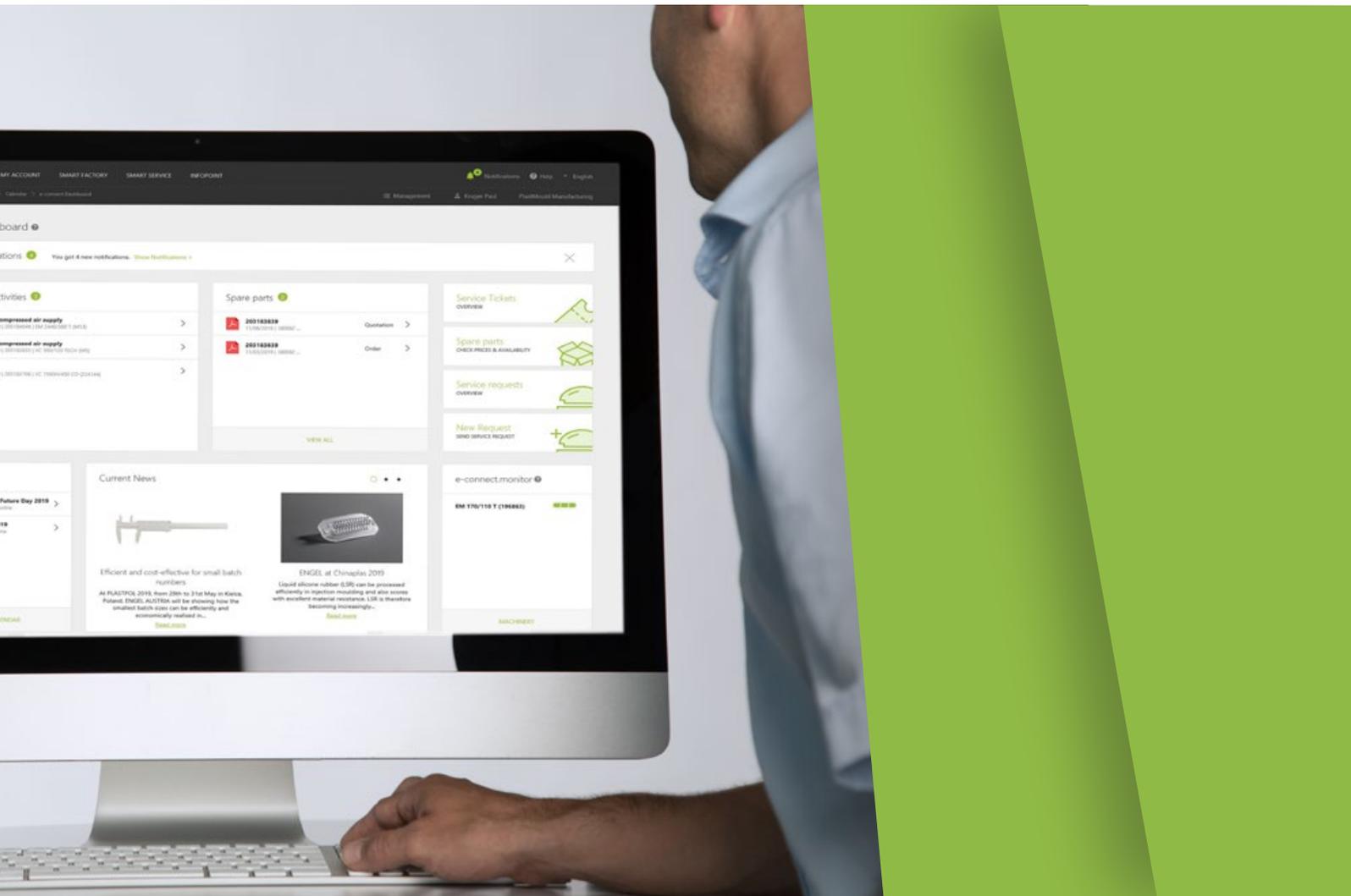


smart service

e-connect | e-connect.monitor | e-connect.24



ENGEL
be the first

The goal of our smart service solutions is clearly defined: we want to maximise the availability of your machine and minimise both maintenance and downtime costs.

