e-connect.monitor
Monitor process-critical components
To reach their expected service life time even the best, self-adjusting machines have to be maintained. Up until now, maintenance has been carried out based on a combination of defined service intervals and maintenance schedules developed by competent maintenance teams.

Conventional maintenance methods are not 100% efficient

Over the lifetime of a machine unexpected downtimes can occur, which even experienced maintenance persons cannot predict. These downtimes reduce the availability of the machine as well as production and cost efficiency. ENGEL has developed a concrete solution to the following problems:

- unplanned or unnecessary downtime and the resulting costs
- high expenses for preventive maintenance
- high storage cost for spare parts
- time consuming cause identification and non-automated error analysis
- penalties associated with delayed delivery of orders

The future of maintenance starts today

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

Your benefits at a glance

- Prevention of unplanned downtime and increase of system availability: timely alerts when the remaining service life of a component becomes critical and replacement is required
- Monitoring of process-critical components during operation: thanks to latest sensors, it is no longer necessary to shut down machines in order to monitor components
- Optimise planned downtime: better coordinate maintenance and machine utilisation
- Cost efficiency: no more unnecessary periodical maintenance, reduced costs for spare parts storage
Monitoring the key components of your machine

The prediction of the remaining service life of components helps you minimise unplanned downtime, plan for maintenance and spare parts order ahead of time, and maximise the availability of your machine pool. And what is best: access all collected data online, perfectly organised in our customer portal e-connect and automated data collection and analysis using ENGEL infrastructure and algorithms.

Plasticising screws

Until now, checking the condition of a plasticising screw required complete dismounting. For larger cells, removal, cleaning and measurement of the screw can take up to two working days – in many cases avoidable downtime, if the screw is still in good condition.

e-connect.monitor enables a new era of maintenance:

- measurement of screw condition without machine downtime
- detection of wear on the screw flight
- ENGEL service technicians use ultrasonic technology for fast and easy measurement
- independent of control version and age of the machine

Hydraulic oil

Bad hydraulic oil condition can lead to wear, damages on valves and deviations in repeatability. Time span between manual oil checks may be too long, but continuous monitoring of the oil quality saves costs in avoiding serious damage to the machine. ENGEL makes it possible – with e-connect.monitor:

- continuous online monitoring of oil provides information on condition, contained particles and oil/water ratio
- optimised scheduling of hydraulic oil replacements or filtering
- recognition of problems from all major hydraulic components

Servo pumps

The wear of a servo pump has 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 servo pumps installed, preventing major unexpected downtimes. This system allows you to keep a close eye on process-critical components:

- continuous online monitoring of the machine’s servo pumps
- detection of wear on the servo pump

Ball screws

Machines with electric drives use ball screws to convert rotary movements into the axial movements required for the injection moulding process, for instance injecting and clamping. A ball screw failure leads to a machine breakdown. But checking the condition of a ball screw manually leads to major – perhaps unnecessary – downtime. We have found a suitable solution. With e-connect.monitor you benefit from numerous advantages:

- continuous online monitoring of the machine’s main ball screws
- detection of wear on the ball screw
The latest sensor technology inside the machine monitors the condition of its main components during production. Your data is automatically transmitted to ENGEL. ENGEL developed special algorithms to analyse this data and the results are available on the e-connect customer portal. These algorithms are regularly updated based on the latest development insights so the customer benefits from them directly.

The workflow:
- monitoring of process critical components during running process
- analysis of collected data using ENGEL algorithms
- display of component condition on the e-connect portal
- service recommendations based on received data any time available on the e-connect portal

Connection
- secure end-to-end connection via latest SSL/TLS standard
- authentication with public key infrastructure certificates (PKI)
- independent channels for configuration, data transfer and remote assistance

ENGEL platform
- ensuring integrity of machine data
- combining measurement data with engineering and production data
- back-end for e-connect portal

ENGEL Service Box
- communication gateway between ENGEL data centre and machines
- hardened device with integrated firewall
- collects and aggregates data according to activated services

e-connect customer portal
- access to customer portal via authentication and encrypted connection
- monitoring the status of components
- access to maintenance recommendations

With e-connect.monitor, the measurement only takes 15 minutes, and we do not even have to shut down the system. For more than a year, the condition of the screw was recorded every eight weeks. Due to the regular screw inspection, we can now eliminate wear as a cause for process-related problems. This makes troubleshooting significantly faster.

Wilhelm Raber, Head of Injection Moulding Technology and Production at Praher Plastics Austria