

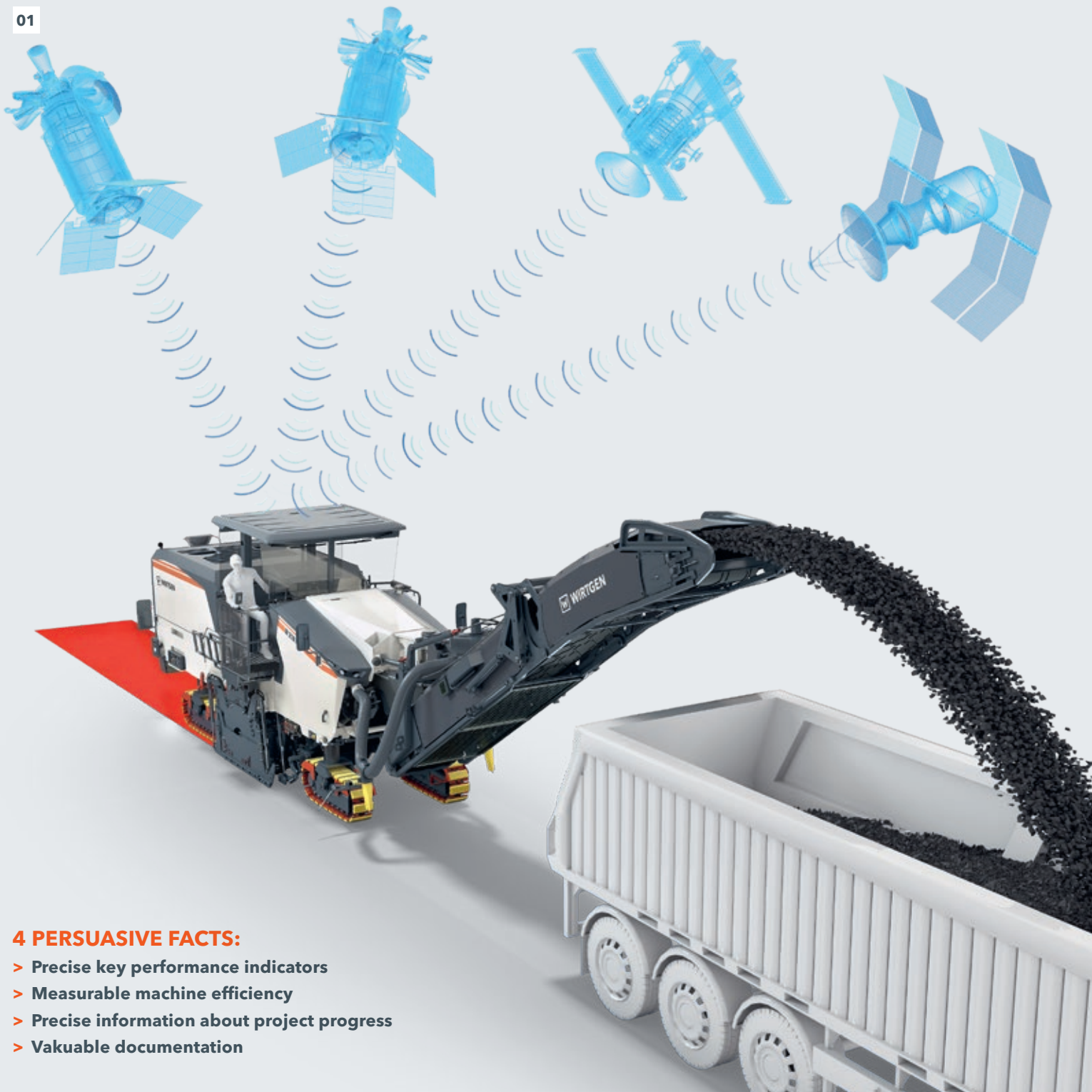
Precise Construction Site Data for Higher Productivity, Efficiency,
and Sustainability

WPT - WIRTGEN PERFORMANCE TRACKER



WIRTGEN PERFORMANCE TRACKER DELIVERS MAXIMUM CUSTOMER BENEFIT

01



4 PERSUASIVE FACTS:

- > Precise key performance indicators
- > Measurable machine efficiency
- > Precise information about project progress
- > Valuable documentation

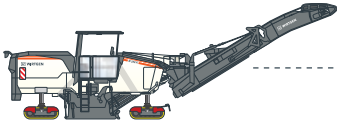
The innovative, satellite-based **WPT - WIRTGEN PERFORMANCE TRACKER** is a comprehensive system for the measurement and documentation of machine performance. The information gathered are continuously analyzed and made available to the system's users in a clearly structured form.

Ultimately, **WPT** delivers essential information about ongoing construction projects and, when used consistently, can contribute to higher productivity and an increase in efficiency, quality, and sustainability on every single construction site.