Our range of services extends from an online customer portal to predictive maintenance systems and remote maintenance services with fast response times. If an unplanned downtime occurs despite this, fast and straightforward assistance is critical. This is why we provide you with professional 24/7 support, world-wide.

Our smart service solutions:

- e-connect
- e-connect.monitor
- e-connect.24

e-connect

Your online portal for ENGEL services

The free ENGEL e-connect customer portal collects all the information you need for your system. Whenever you log in, you can access the required details at any time.

From the first order, all machines and manufacturing cells supplied by ENGEL are stored in the portal, with the current status also shown. For a clear-cut overview, you can reproduce the precise structure of your individual machinery in the system and even assign production lines to different areas or departments online.

Whether you are replacing a machine component, or for other reasons, service requests can be sent directly via our e-connect customer portal. This is not only highly convenient for you as a user, but also speeds up order processing.

Your e-connect benefits at a glance

- free, independent of location and always available
- detailed information and documentation on all your ENGEL equipment
- current status data of your equipment for the proactive detection of impending downtime
- complete order and service history for efficient handling of service cases
- simple and quick pricing and availability check of spare parts
- overview of currently used and available products for further optimisation of your systems
- integration of ENGEL e-connect.monitor

Details of service cases

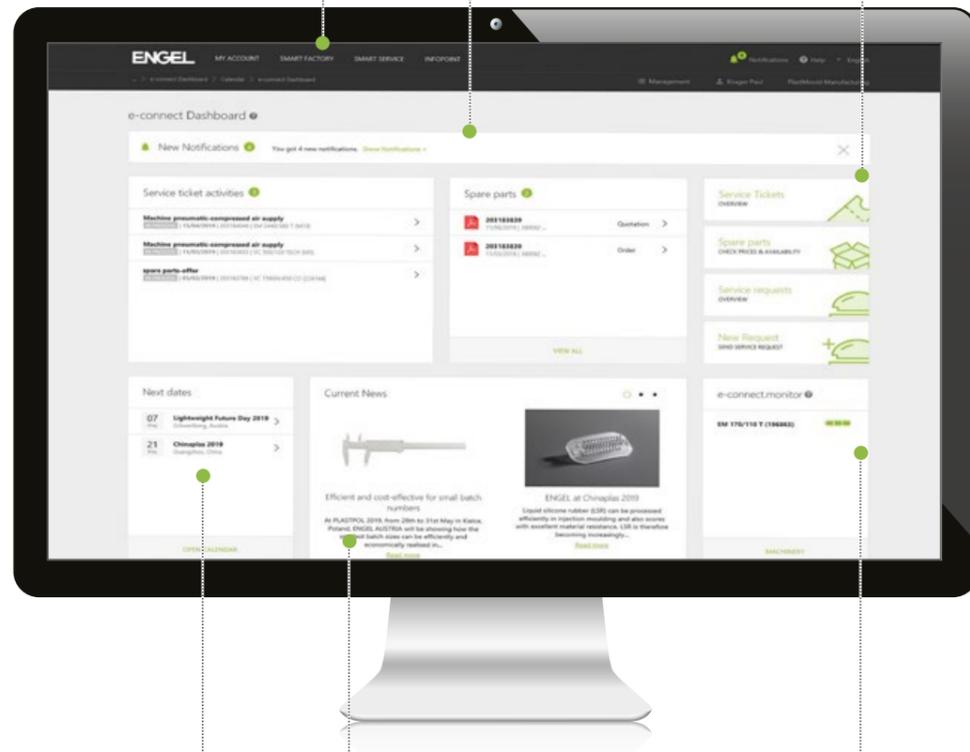
- Service tickets
- Spare parts offers/orders
- Service engineer calls

Quick links

Direct links to important areas/functions in the portal (e.g. checking the price and availability of spare parts, sending service requests)

Machinery

- Current status
- Alarms
- Machine documentation



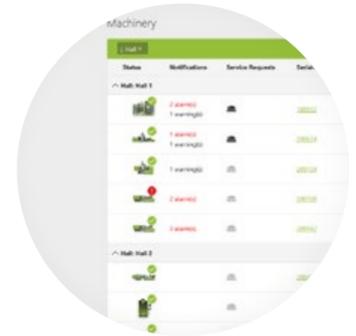
Dates with ENGEL

News

e-connect.monitor
Status display for monitored components in the machine (e.g. screw, hydraulic oil, servo pump)

Your machinery

You are given an overview of all your ENGEL equipment (machines, robots, stand-alone solutions, peripherals). You also have the option of naming all your machines individually and organising them accordingly. If you also use ENGEL e-connect.24 for your machines, the current machine status and pending alarms are displayed.



