



**The No. 1  
on the Market**

## Free Your Tool Monitoring With **eltimon**

The revolutionary system **eltimon** (electronic live tool integrated monitoring) for digitization of live tools, angle heads in machining centers and driven tools in CNC lathes



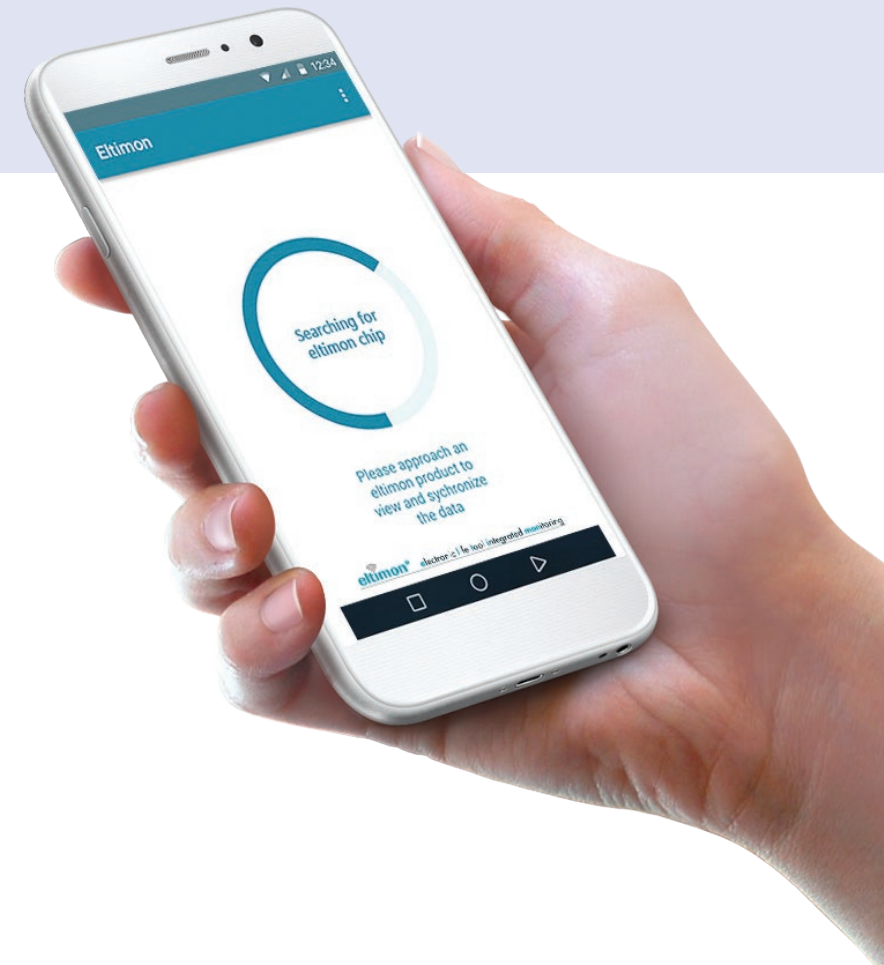
## The World of eltimon

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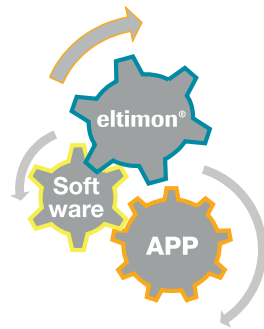
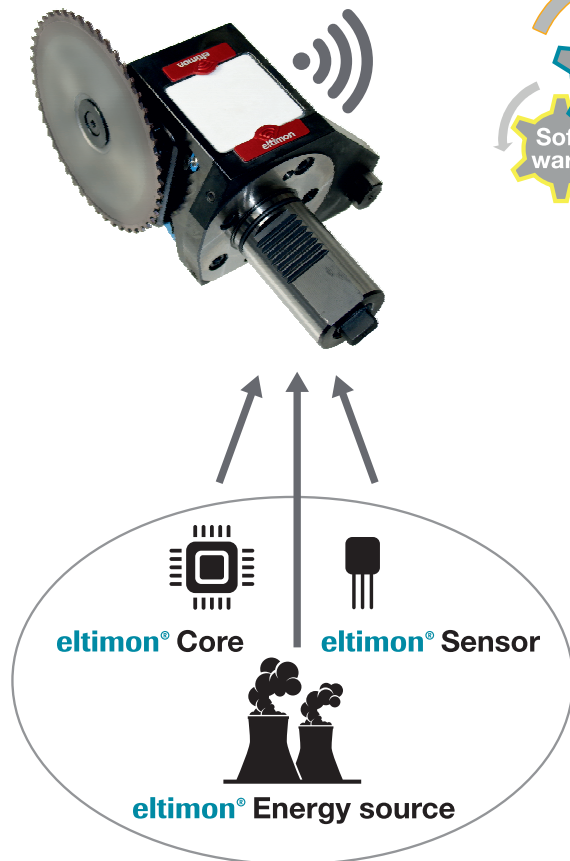
## Free Your Tool Monitoring With **eltimon**

The revolutionary system **eltimon** (electronic live tool integrated monitoring) for digitization of live tools, angle heads in machining centers and driven tools in CNC lathes.

- Visualization using **eltimon-App** on your mobile phone
- Data storage in the **eltimon-core** in the live tool
- Synchronization through **eltimon-cloud**
- Real time analyses, trends and status
- Augmented operator, decision-support, reminders, transparency
- Maximum lifetime for your live tools



## eltimon® Live tool



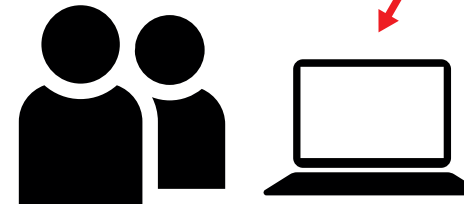
## eltimon® Cloud

Enduser live tool monitoring:

- ✓ Status
- ✓ Availability
- ✓ Performance
- ✓ Predictive maintenance
- ✓ Service logbook
- ✓ Technical information



eltimon® Data download



Customer

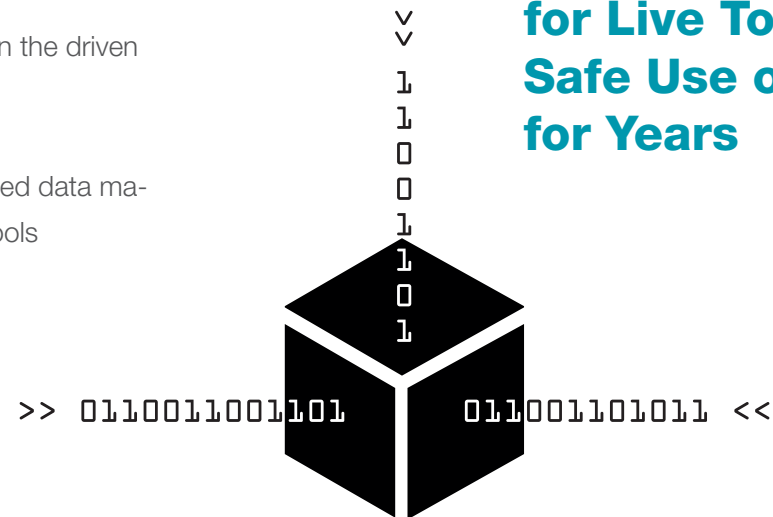
## eltimon Technology

**eltimon** captures the state of the tool transmission via sensors, processes the raw data to usable information and stores the information in the **eltimon**-core, located in the live tool.

- Sensor technology: USA (e.g. silicon chip)
- Wireless data transfer: Japan
- Energy harvesting concept for **eltimon**
- System to minimise energy consumption for **eltimon**
- **eltimon** Reading device = consumer electronics: mobile phone or tablet
- **eltimon** lifetime: data acquisition for up to 10 years, or driven tools in use for up to 6000 hours

- **eltimon** Cloud server: customer-related data only individually accessible for **eltimon** driven tools in the property of the customer
- **eltimon** data availability: no eltimon-specific limitation in the driven tools or in the cloud
- Data security: Encryption against unauthorized data manipulation in **eltimon** driven tools

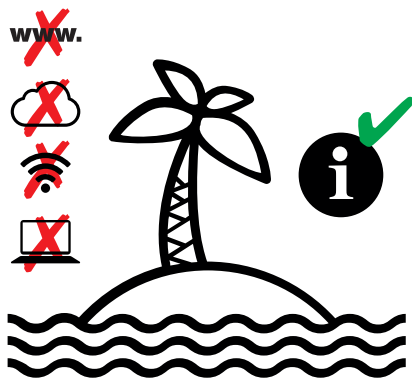
**Black Box  
for Live Tools:  
Safe Use of Data  
for Years**



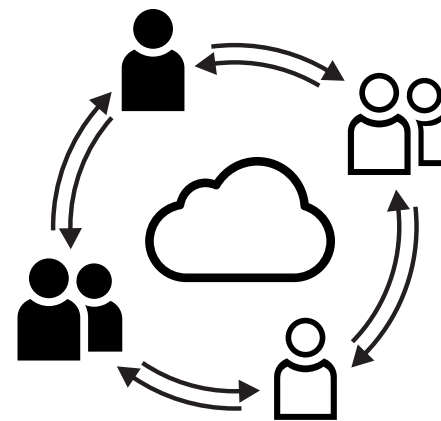
## eltimon Data Structure

- **eltimon** data are generated inside the Live tool
- **eltimon** data are stored inside the individual Live tool
- **eltimon** tool data can be read out:
  - and analyze with your mobile phone
  - everywhere: in the machine, on the shelf ...
  - even if **eltimon** is completely powerless

- **eltimon** data is available in the cloud for:
  - Tool history
  - Machines or departmental evaluations
  - Management of preventive maintenance
- **eltimon** data can be downloaded from the owner of the tools from **eltimon**-cloud to their own systems



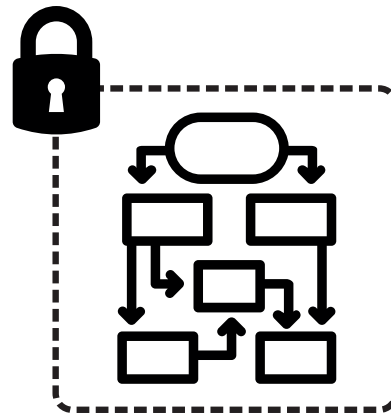
**Data Available  
without  
Infrastructure**



**Customer-specific  
Configurable:  
eltimon Cloud**

## eltimon Sustainability

- **eltimon** extends the lifetime of your Live tools
- **eltimon** saves material consumption in the production
- **eltimon** saves the exchange of bearings and gears
- **eltimon** saves maintenance efforts
- **eltimon** reduces the reject rate
- **eltimon** improves the reliability in the production process
- **eltimon** saves cost, time, energy and material
- **eltimon** saves standby tools