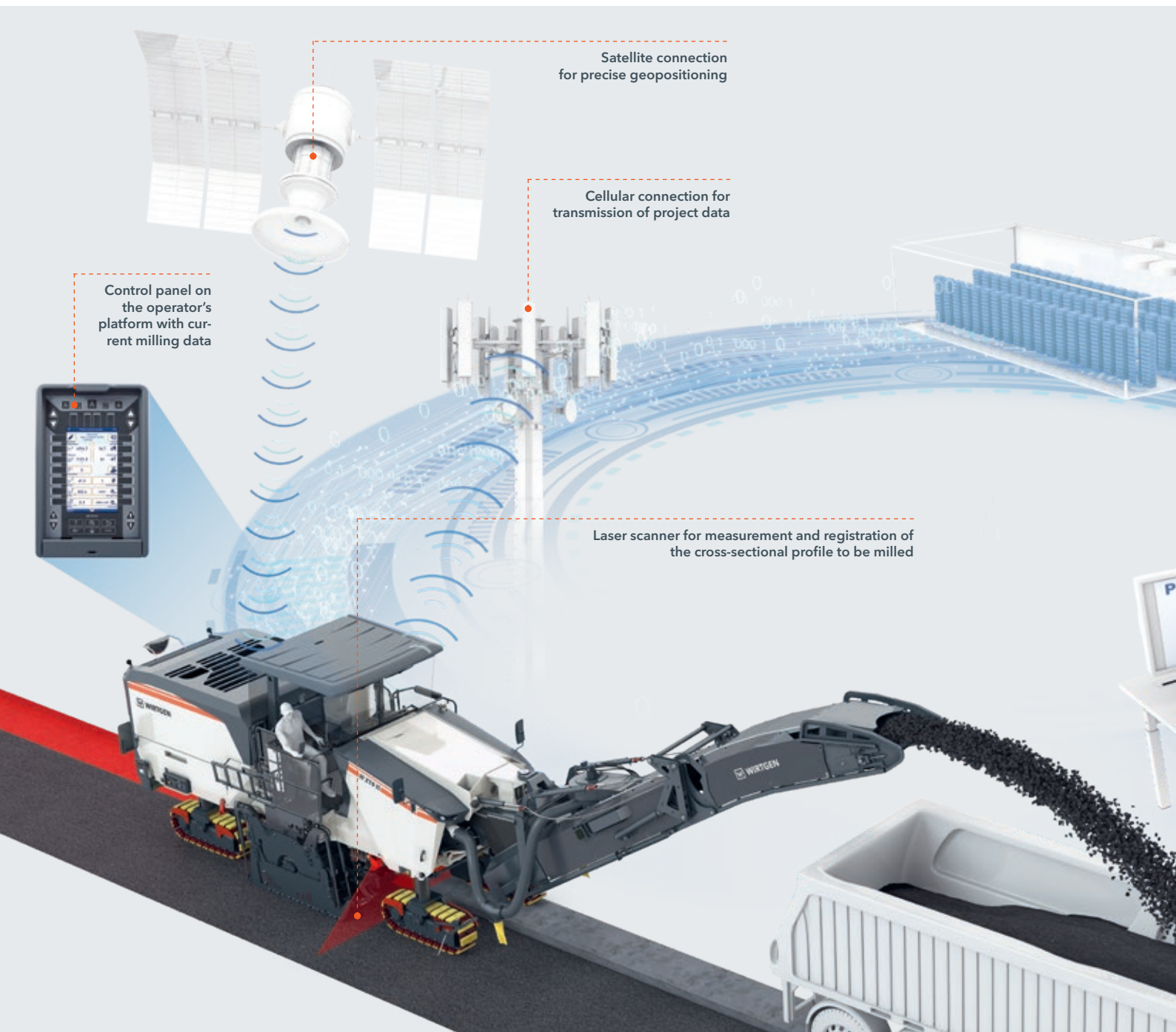
01 - 02 WPT is available for all current compact and large milling machines from WIRTGEN and the WR model series. The system can also be quickly and easily retrofitted on machines already in use.

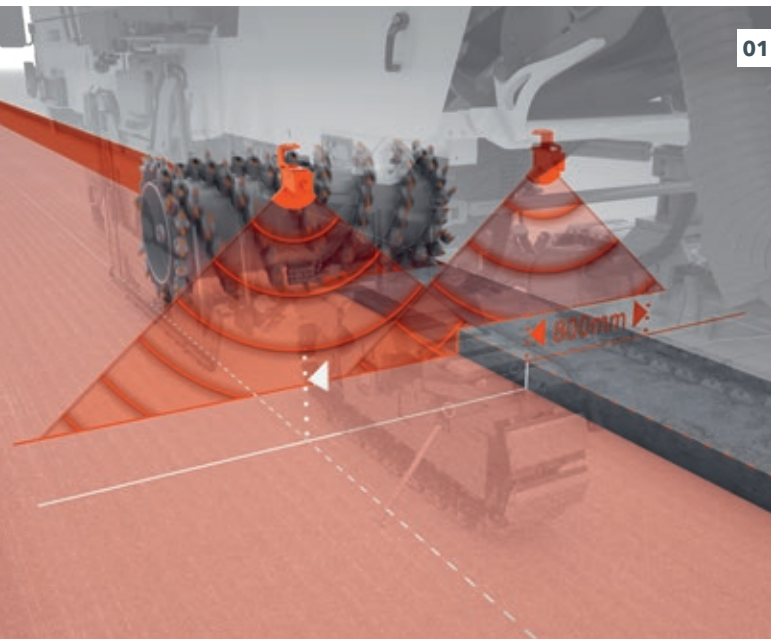
02





WPT FOR COLD MILLING MACHINES: AUTOMATIC TRACKING OF MILLING PERFORMANCE





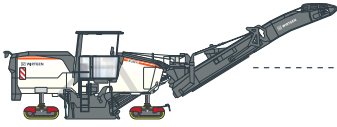
02



01 The actual milling profile is determined by means of laser scanners. **02** The machine operator can view the milling data determined on the control panel on the operator's platform.