Details of your ENGEL equipment

The equipment details page offers you a clear-cut view of your current machine and production status. You get a complete overview of already active or bookable products to help further increase productivity, quality and machine availability. A detailed service history, machine and spare parts documentation, service reports and a log of your communications with the ENGEL service team are also available.



Status of your components

If you use e-connect.monitor products to monitor process-critical components, our customer portal will provide you with information on the current status and historical data. Critical conditions can immediately be identified, and essential maintenance activities decided. For screws, as example, e-connect lets you specifically define the desired tolerances for individual wear levels.



Your access to our customer portal Easy, quick and available online

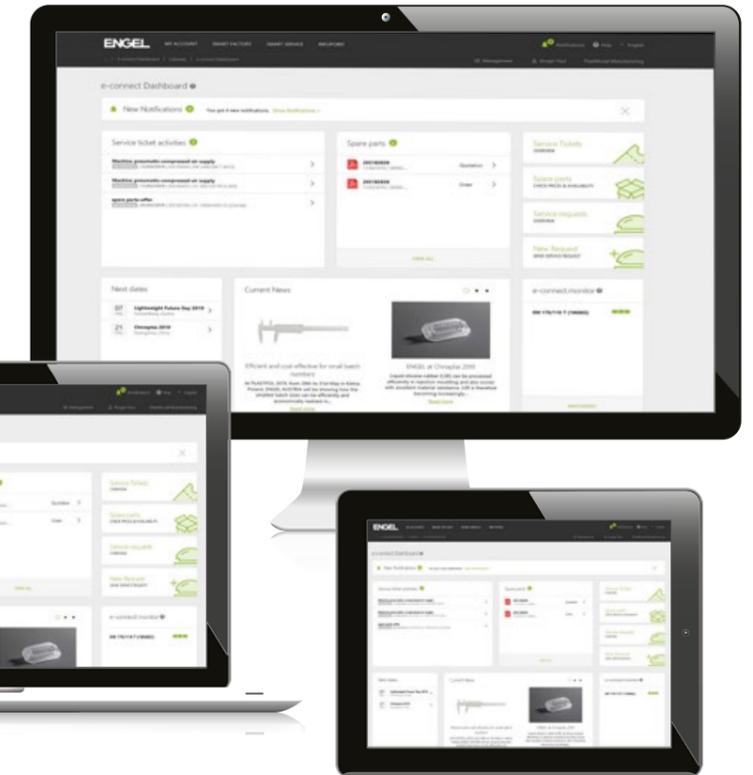
Price & availability check

ENGEL gives you quick and easy access to all spare parts offered by ENGEL or to all the information you may need from your machine's bill of materials. The prices are automatically displayed, including individual special conditions. It is also possible to request quotations directly.



Technical requirements:

- Internet connection
- EDGE Device (optional)
- operating system:
Windows 7 or newer
OS X 10.5 or newer
Android 4.4 or newer
iOS 8.0 or newer



Online service requests

In cases of machine downtime, every minute counts: ENGEL e-connect gives you a fast and easy way of sending service requests to our service team. If e-connect.24 is enabled on the specific machine, you will even receive 24/7 support. You can track the processing status of your service request on the customer portal.



Your connection to ENGEL

The appointments you book, such as seminars, workshops or visits by our sales and service technicians are listed in the portal and give you an overview of your next personal contact with ENGEL. If required, you can contact your service and sales person directly via the customer portal.



Registration:
You can reach our registration page via our homepage or directly via this QR code.