**No Influence on  
Existing Workflows  
by eltimon**

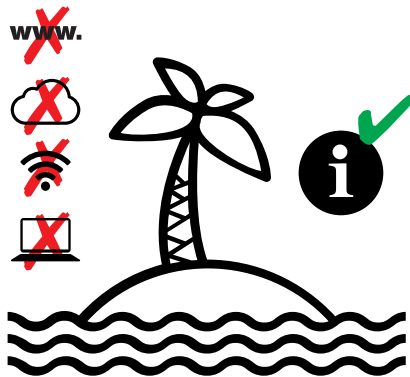


## eltimon Industry 4.0 (IIoT)

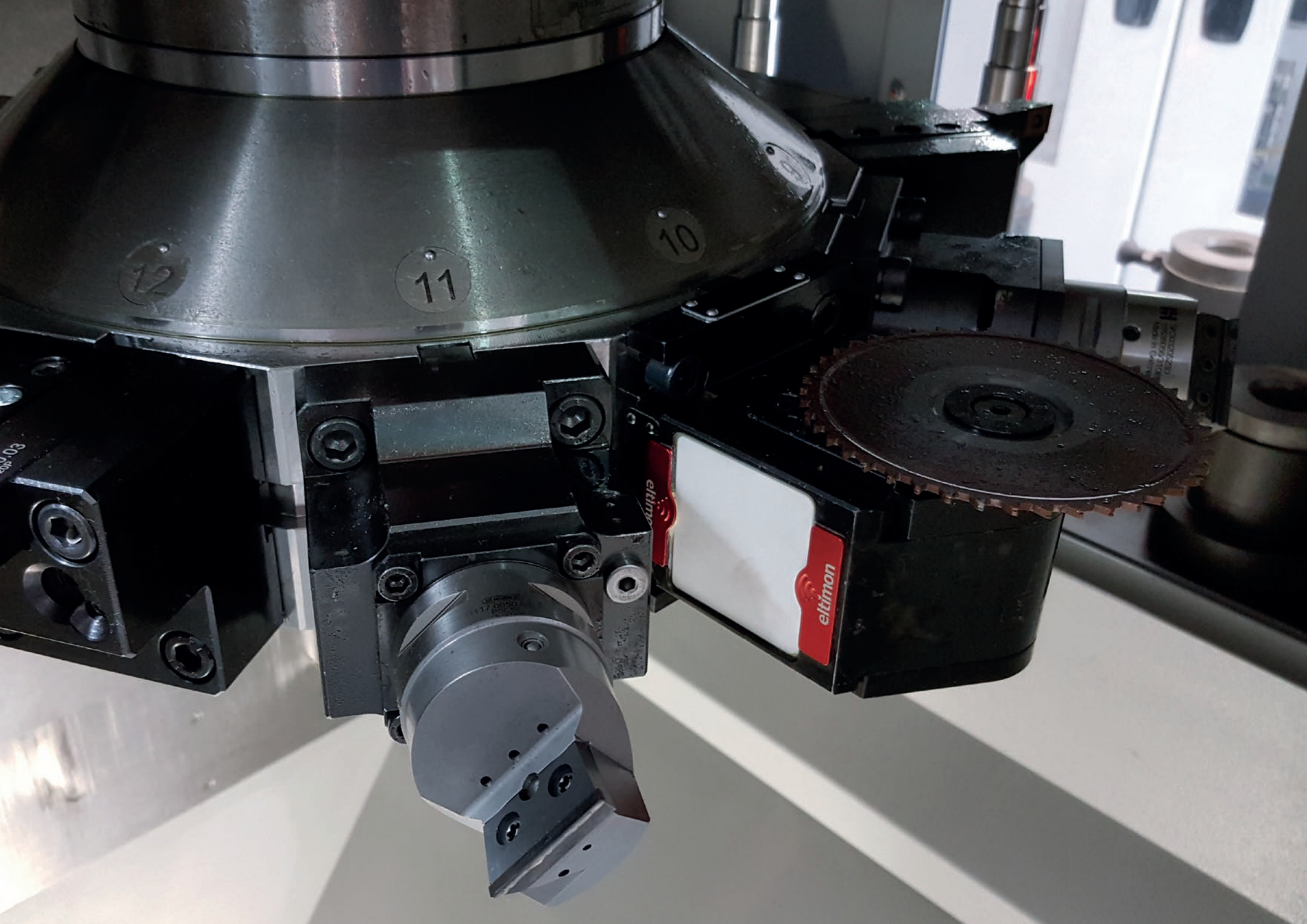
- **eltimon** can be connected to your machine
- **eltimon** data can contribute to a more efficient production process
- **eltimon** data can be used for your virtual factory
- **eltimon** controls the preventative maintenance
- **eltimon** allows more transparency in the production
- **eltimon** data are part of digital data, which are available for analyses

## eltimon Advantages

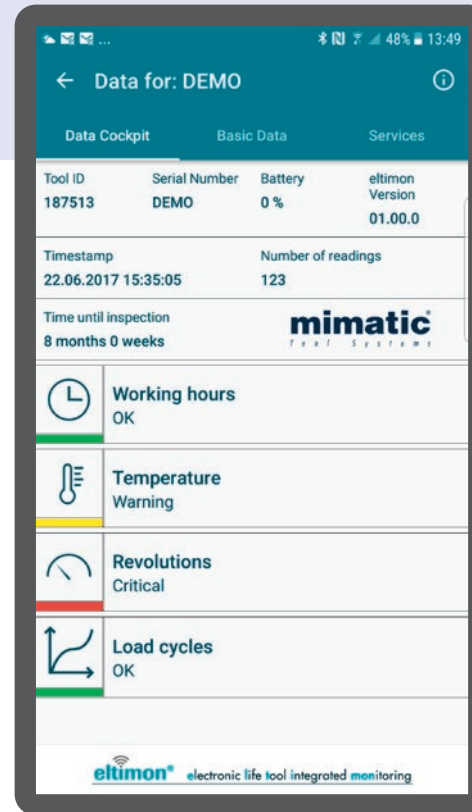
- **eltimon** is the efficiency booster for your production
- **eltimon** improves your preventive maintenance
- **eltimon** reduces rejects
- **eltimon** improves the reliability in the production
- **eltimon** helps to avoid »crashes«
- **eltimon** tools are 100% ready for industry 4.0 (IIoT)
- **eltimon** avoids unplanned downtime
- **eltimon** extends the lifetime of your Live tools
- **eltimon** saves cost, time, energy and material



**Augmented Operator:  
Direct Decision Support**

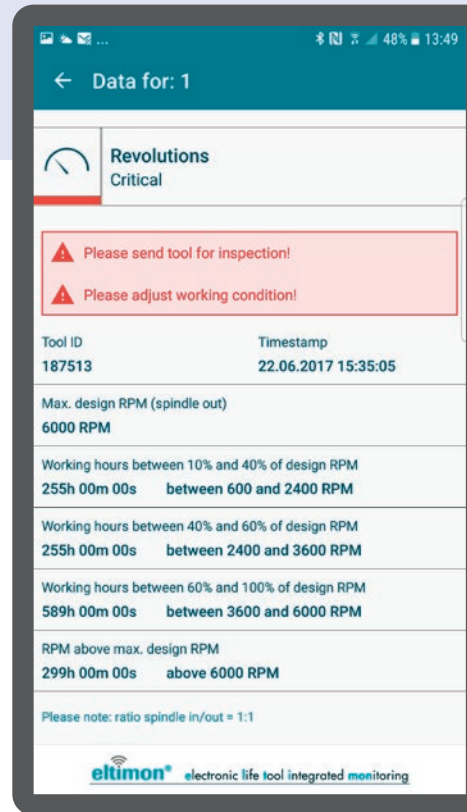


## eltimon App

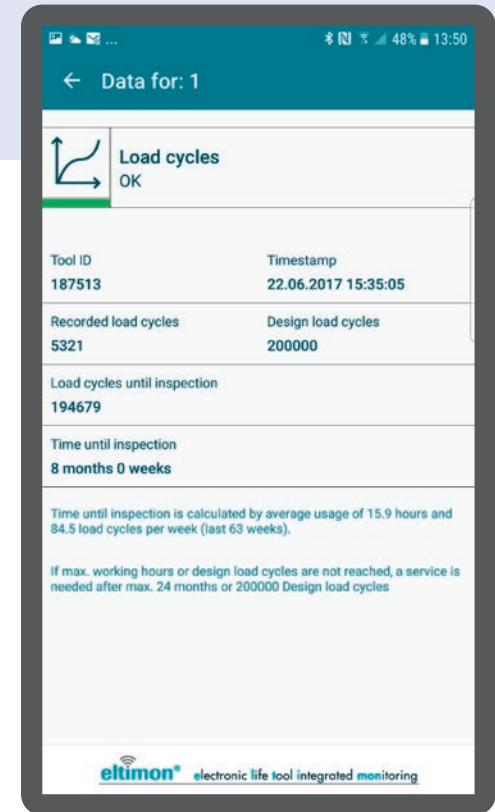


Instead of “Data for: DEMO”  
appears in reality: “Data for: XXXXXXXXX”  
(unique serial number of the Live Tool)