WPT - WIRTGEN PERFORMANCE TRACKER uses laser scanning to determine the cross-sectional profile to be milled. Surface milling performance and milling volume are then precisely measured using GNSS positioning and other sensors. The machine operator can permanently view the milling data determined on the control panel on the operator's platform. After project completion, an automatically generated report containing all relevant performance and consumption data is forwarded to the machine owner.

At the same time, Performance Monitoring in the Operations Center even allows the measured data to be clearly displayed in real-time during the ongoing process. Moreover, an API data interface makes it possible to automatically migrate the measured data to the customer's own system after project completion, e.g. for final invoicing of the construction project.



WIDE RANGE OF INFORMATION WITH WPT

WPT enables an extremely precise assessment of machine efficiency on the basis of the relayed data and information:

01 Precise Key Performance Indicators

- > More precise costing analysis
- > Exact performance and consumption data for project planning
- > Easier assessment of site efficiency

02 Measurable Machine Efficiency

- > Transparent data base
- > Easier comparison of efficiency within the machine fleet
- > Easier selection of the most effective machine for the project

03 Precise Information about Project Progress

- > Important information is displayed on the operator's platform
- > Display of current milling progress in the Performance Monitoring function in the Operations Center
- > Details of diesel fuel and pick consumption
- > Display of current truck load (in tons)
- > Easier costing for future projects

04 Valuable Documentation

- > Precise tracking of additional work for billing purposes
- > Manual measurement no longer necessary
- > Data required for billing available immediately after project completion
- > Quick and time-saving final costing



**MACHINE
OWNER**

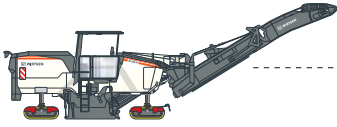
**COLD MILLING
MACHINE**



WPT



OPERATOR



PRECISE INFORMATION FOR THE MACHINE OPERATOR

The machine operator can select and display any of the most important performance and consumption data on the universal 7" control panel, e.g. precise information on truck loads. In the event of unforeseen milling situations such as manhole

covers or refinished sections, the operator can also place markers, which are then noted in the **WPT** report.

Control Panel of the F-Series Compact and Large Milling Machine Generation

Left side labels:

- Edit job name
- Current distance milled
- Current area milled
- Number of markers placed
- Markers placed on special sections
- Marking of added areas
- Marking of refinished areas

Right side labels:

- Finish job
- Current truck load
- Current number of trucks
- Density calculator
- Project item number
- Main application
- Sub-base type

Screen content (Performance tracker 1/4):

- Start of site: May 12, 2020 07:26 PM
- TEST-001
- Job name: TEST-001
- Milling distance: 4314.7 m
- Milling area: 7177.9 m²
- Truck load: 14.7 t
- Amount trucks: 51
- Counters/Marker: 5
- Difficulty: 47.5
- Sub-base: 322.6
- Sub-base type: 0.0
- Main application: ASPHALT
- Sub-base type: BINDER LAYER

Physical buttons and icons:

- Top row: A, B, A, B, A
- Left side: Up, Down, Home, Back, Forward
- Right side: Up, Down, Home, Back, Forward
- Bottom row: WIRTGEN, ?, Home, Back, Forward, LEVEL

HIGH-QUALITY DOCUMENTATION IN EXCEL FORMAT BY E-MAIL

The system continuously documents all construction site information without any intervention on the part of the machine operator. Milling performance data is transmitted to a data server via a cellular connection. At the start of a new job outside of a defined radius of the previous project, a **WPT** report is automatically generated in Excel and PDF format and sent, for example, to the e-mail address provided by the machine owner. The operator can manually mark a job as finished and send off a report at any time - either in the form of smaller units (e.g. daily) or as a comprehensive report for a specified period of time (e.g. a weekly report).