User roles:

As an ENGEL customer, you can designate an employee as the administrator in your company. The administrator manages the user data and assigns different user roles.

e-connect.monitor

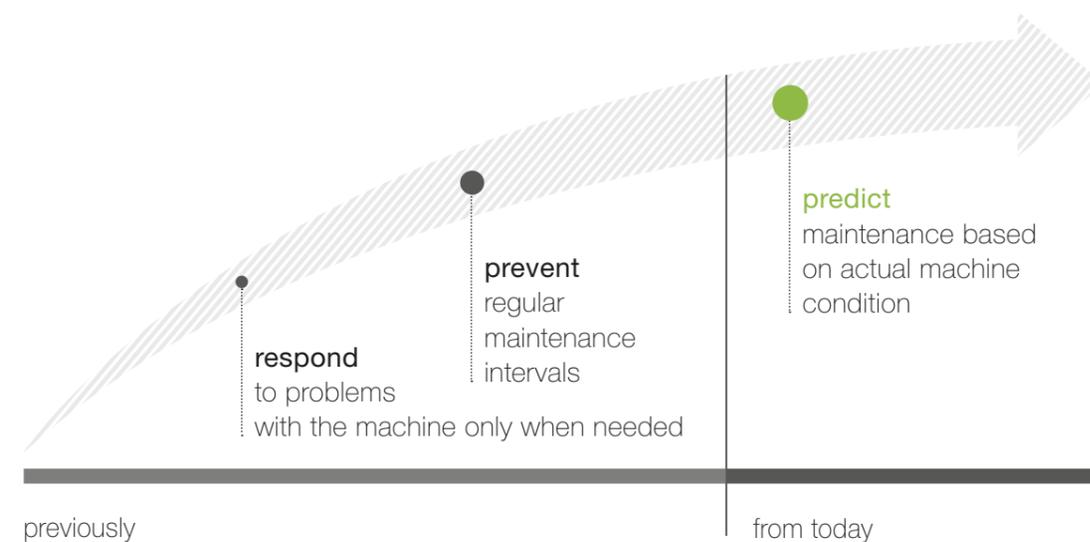
Monitoring process-critical components

Even the best self-adapting machines must be serviced to achieve their expected service life. Maintenance was previously based on fixed intervals in combination with production schedules developed by competent service teams.

Traditional maintenance methods have numerous disadvantages

During the machine's service life, unexpected downtime can occur that even competent maintenance teams cannot predict. As a result, the machine availability suffers, as do costs and production efficiency. ENGEL has developed a concrete solution for the following problems:

- unplanned downtimes, combined with enormous downtime costs
- high cost of preventive maintenance
- high inventory costs for spare parts
- time-consuming troubleshooting and manual fault analysis
- penalties in the case of orders which are not completed on time



The future of maintenance starts today

Listen to the heartbeat of your machine: The predictive maintenance systems in e-connect.monitor, the **condition monitoring** solution by ENGEL, mark the beginning of a new era in the maintenance and repair of injection moulding machines. It is now possible to monitor process-critical components during operation, saving you time, money and headaches.



Your benefits at a glance

- **Avoid unplanned downtime and improvements in machine availability:** timely function when the remaining service life of a component becomes critical and a replacement is necessary
- **Monitoring of process-critical components during operations:** thanks to ultra-modern sensor technology, machine downtime is no longer necessary to monitor components
- **Optimise planned downtime:** better planning of maintenance time and machine utilisation
- **Cost efficiency:** no need for regular maintenance, and costs for spare parts inventory is reduced

Monitoring

The key components of your machine

Predicting the remaining life and service life of components helps you minimise planned downtime, schedule maintenance, and order spare parts in advance. This maximises the availability of your machines. The best thing about this, however, is that all the information collected in the ENGEL e-connect customer portal is perfectly organised and available at all times. Data is analysed automatically using ENGEL's infrastructure and algorithms.



