation	 high thermal stability	 vibration resistance	 ideal spill-proofness
 many electrical consumers	 price-performance ratio			



#### Proven OE quality

The MOLL EFB features an extraordinary high micro-hybrid cycling performance and therefore it is particularly well suited for these applications (see figure on the right). Premium car manufacturers such as Audi, Daimler, Seat, Škoda, Volkswagen et al. apply the MOLL start|stop in EFB Technology very successfully for years.





**Original  
OEM  
Sparepart**

**Best in Test!**  
Best of all tested  
start/stop batteries in the market!



MOLL type no.	K2 double lid	vibration resistance level	wet charged	base hold-downs	terminal position	terminal type	capacity Ah (20h)	cold cranking current A (EN)	max. outer dimensions [mm]		
									length	width	height
82060	•	3	•	B13	0	1	60	640	242	175	190
82065	•	3	•	B13	0	1	65	680	278	175	175
82070	•	3	•	B13	0	1	70	700	278	175	190
82075	•	3	•	B13	0	1	75	760	315	175	175
82080	•	3	•	B13	0	1	80	800	315	175	190
82095	•	3	•	B13	0	1	95	900	353	175	190

Which battery fits in which vehicle? >> [www.moll-batterien.de/batteryfinder](http://www.moll-batterien.de/batteryfinder)

All information according to EN 50342

# MOLL X-TRA Charge

**MOLL Nano Carbon Technology**

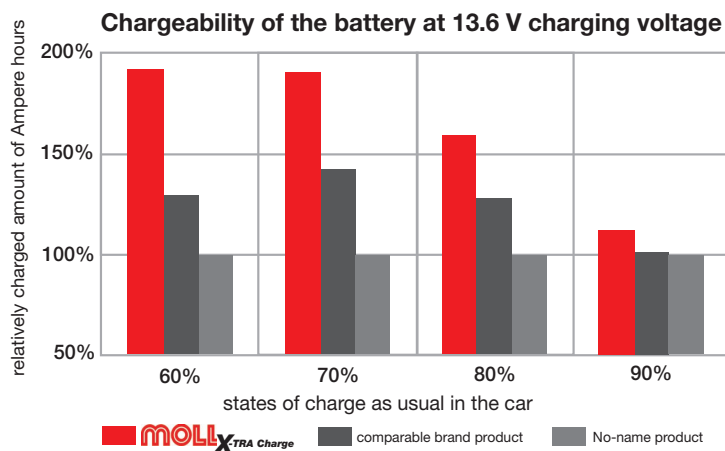
**The premium battery with much faster charge acceptance**



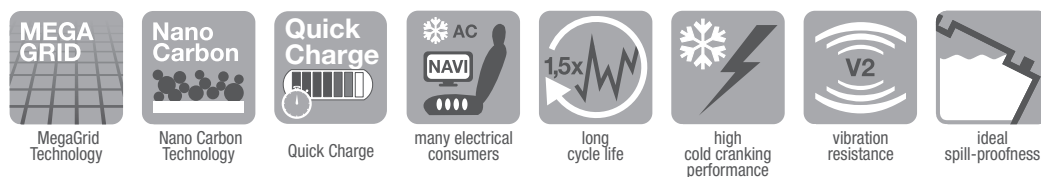
## **Customer benefits of the MOLL X-TRA Charge**

- extra fast charging through Nano Carbon Technology
- significantly improved cranking performance
- longer shelf life due to Ca/Ca Technology
- electrolyte level indicator (ELI) according to OE requirements
- terminal covers protect against contact and short-circuit

The **MOLL X-TRA charge** has been designed to recharge almost twice as fast as conventional batteries especially at low state of charge (60 - 70%) . The state of charge can thus be kept on a higher level which has a significant effect on the service life of the battery. The **MOLL X-TRA Charge** owes this advantage, among other things, to the Nano Carbon Technology used, known from the development of the MOLL EFB technology.



## MOLL X-TRA Charge – main features at a glance



Type-Nr. MOLL	applicable for	capacity			cold cranking current		max. outer dimensions [mm]					
		K2 double lid	vibration and resistance level wet charged	base hold-downs	terminal position	terminal type	Ah (20h)	A (EN)	length	width	height	
84050	83050, 53624/46, 54316, 54459, 54465, 54519, 83046	•	2	•	B13	0	1	50	450	207	175	175
84060	83060, 55046/48, 55559, 55566, 56225	•	2	•	B13	0	1	60	600	242	175	175
84062	83062, 55559, 56020, 56111, 56219, 56220,	•	2	•	B13	0	1	62	600	242	175	190
84074	83071, 56318, 56420, 56530/35, 56638, 57113	•	2	•	B13	0	1	74	700	278	175	175
84075	83075, 56638, 57082, 57220, 57412	•	2	•	B13	0	1	75	720	278	175	190
84085	83085, 58042, 58045, 58090, 58211, 58214,	•	2	•	B13	0	1	85	800	315	175	190
84090	83091, 58515, 58827/32, 59218/22,	•	2	•	B13	0	1	90	800	353	175	175
84100	83100, 58827, 59218/22, 59531, 60038, 60044, 83095	•	2	•	B13	0	1	100	850	353	175	190
84110	83110, 61042, 61058,	•	2	•	B13	0	1	110	900	394	175	190

Which battery fits in which vehicle? [www.moll-batterien.de/batteryfinder](http://www.moll-batterien.de/batteryfinder)

All information according to EN 50342

# MOLL Kamina truck SHD

## SHD MegaGrid Technology

### Leading truck manufacturers trust in MOLL Kamina truck

The **MOLL Kamina truck SHD** is characterized by exceptionally high cycling performance.