The Live Tool cockpit appears at first after reading the data. The traffic light colours are showing the status and areas for more attention. With click or touch more information is available: for instance for rpm. →



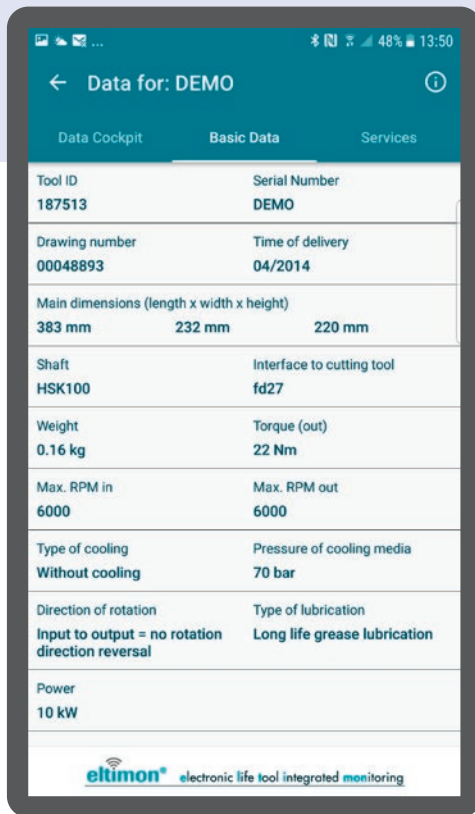
Detailed information to rpm and working hours for the defined rpm ranges. In this case we see 299 h above design rpm. Therefore warnings in RED colour.



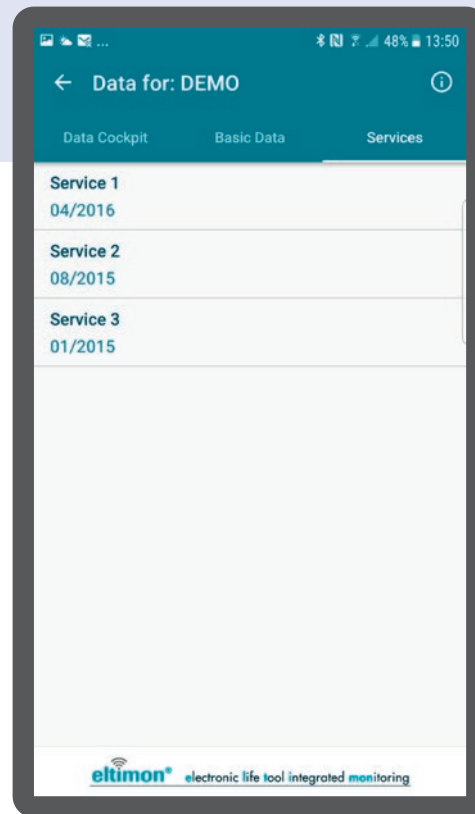
Detailed information to load cycles through the data cockpit. The achieved load cycles could be for instance the number of drilled holes.

The recommended date for maintenance is being calculated out of 3 criteria:

1. Achieved working hours
2. Achieved load cycles
3. Elapsed time since delivery

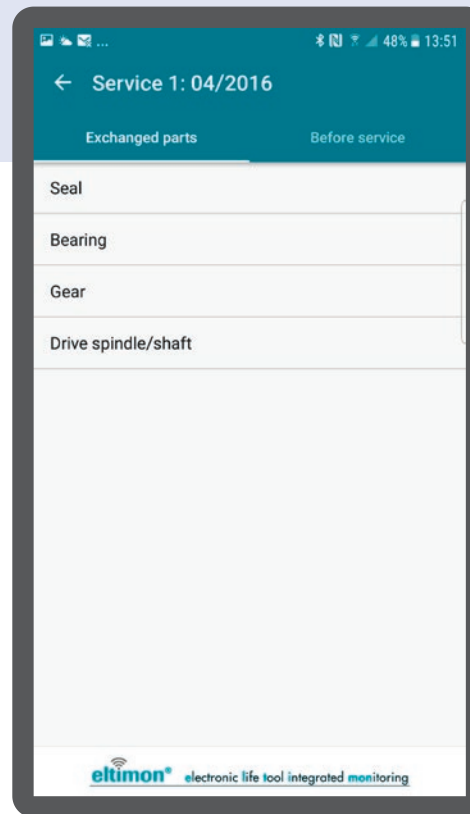


Information about basic data of the Live Tool.

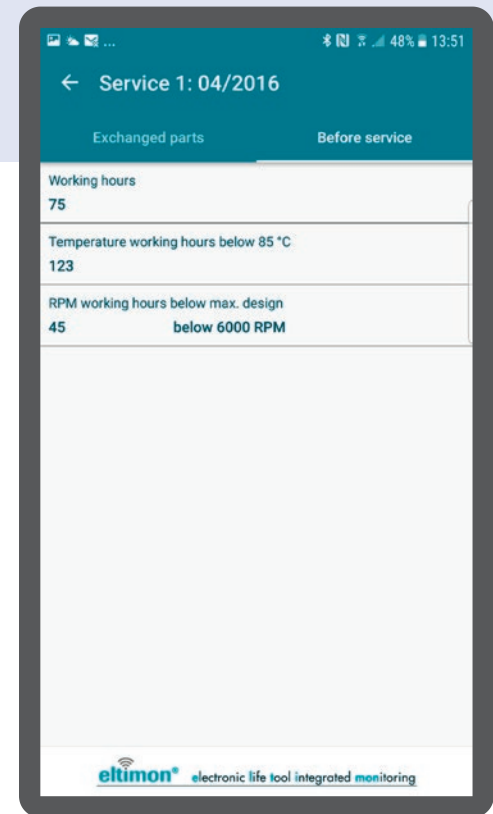


if there are services or maintenances carried out, information is to be found behind the button "Services".

With more clicks info to the specific service will be found →



These parts have been exchanged at Service #1. Important data before a service was carried out (before the counters are set back to zero): button "Before service" →



Before Service 2: 444 working hours in total. There off 321 h below 85°C and 23 hours below design rpm.