Plasticising screws

Until now, the condition of a plasticising screw could only be checked by removing it from the machine. Downtime of up to two working days had to be accepted for large machines for removing, cleaning and measuring the screw – that is now a thing of the past. e-connect.monitor starts a new era of maintenance:

- wear measurement of the screw during operation
- determining the wear on the screw flight
- simple and fast analysis by ENGEL service engineers using ultrasonic sensors
- independent of the control unit version and age of the machine

Servo pumps

The wear of a servo pump has a direct influence on the process stability and energy efficiency of your hydraulic machine. With e-connect.monitor, you can easily check the current status of all installed internal gear pumps, avoiding major unexpected downtime. This system enables you to closely monitor process-critical components:

- continuous online monitoring of the servo pumps of a machine
- detecting servo pump wear



Hydraulic oil

A poor condition of the hydraulic oil can lead to wear, valve damage and deviations in reproducibility. The time interval between manual oil tests are often too long, continuous monitoring of the quality of the oil saves costs by avoiding serious damage to the machine. ENGEL makes it possible – with e-connect.monitor:

- continuous online monitoring of the hydraulic oil by measuring the chemical status, particles and relative water content
- optimised scheduling of hydraulic oil changes or filtration
- early detection of deviating behaviour of the hydraulic components



Ball screw

Electrically driven machines use ball screws to convert rotary motion into the axial motion required for the injection moulding process, such as injection and clamping. A failure of the ball screw therefore leads to a failure of the machine. However, manual testing of a ball screw leads to prolonged, and perhaps unnecessary, downtime. We have developed an effective solution for this. Our e-connect.monitor offers many benefits for you:

- continuous online monitoring of the ball screws of a machine
- detecting ball screw wear



In order to monitor the condition of the main machine components during production, state-of-the-art sensors are attached to the machine, which automatically transmit their measurement data to ENGEL. We have developed special algorithms to analyse these data. You can access the results on the e-connect customer portal. Based on the latest developments, these algorithms are regularly updated and are immediately available to our customers.

Smart service architecture

Complete data protection

Through comprehensive linking and networking of technologies and the associated business processes, the topic of data security is increasingly becoming more of a focus. With ENGEL, your data is safe: Our system architecture meets the highest security standards – you have complete control and transparency over the data connections and the transferred data. A hardened operating system is used to operate the EDGE Device. All systems used are subjected to regular security tests and access is restricted to employees authorised by you.

Connection

- secure end-to-end connection with the latest SSL/TLS standards
- authentication based on X.509 certificate
- independent channels for device status & updates, condition monitoring and remote service

ENGEL data platform

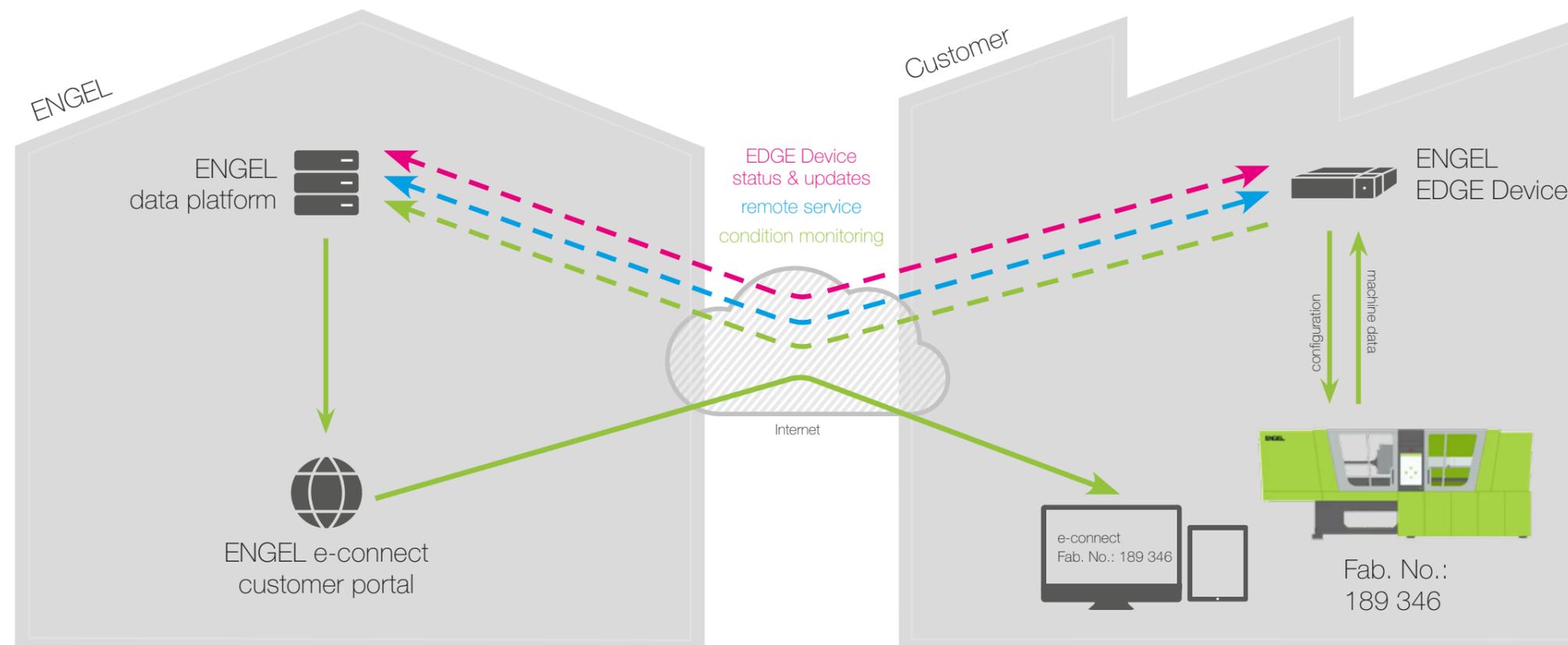
- checks the integrity of the machine data
- link between recorded data and the equipment master data
- e-connect customer portal backend
- e-connect.24 remote service backend
- EDGE Device backend