> Job data, general information, listing of all important performance data

> Precise view of milling progress on satellite map displays



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2320 0001

Wirtgen Performance Tracker Report

L1075, 07639, Bad Klosterlausnitz, Thüringen, 03.04.2019

general information

job begin: 03.04.2019 06:30
 job end: 03.04.2019 14:33
 order no.: BAUMA 2019
 time zone: GMT+02:00

overview milling performance

| | | | |
|---------------------------------------|--------|---------------------------------------|-------|
| total area ¹⁾ [m²]: | 3072,7 | total volume [m³]: | 371,9 |
| of which uncertain ²⁾ [%]: | 1,1 | total tonnage [t]: | 892,6 |
| milling distance ³⁾ [m]: | 2403,6 | of which not loaded [t]: | 0 |
| Ø milling depth [cm]: | 12,1 | Ø material density [kg/m³]: | 2400 |
| Ø milling width [m]: | 1,28 | loaded trucks: | 41 |
| job duration ⁴⁾ [h:m]: | 08:02 | milling duration ⁵⁾ [h:m]: | 04:44 |
| idle duration ⁶⁾ [h:m]: | 01:51 | current operating time [h]: | 1588 |
| | | engine on-time [h:m]: | 07:30 |
| sum marker: | 8 | difficulty [m]: | 34,4 |
| addition [m²]: | 57,5 | refinish [m²]: | 68,9 |



Wirtgen Performance Tracker Report

Page 1



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2320 0001

Wirtgen Performance Tracker Report

L1075, 07639, Bad Klosterlausnitz, Thüringen, 03.04.2019

overview order item

| comfort filter to order assignment | | | | | | | 00,0 % of all areas assigned | | | |
|------------------------------------|-------------------------|-----------------------|----------|---------------------------|--------------|------------|------------------------------|---------------|------------------|--------------|
| order item ¹⁾ | milling depth [cm] from | milling depth [cm] to | area no. | main application | sub-base | specialty | truck loading | milling depth | milling distance | milling area |
| 1 | 12,5 | 15,4 | 1 | binder- and surface layer | base layer | | yes | | | |
| 2 | 3,5 | 4,4 | 1 | surface layer | binder layer | | yes | | | |
| | | | | | | additional | yes | | | |



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2320 0001

Wirtgen Performance Tracker Report

L1075, 07639, Bad Klosterlausnitz, Thüringen

overview areas

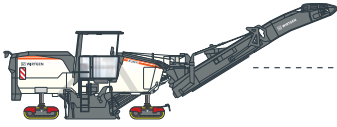
| milling depth [cm] | milling distance [m] | milling area [m²] | milling volume [m³] | tonnage [t] | truck loading | main application | sub-base | specialty | assignment order item ¹⁾ |
|--------------------|----------------------|-------------------|---------------------|-------------|---------------|------------------|----------|-----------|-------------------------------------|
| undefined | 17,10 | 34,0 | | | | | | | |
| 3,5-4,4 | 336,00 | 544,2 | | | | | | | |

> Breakdown of milled surfaces according to milling depth class, truck loading, marking of special features and main application / sub-base type



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| milling depth [cm] | milling distance [m] | milling area [m²] | milling volume [m³] | tonnage [t] | truck loading | main application | sub-base | specialty | assignment order item ¹⁾ |
|--------------------|----------------------|-------------------|---------------------|-------------|---------------|---------------------------|------------|------------|-------------------------------------|
| undefined | 0,20 | 0,4 | 0,0 | 0,0 | | binder- and surface layer | base layer | additional | |
| 14,5-15,4 | 117,6 | 57,1 | 8,2 | 19,6 | yes | binder- and surface layer | base layer | additional | |
| sum | 117,8 | 57,5 | 8,2 | 19,6 | | | | | |