Further info is available regarding temperatures and working hours.

## eltimon Cloud

### Data Security

- Protection against unauthorized access
- Unique mapping
- All data are stored anonymously
- Link to sensitive customer data (Workpiece, machine, plant part, etc.) does not occur, or only by the customer!

### Analyses

- Preventive maintenance
- Parameters, trends, life cycle
- Tool history
- Service history
- Comparisons of equivalent live tools

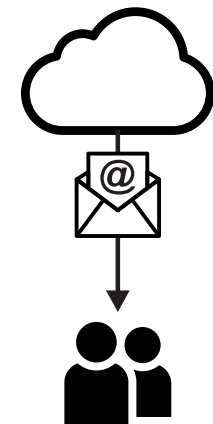
### Cloud Communication

- Upload of information and pictures
- How-to-use advice, service
- Automatic reminders

## Cloud Communication: Upload, Download, Advice, Reminders



## Push-Service: Automatic Messages acc. to Desired Criteria



## Dashboard (total number of tools with data: 1)

Filter datasets by readingdate

From    Until    ☐

Search:

Tools: 1

Critical: 0

Warning: 0

OK: 1

Service: 0

Missing Data: 0

Result	Serial number	Tool ID	Reading date	Manufacturer	Department	Status
1	8185501	188824	01.06.17 08:42:08	Mimatic Tool Systems	Fertigung	<div><div><div></div><div></div><div></div><div></div><div></div></div></div>

### Dashboard

- Status overview for life tools
- Search for tools of the same kind




## All tools

+ Add new tool

Only show devices from department

☐

Search:

Serial number	Tool ID	Reading date	Manufacturer	Department	Status	Comment	Date activated
8185501	188824	01.06.17 08:42:08	Mimatic Tool Systems	Fertigung			01.02.17 13:28:11  

[About](#) [Imprint](#) [Data policy](#) [Terms of use](#)

- All tools – related to department
- Search for tools of the same kind
- Add new tools

## eltimon Cloud

← Back
Data sets for tool with serial number: 8185501
Upload file

Serial number	Tool ID	Reading date	Manufacturer	Department		
8185501	188824	01.06.17 08:42:08	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	04.04.17 13:43:47	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	04.04.17 13:43:47	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	04.04.17 13:43:47	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	24.03.17 14:10:36	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	10.02.17 11:37:02	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	09.02.17 08:53:50	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	08.02.17 09:41:24	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	08.02.17 09:41:24	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>
8185501	188824	08.02.17 08:50:46	Mimatic Tool Systems	Fertigung	🕒 ↺ ↻ 🔧	>

1
2
>

- Data sets chronologically listed for **one** tool
- Add Info as PDF or JPG file

← Back

Details for tool with serial number: 8185501

Information

Serial number 8185501	Tool ID 188824	Reading date 01.06.2017 08:42:08	Manufacturer Mimatic Tool Systems	Eltimon version 01.00.0	Battery 88 %
--------------------------	-------------------	-------------------------------------	--------------------------------------	----------------------------	-----------------

⌚

Working hours

▼

🌡️

Temperature

▼

↺

Revolutions

▼

📈

Load cycles

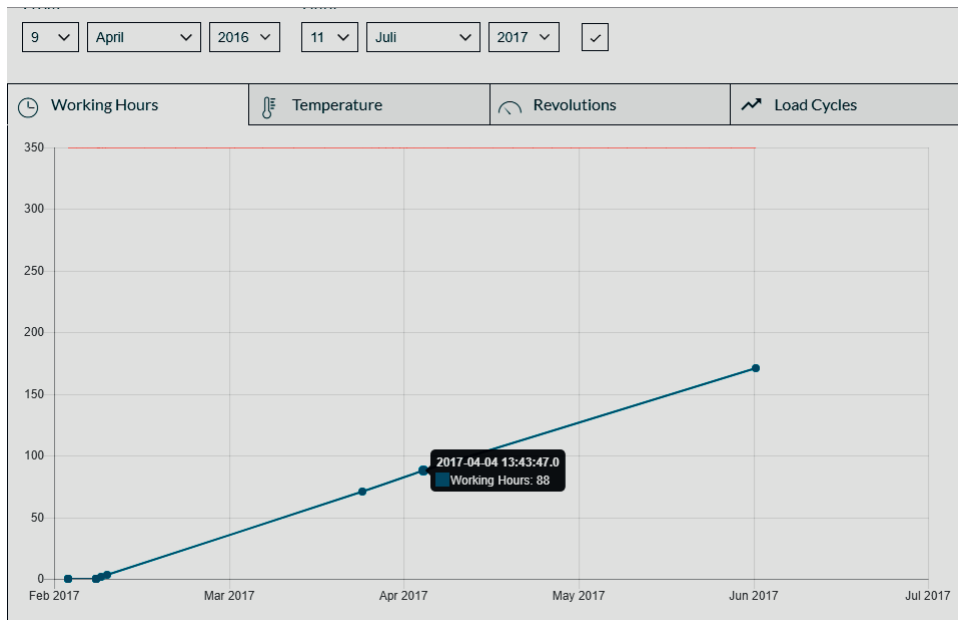
▼

Basic Data (8185501)

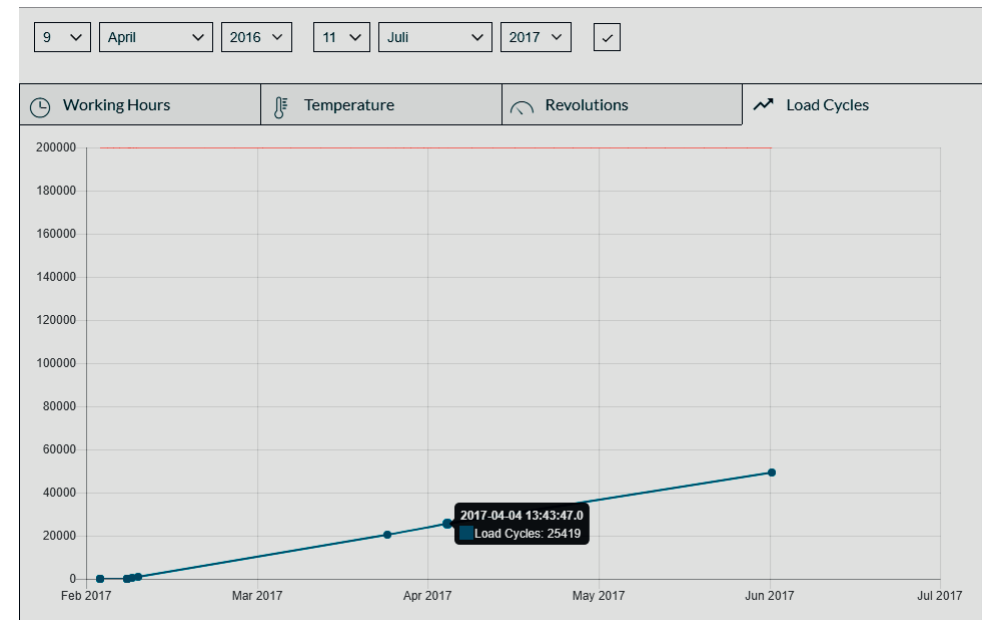
Drawing number 50060	Time of delivery 01.09.2016 00:00	Main dimensions (length x width x height) 207mm x 140mm x 94mm
Weight 8.00 kg	Shaft BMT55	Interface to cutting tool ER32
Max. torque 50 Nm	Direction of rotation Eingang zu Ausgang = keine Drehrichtungsumkehr	Max. rpm in 6500
Max. rpm out 6500	Type of cooling externe Kühlmittelzufuhr	Pressure of cooling media 70 bar