ENGEL EDGE Device

- communication interface between ENGEL data platform and systems
- hardened device with integrated firewall
- Trusted Platform Module (TPM)
- 2-factor authentication
- collects data based on the enabled services

ENGEL e-connect customer portal

- access to the portal via authentication and encrypted connection
- service history and documentation on your ENGEL equipment
- monitoring of equipment and components status
- maintenance recommendations on demand



e-connect.24

Fast remote maintenance 24/7

ENGEL e-connect.24 provides online support 24/7. Service experts from our locations around the world help you resolve unscheduled machine downtimes fast – at any time.

Thanks to our cost-saving remote maintenance package, your machine can quickly resume trouble-free production. The result is an optimised support process and even more productivity with a short payback period.

Your e-connect.24 Benefits at a glance

- Free 24/7 online support for immediate assistance
- Guaranteed maximum response time of two hours
- World-wide remote maintenance by ENGEL experts
- Quick troubleshooting for minimised downtimes
- Maximum machine availability and absolute data security
- Full service history
- Overview of your machinery status via the free e-connect app, regardless of location

Our security standard The ENGEL definition of industrial security



An ENGEL customer service technician can only access your machine when a service request has been sent by you or an authorised employee. The connection to the ENGEL central server is initiated by your EDGE Device using a SSL/TLS-secured data channel. Once the service case is closed, the connection is terminated. All remote maintenance access is logged and tamper-proof on the EDGE Device and the central server. Logs may be viewed at any time.



Optimised support process 24/7

Huf (Hülsbeck & Fürst) ensures maximum machine availability world-wide with ENGEL e-connect.24



“

With this project, we can see how the new solutions help us to not only reduce our travel times, but also and most importantly improve our overall productivity. All of this makes us much more competitive.”

Dirk Horn, Corporate Process Technology at Huf

4. Fast troubleshooting

- initiate troubleshooting or simply solve problems
- full service history
- close service request
- disconnect from ENGEL server



1. Request support

Operator can send service request from

- a PC/laptop/tablet/mobile phone
- the machine



3. Comprehensive online analysis

Use chat, audio or video conferencing for analysing problems together with experts.

- remote view
- status report
- review changes



2. Agreement of defined 1st level support

Automated notification of

- ENGEL e-connect.24 support
- customer-specific support
- optional: 2nd and 3rd level support



Hardware and software

Tailored for your requirements

We supply the hardware and software package customised for your needs:

3. ENGEL e-connect service package

Choose between a 1-, 2-, 3- or 5-year plan for your machine, including unlimited 24/7 online support, 365 days a year.

3. ENGEL e-connect screen page

For sending a service request directly from the machine. Standard on new ENGEL machines; optional upgrades available.