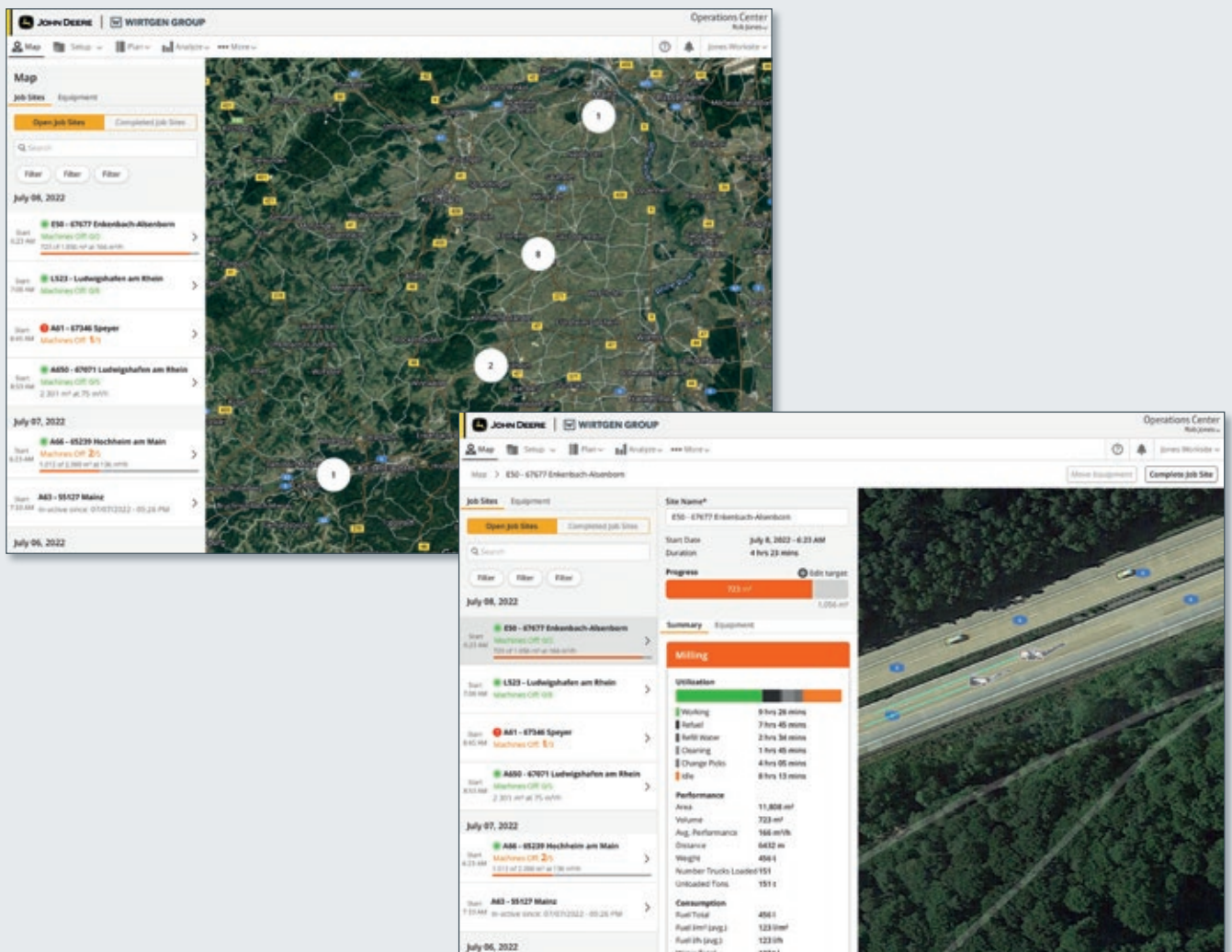
MACHINE PLANNING WITH PERFORMANCE MONITORING

Performance Monitoring in Operations Center enables the live display of the tracked performance data of a machine. An overview of the entire construction site can also be displayed in real-time. This enables resource managers and project planners to view all relevant information in their offices at any time, e.g. to assess progress on the construction site.

In practice, **Performance Monitoring** automatically delivers a live overview of all active construction sites and monitors the progress of each respective project. The live information in-

cludes the total volume and area milled, machine idle times, machine locations, and other relevant parameters. It also displays detailed, site-specific key performance indicators of individual machines – e.g. diesel fuel consumption (l/m^3) and milling performance (m^3/h). The KPIs of the individual machines and all parameters of a construction project can be grouped together and conveniently compared in a clearly structured overview. This enables the timely implementation of improvements to on-site processes and procedures, even in the course of an ongoing project.