- **One** data set from the customer app
- Information on the data collection type and conclusions



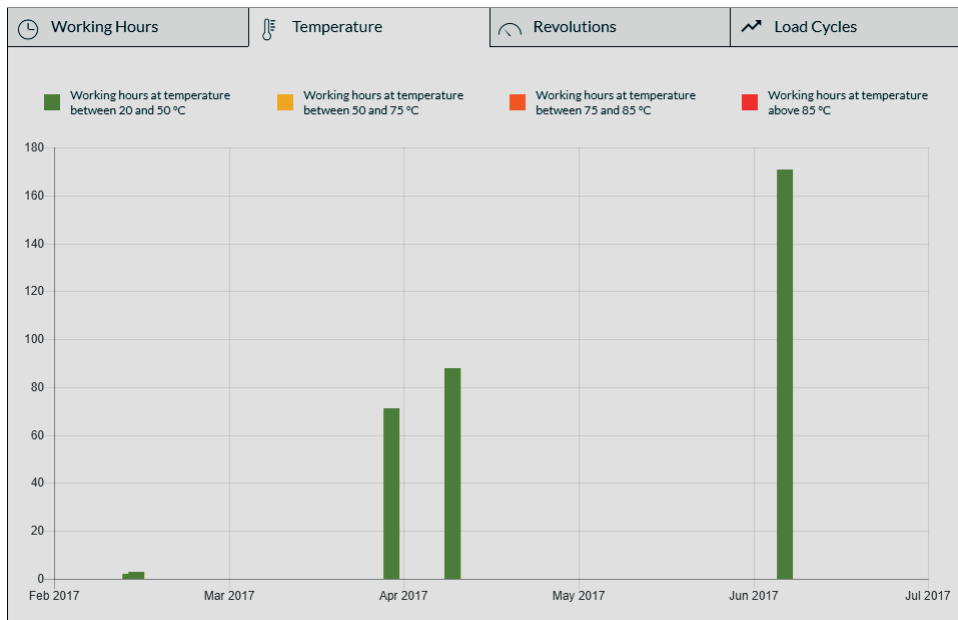


Reliable trend for achieved working hours with few data sets. Detailed data by touch over: black field. The number of data sets depend on the user. The linearity of the trend: it is most likely a process close to serial production.

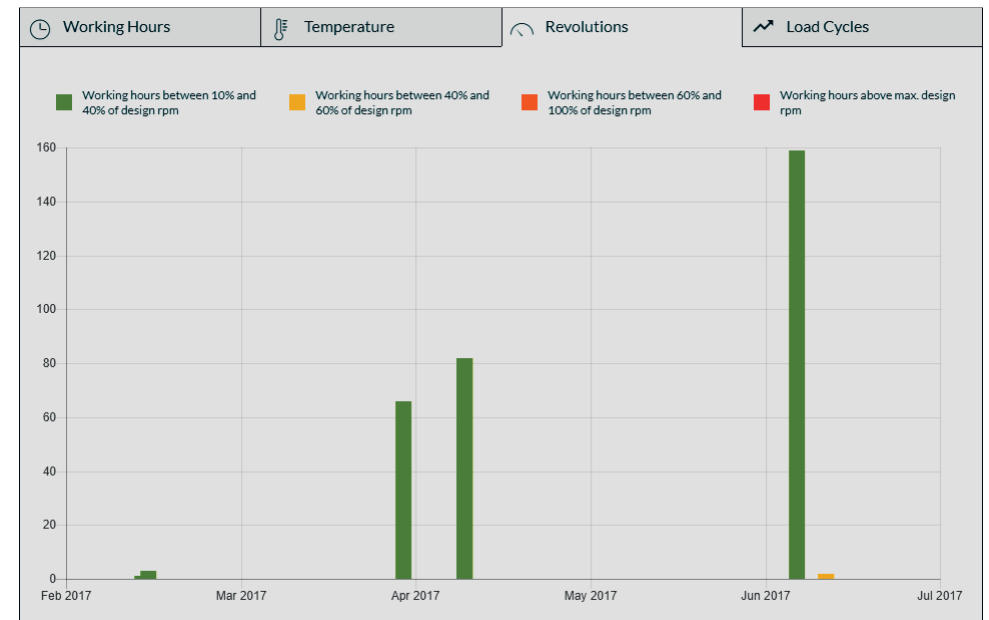


Trend for load cycles (e.g. number of drilled holes): reliable trend with few data sets possible. Detailed data by touch over.

From the number of working hours and load cycles the average process time of 12 sec. is to be calculated.



The tool was working only between 20 °C and 50 °C angefallen.



The tool was working mainly between 10 and 40 % of the design rpm. Only 2 hours between 40 and 60 % of the design rpm. Many more tool related data are to be found in the eltimon cloud.