This high cycling performance results from the combination of two different alloys specially developed for the manufacture of the MegaGrids. For the customer, this means – especially when many electric consumers are in use – highest lifetime.

The robust solution for professionals.



### Customer benefits of the MOLL Kamina truck SHD

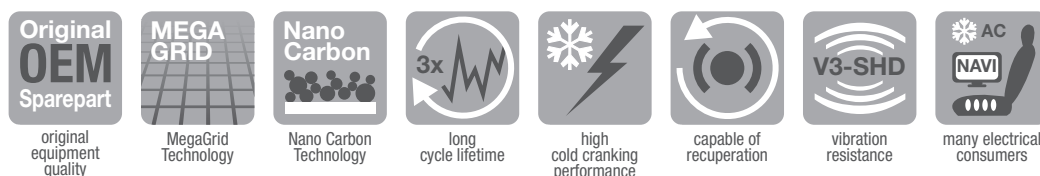
- robust Super Heavy Duty quality
- with the advantages of MOLL EFB Technology
- powerful performance
- very long cycle life
- highly vibration-resistant

### Fields of application

- trucks
- buses
- construction machines
- communal vehicles
- agricultural machinery
- inland waterway crafts



### MOLL Kamina truck SHD - main features at a glance



MOLL type no.	applicable for	KAMINA central degassing	double lid	vibration resistance level	wet charged	base hold-downs	terminal position	terminal type	capacity Ah (20h)	cold cranking current A (EN)	max. outer dimensions [mm]		
											length	width	height

### **MOLL Kamina truck SHD**

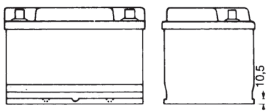
610 040 076	61023	•		3	•	B3	3	1	110	760	514	175	210
625 023 000				3	•		2	1	125	-	286	269	230
635 043 100	63539, 63544	•		3	•	B3	3	1	135	1000	514	175	210
640 020 076	61511, 63530, 64035		•	3	•		3	1	140	760	513	189	223
670 018 100	64317, 65513, 66514, 67043		•	3	•		3	1	170	1000	513	223	223
670 033 100	67015, 67034	•		3	•	B3	3	1	170	1000	514	218	210
680 032 100	67043, 68034		•	3	•		3	1	180	1000	513	223	223
725 012 115	70027, 70038, 71014, 72018		•	3	•		3	1	225	1150	518	276	242

# mOLL Standards

## Base hold-downs, terminal positions, terminal types

### Base hold-downs

**B1**



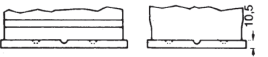
Hold-downs with a height of 10.5 mm on the long sides

**B5**



Hold-downs with a height of 10.5 mm on the long sides and of 29 mm on the narrow sides

**B3/13**



Hold-downs with a height of 10.5 mm on long and narrow sides

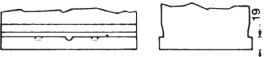
**B6**



Hold-downs with a height of 29 mm on the narrow sides

B3: 3 notches | B13: 5 notches

**B4/14**



Hold-downs with a height of 19 mm on the long sides

**B11**



Hold-downs with a height of 10.5 mm on the narrow sides

B4: 3 notches | B14: 5 notches

| B0: without Hold-downs

### Terminal positions

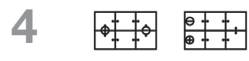
6 V 12 V



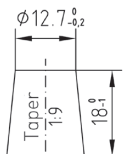
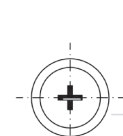
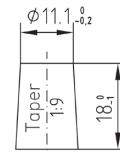
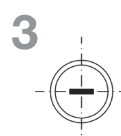
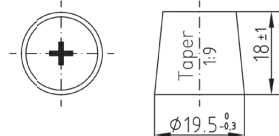
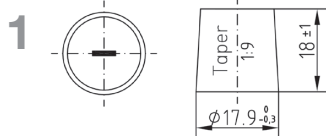
6 V 12 V



12 V



### Terminal types

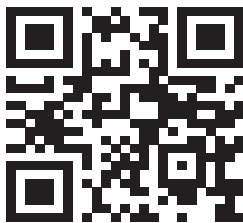


1 Battery terminal according to EN 50342

1/3 Battery terminals for Japanese vehicles with adapter for European vehicles

## Battery characteristics - Legend to icons for quick guidance

 original equipment quality	meets all demands of the vehicle manufacturers for original equipment	 capable of recuperation	meets all demands of the vehicle manufacturers for Micro-Hybrid applications (recuperation and start stop)	
 MegaGrid Technology	MegaGrid high performance grid with lead-calcium-silver alloy	 high thermal stability	high thermal stability, ideal for installation in the engine compartment	
 Nano Carbon Technology	special Nano Carbon additives to avoid sulphation and to facilitate maximum cycle lifetime	 vibration resistance	 vibration resistance	vibration resistance levels (V3-SHD $\hat{=}$ max.)
 start stop Technology	very high start stop ability and enormous capability	 ideal spill-proofness	ideal spill-proofness due to patented K2 double lid	
 long cycle lifetime	 long cycle lifetime	cycle lifetime in comparison to a conventional flooded battery	 absolute spill-proofness	spill-proof, no acid leakage even when the battery container is damaged
 high cold cranking performance	very high cold cranking performance	 many electrical consumers	highest number of electrical consumers, especially in vehicles with auxiliary heating	
 quick charge	fast charge acceptance	 price-performance ratio	balanced price-performance ratio in comparison to AGM batteries	



MOLL Batterien GmbH  
Angerstraße 50 · 96231 Bad Staffelstein · Germany  
Tel +49 (0) 95 73/96 22-0 · Fax +49 (0) 95 73/96 22-11  
info@moll-batterien.de · www.moll-batterien.de

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