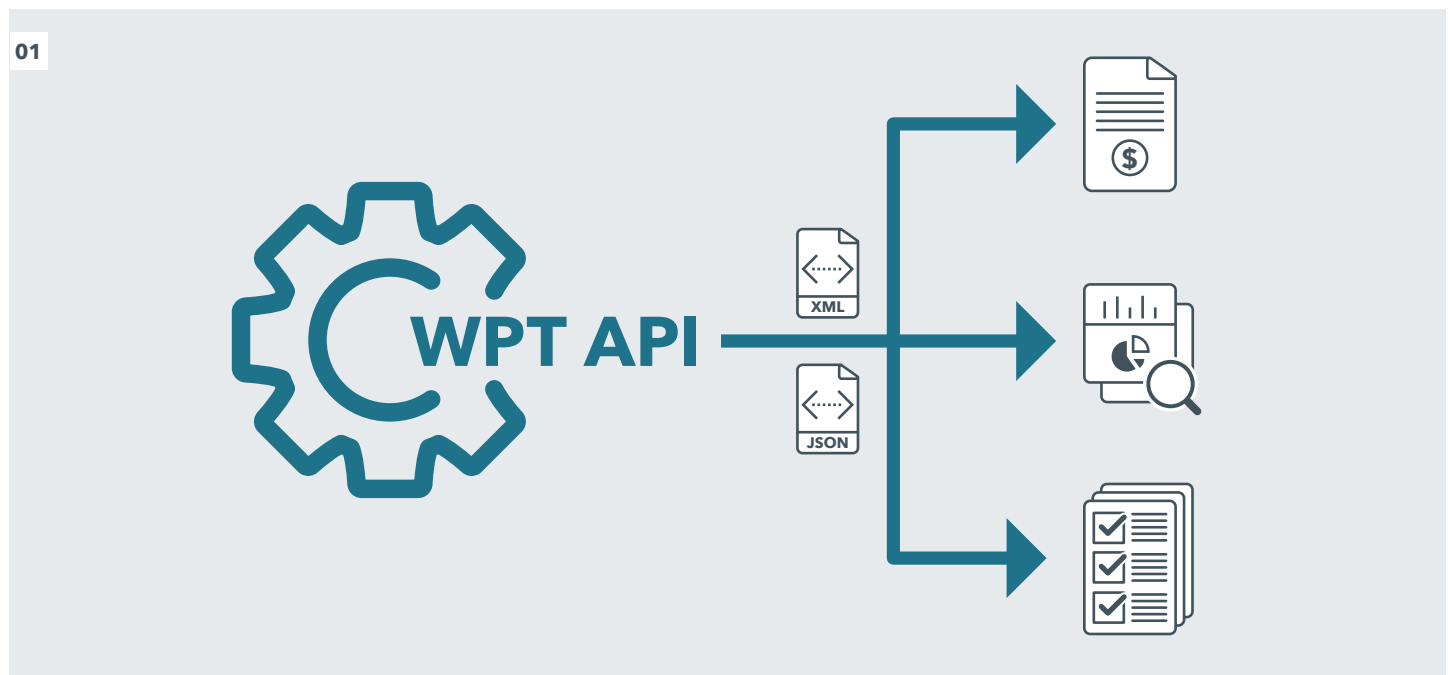
01



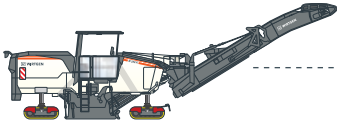
OPTIONAL DATA TRANSFER TO CUSTOMER-SYSTEMS

Construction contractors frequently need to manually transfer relevant site data to their own systems as an aid to organization and the planning of resources. Now, the data registered on the construction site can be transferred automatically via the **WPTAPI-interface**. The automatic transfer of data in XML or JSON format is fast and error-free – which means that the corresponding information is available immediately after completion of the construction project, e.g. for automatic billing.

Other advantages of the **WPT API-interface** are fast and precise costing analysis, exact performance and consumption data for project planning, simplified analysis of construction site efficiency, etc.



01 WPT report data are automatically transferred to the customer's own system on completion of a construction project.



HIGH-QUALITY HARDWARE COMPONENTS

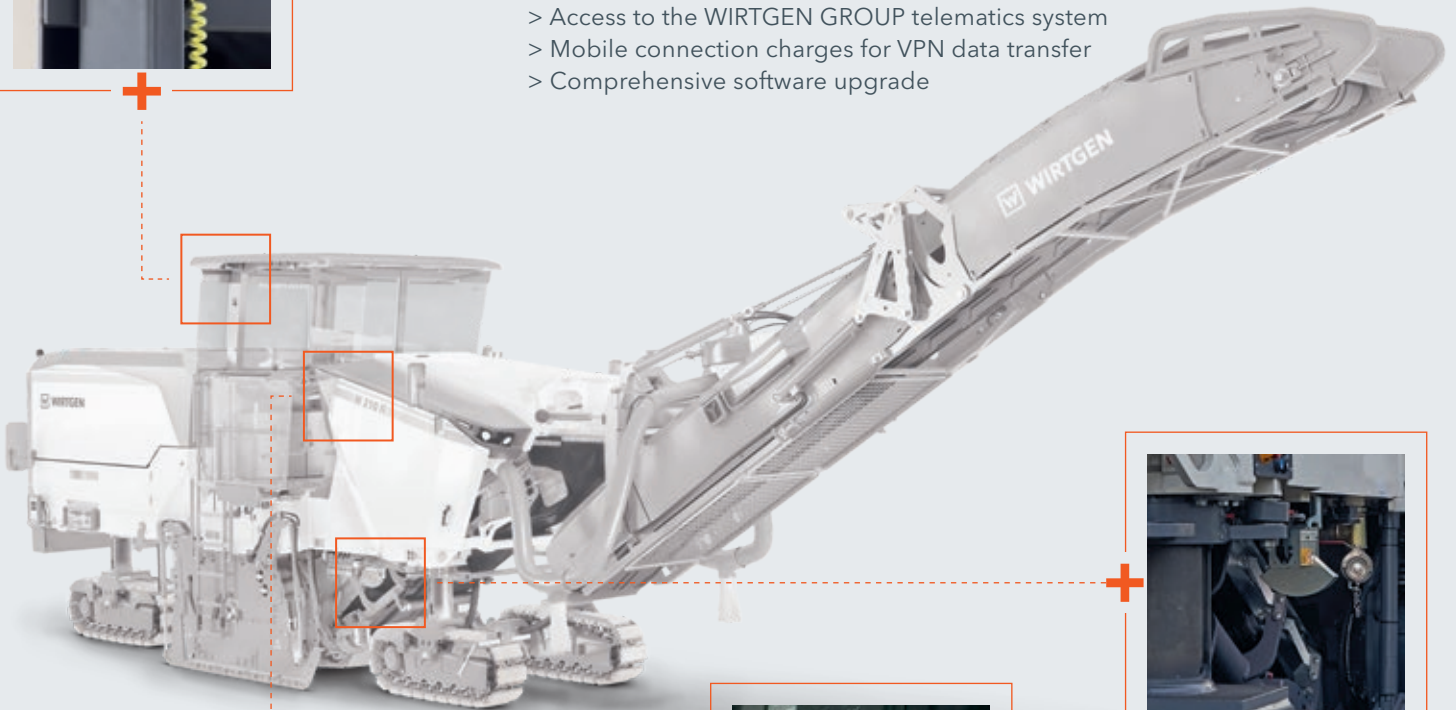
With a TCU (Telematic Control Unit), a receiver for the GNSS navigation satellite system, and one or two laser scanners, **WPT** works with three precisely coordinated system components that are responsible for the exact registration and transfer of the milling performance and positioning data.