2. ENGEL EDGE Device

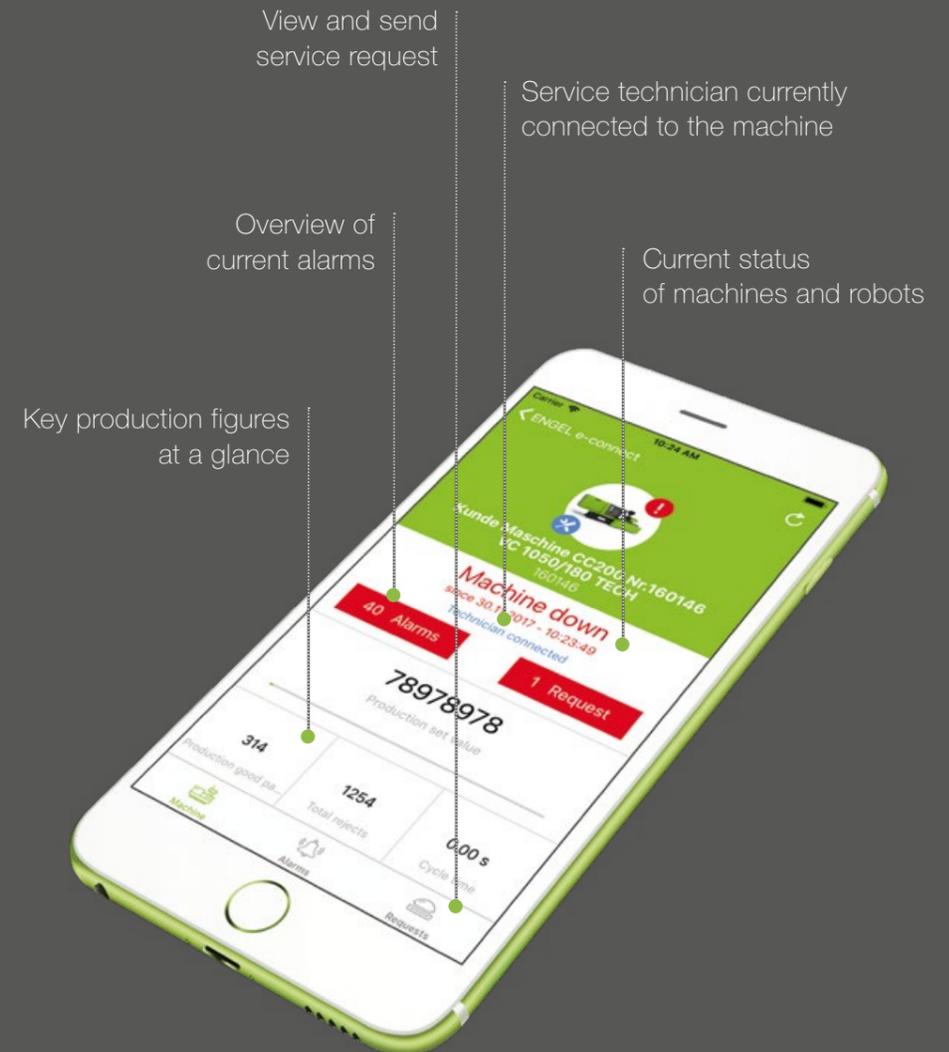
The user-friendly plug & play solution with software package for your PC or laptop. (1 device for up to 20 machines)

4. ENGEL wireless module (optional)

Wireless connection via WiFi or cellular data network including USB modem and WiFi router



You will also need internet access for the EDGE Device and a wired network to connect the machines.



e-connect app

Keep an eye on your machines using our free e-connect app (available for iOS, Android or Windows) at any time. Check your current machine and production status on your mobile device and submit service requests – fast and easy.



ENGEL AUSTRIA GmbH | Ludwig-Engel-Straße 1 | 4311 Schwertberg, Austria
Tel. +43 50 620 0 | Fax +43 50 620 3009 | sales@engel.at | www.engelglobal.com

The information, product features and pictures contained in this brochure are intended exclusively as a technical guide. ENGEL is not responsible for any technical changes or print/typographical errors. Reproduction in whole or in part is prohibited without the prior written consent of ENGEL AUSTRIA GmbH.