- Manage users and user rights
- Invite new users – authentication  
(Names erased)

### Manage users for Technologie

[Invite user](#)

ID	Last name	First name	Status	Department	Roles
15	Bäc	Christian	active	Fertigung	Company admin
31	Fäu	Walter	active	Fertigung	Company admin
38	Gr	T	invitation pending	Fertigung	Department user
39	Gr	Timo	active	Fertigung	Department user
30	Kei	Markus	active	Fertigung	Company admin
14	Nie	Joh	active	Fertigung	Company admin
16	Ok			Fertigung	Company admin

- Address management
- Add new departments  
(Names erased)

### Company & Departments

[Edit company](#)

**Technologie**

Street:

City:

Phone:

E-Mail:

Website:

Registered devices:

### Departments

[Add Department for Technologie](#)

ID	Name	Street and number	Zip & city	Registered devices
1	Fertigung	Industriestrasse 1	10115 Berlin	1
2			10115 Berlin	0

## eltimon Protection

### eltimon is Used in Very „Hostile“ Environments

- Vibrations, comparable with a vibrating plate
- Flying chips, which can cause holes in steel
- Coolant-lubricant, such as acidic rain on the car window

### Mimalit is a Composite Material Developed for eltimon

- Highly resistant to breakage
- Extremely wear-resistant
- Completely resistant against flying chips
- Transparent data transfer



## eltimon Lab

An **eltimon** laboratory with a test rig for complete **eltimon** tools and data evaluation was built according to the latest ESD guidelines.

## eltimon Requirements

### What You Need

- eltimon Live Tool
- Mobile phone
- eltimon App

### What Needs to Be Done to Take Advantage of eltimon

#### Nothing!

- Data is generated fully automatic and stored
- Data will not be lost
- All work processes remain unchanged

#### Data readout

- At any time you want
- Regular reading of data improve the data basis for analyses



**What Needs to Be Done to  
Take Advantage of eltimon?  
Nothing!**

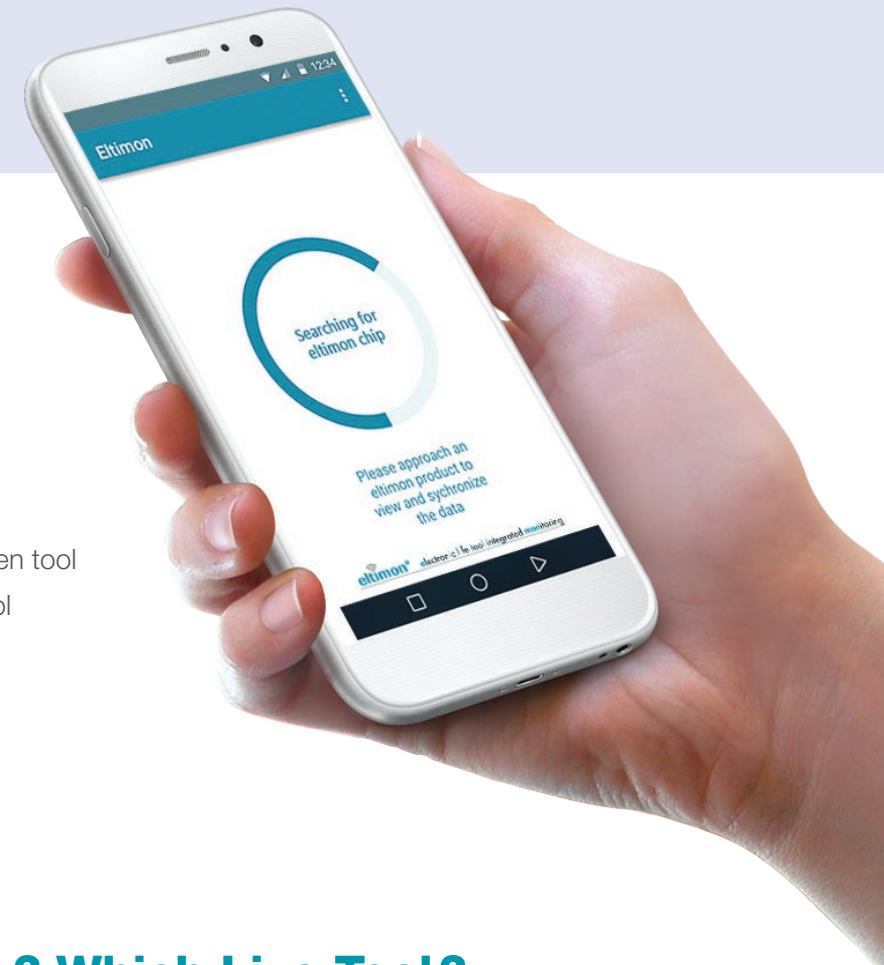
## eltimon Features

### Data Distance

- = Unique mapping
- = Simple handling without coupling
- = A mobile phone + an app = many driven tools
- = Energy-optimized

### Intelligence

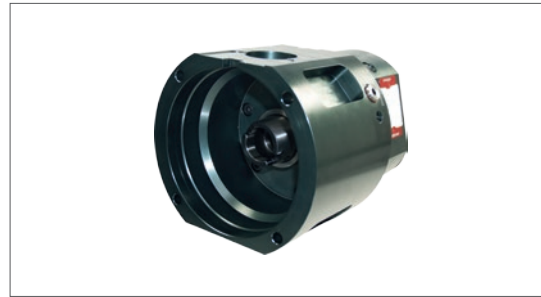
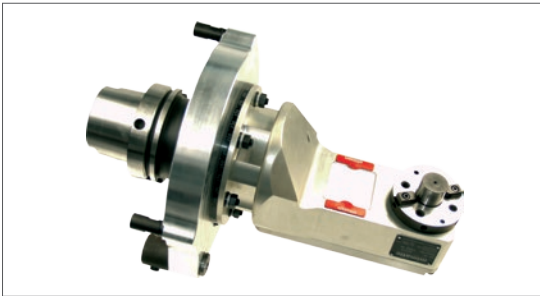
- = Data are processed using **eltimon** in the driven tool
- = Data are stored with **eltimon** in the driven tool



**Where Are the Data ? Which Live Tool ?**  
**eltimon = Unique mapping!**  
**eltimon = Unique Detection of the Live Tool!**

## eltimon Live Tools





## eltimon Data Security, Sensitive Data, Access Procedures

### eltimon N 1.0 Components Inside the Live Tool

- There is maximum security, as well regarding the environment and neighborhood.
  - No electromagnetic waves are emitted, **no radio signals** of any frequency.
  - There is **no electromagnetic pollution**.
  - Only non-sensitive data are collected and saved inside the Live Tool.
  - The attempt of illegal data access is very difficult, because a person has to closely approach the Live Tool with the reading device. eltimon is using a standardized data format of the NFC-Forum. Other data formats are actively sending data, which makes access attempts from decent distance possible.
  - Illegal access attempt with a non eltimon reading device: if the device could be placed within appr. one inch to the Live Tool. These illegally gained data are only numbers without any context or units like sec. A **meaningful usage** of the data **is impossible**.
- Stored data inside the Live Tool are **untouchable**. Only authorised and trained eltimon service personal has devices available to program eltimon devices. Information about maintenance and history will be stored. Counters are set to Zero after maintenance.
  - The life time of the collected and stored data relates to the mechanical life time of the tool casing. The eltimon black box conserves the data even after destruction of the sensors and other parts. The **“eltimon black Box”** is accessible with an eltimon reading device and the appropriate software.