In addition to the hardware components, the complete **WPT** package includes a comprehensive software package, a license for the use of GNSS data, and access authorization for the WIRTGEN GROUP telematics system.



Package Content

- > Differential GNSS receiver
- > Laser scanner
- > Telematic Control Unit (TCU)
- > Usage rights for satellite maps
- > Access to the WIRTGEN GROUP telematics system
- > Mobile connection charges for VPN data transfer
- > Comprehensive software upgrade



WPT RETROFIT KITS

Large milling machines already in operation can be retrofitted with **WPT** at any time. Thanks to smart hardware and software solutions, retrofitting can be completed within a single day.

Please consult your respective WIRTGEN GROUP sales and service organization when considering the utilization or retrofitting of **WPT**.



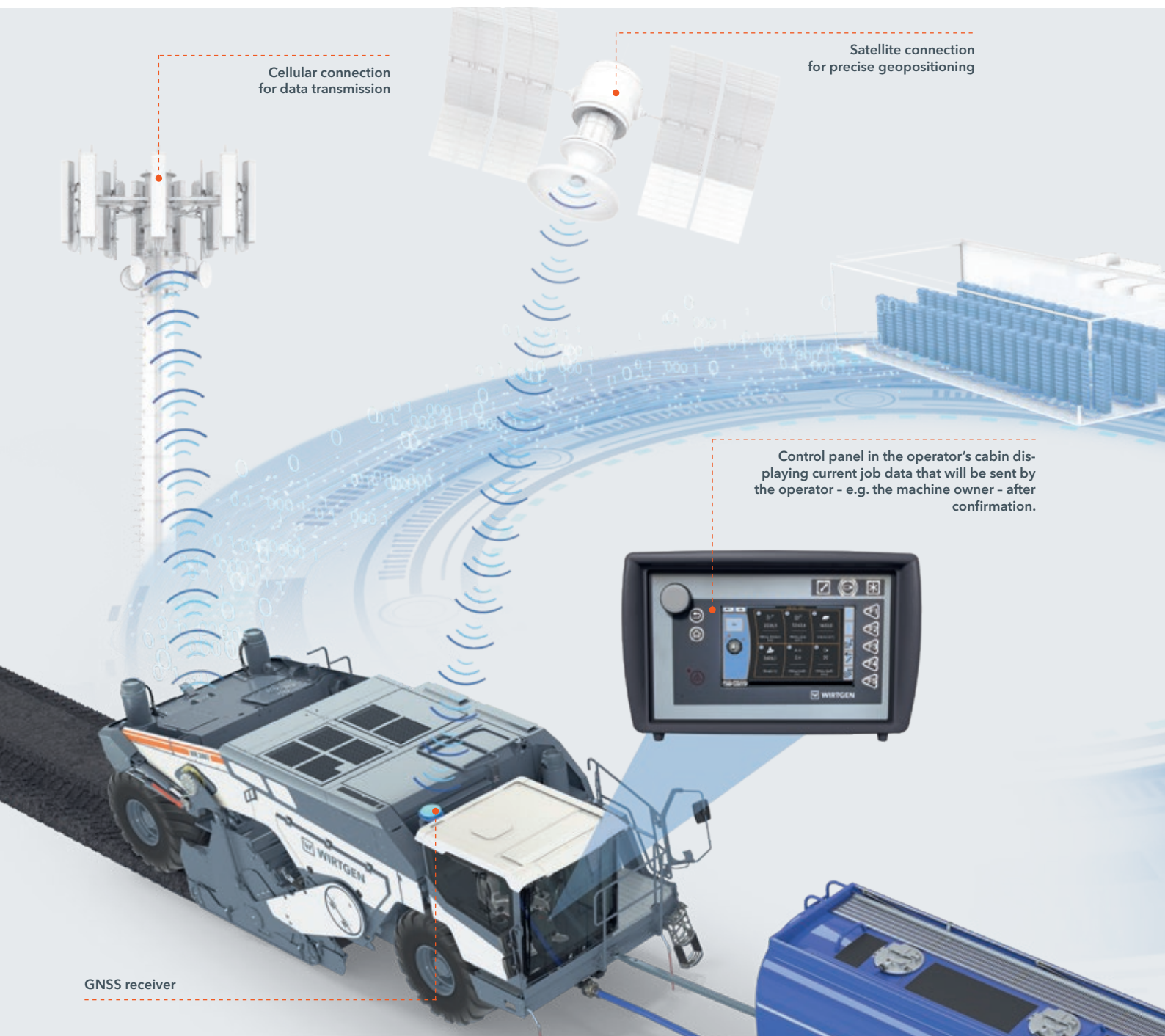
01 Your WIRTGEN GROUP service technicians can quickly and professionally retrofit your machine with **WPT**.