### eltimon N 1.0 Customer App

Multiple security measures are applied. Only authorised people are able to use an eltimon customer app.

- There is a registration in the Google Play Store.
- There is a check with a “closed loop” procedure.
- There is a clearing only after entering a security code.

If there is illegal data access during transmission of data from customer app to the eltimon cloud:

These illegally gained data are only numbers without any context or units like sec. A **meaningful usage** of the data **is impossible**.

## eltimon Cloud

The eltimon cloud und related data banks are secured through up to date safety measures and security software. There is a frequent up date for the safety measures.

Only authorised people are getting access to **their specific part** of the eltimon cloud. Procedure:

- Personal invitation
- Registration
- Checking of registered data with a “closed loop” procedure
- Individual code

### Server architecture

The physical position of the servers are in Germany and hosted by a well-known provider with headquarter in Germany. The security concept provides maximum protection and availability. Data integrity is according to German laws.

- TÜV - examined data integrity according to ISO 27001
- The eltimon infrastructure is redundant has a 24/7 surveillance
- Health monitoring and Load Balancing for max. availability
- Redundant technologies
- Data mirroring
- Uninterruptable power supply
- Standby generator sets
- Modern fire protection
- Various non visible locations



## eltimon Certifications

**The Indicated Product “eltimon 1.0” is in Correspondence with the Following Regulations of European Council**

EN 61000-6-1 Electromagnetic compatibility (EMC) generic (10-2007) Immunity standard

EN 61000-6-3 Electromagnetic compatibility (EMC) generic (09-2011) emission standard

Immunity to high frequency electromagnetic fields  
DIN EN 61000-4-3 04.2011

Interference strength DIN EN 55022 12.2011

### Tests for Certification Have Been Performed:

Measuring equipment:

- Rohde & Schwarz Signal Generator SMT03
- Amplifier Research 10W1000
- Transducer EMCO 3110B
- Schwarzbeck UBA 9116
- Compotek CTA2450
- Frequency range: 80-1000 MHz
- 1-2.7 GHz (CTA2450)
- Field strength: 3V/m 3V/m 1V/m
- Polarisation: horizontal / vertikal
- Modulation: AM / 1 kHz / 80 % / Sinus
- Step width 80-1000 MHz: 1% log
- Dwell time: 3.3s

## eltimon History

### Summer 2012

Customers require operating hours counters for angle heads

### 2013

Conventional operating hours counters are installed in driven tools

### Autumn 2013

mimatic starts the reflection about new digital data acquisition

### Spring 2014

Foundation of mimatic R&D department: INNOVATION + marketing

### Autumn 2014

Globally available technologies are investigated

### Spring 2015

First technology partners are selected from USA and Europe

### Summer 2015

Presentation of first hardware dummies

### December 2015

First **eltimon** system has been tested successfully in Live tool

### January 2016

Two OEM global players are won as pilot customers for **eltimon**

### February 2016

**eltimon** Software specification with 233 pages of features is ready

### March 2016

60 **eltimon** Live tools are located in the order backlog

### September 2016

eltimon is presented to the public: AMB, IMTS

### March 2017

eltimon Cloud is online

### May 2017

eltimon App worldwide available in the Google Store

### June 2017

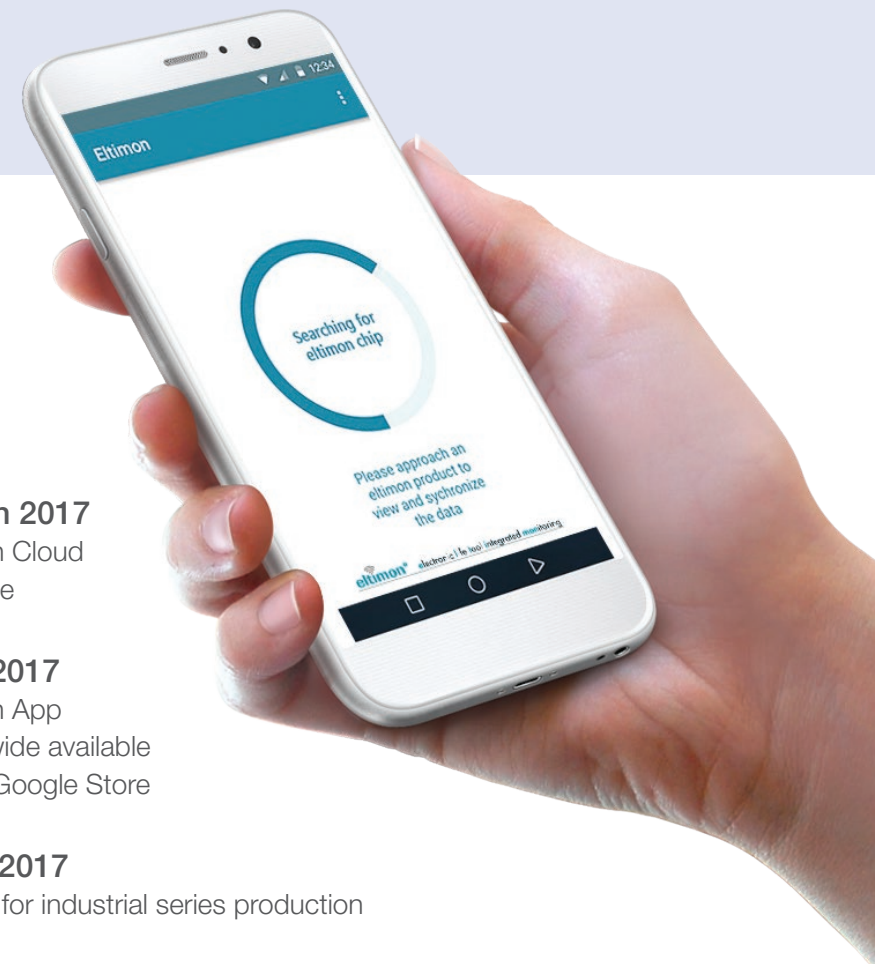
Ready for industrial series production

### July 2017

mimatic builds all customer-specific Live Tools with eltimon

### August 2017

150 Live Tools are running in pilot applications





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eMail: [info@wendel-tools.de](mailto:info@wendel-tools.de)