WPT - WIRTGEN PERFORMANCE TRACKER RETROFIT KIT

| Machine type | Series | Serial nos. | Mobile radio standard 2 | | Mobile radio standard 3 | |
|--|------------------------------|---|----------------------------------|---------------------------------|----------------------------------|---------------------------------|
| | | | Order number with weather canopy | Order number w/o weather canopy | Order number with weather canopy | Order number w/o weather canopy |
| W 100 CF / W 100 CFi / W 100 XFi W 120 CF / W 120 CFi / W 120 XFi / W 120 XTi W 130 CF / W 130 CFi / W 130 XFi | 1710 1810 | 17.10.0001 - xxxx 18.10.0001 - xxxx | 3032457 | | 3032458 | |
| W 100 F / W 100 Fi W 120 F / W 120 Fi / W 120 FTi W 130 F / W 130 Fi | 2610 2710 | 26.10.0001 - xxxx 27.10.0001 - xxxx | 3032461 | | 3032462 | |
| W 150 CF / W 150 CFi | 0713 0813 | 07.13.0001 - xxxx 08.13.0001 - xxxx | 2954822 | 2954827 | 2954823 | 2954831 |
| W 200 / W 200i W 210 / W 210i W 210 XP | 1220 1320 1420 1520 | 12.20.0331 - 0665 13.20.0310 - 0454 14.20.0001 - 1440 15.20.0001 - 1162 | 2882945 | 2882955 | 2882947 | 2882959 |
| | | 12.20.0666 - xxxx 13.20.0455 - xxxx 14.20.1441 - xxxx 15.20.1162 - xxxx 24.20.0001 - xxxx | 2882951 | 2882966 | 2882952 | 2882968 |
| W 200 F / W 200 Fi W 207 Fi W 210 Fi | 2020 2120 2320 | 20.20.0001 - xxxx 21.20.0001 - xxxx 23.20.0001 - xxxx | 2883042 | 2883055 | 2883044 | 2883059 |
| W 220 / W 220i | 0522 0722 | 05.22.0006 - 0222 | 2883006 | 2883019 | 2883008 | 2883022 |
| | | 05.22.0223 - xxxx 07.22.0001 - xxxx | 2883014 | 2883024 | 2883016 | 2883027 |
| W 220 Fi W 250 Fi | 1122 1322 | 11.22.0001 - xxxx 13.22.0001 - xxxx | 2883062 | 2883069 | 2883063 | 2883070 |
| W 250 / W 250i | 0422 0622 | 04.22.0044 - 0089 06.22.0003 - 1017 | 2882981 | 2882996 | 2882984 | 2882998 |
| | | 04.22.0090 - xxxx 06.22.1018 - xxxx | 2882989 | 2883002 | 2882993 | 2883003 |



WPT FOR THE WR SERIES AUTOMATIC MIXING PERFORMANCE TRACKING



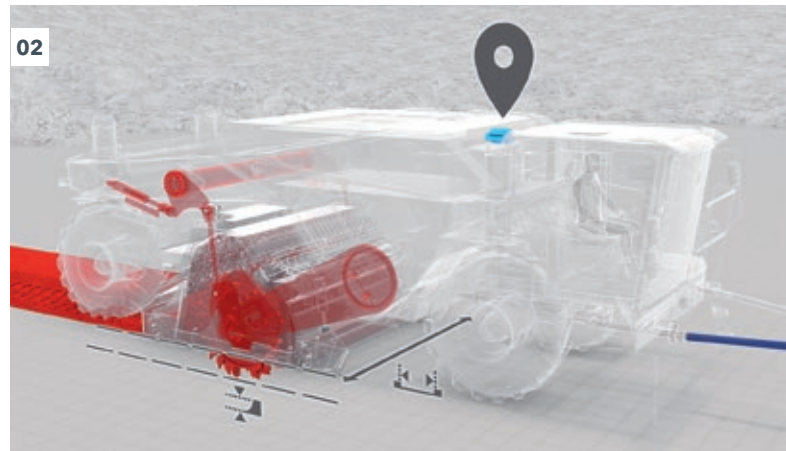
01 The machine operator can view the job data determined on the control panel in the operator's cabin.

02 WPT determines the exact area and volume performance and consumption figures with the aid of satellite-based positioning data and the high-precision sensor system on the machine.

01



02



The **WPT - WIRTGEN PERFORMANCE TRACKER** records all relevant construction site information specific to the location and summarizes it in a detailed report. In the case of WR series machines, this includes the working width and depth, the area and distance worked, fuel, water, and binding agent consumption etc.

The values enable a precise analysis of performance on the construction site, the quality of the results delivered, and the efficiency of the processes in place. This in turn enables detailed accounting of all processes and the identification of future savings potentials. At the same time, the machine operator receives reliable and precise documentation of the work on the construction site at the end of each shift without any additional effort.

After confirmation by the machine operator, the report is sent to the machine owner by e-mail in Excel and PDF format.





WIDE RANGE OF INFORMATION WITH WPT

WPT relays data and information that enable an extremely precise assessment of machine efficiency:

01 Precise Key Performance Indicators

- > More precise costing analysis
- > Exact performance and consumption data for project planning
- > Easier assessment of site efficiency

02 Measurable Machine Efficiency

- > Transparent data base
- > Easier comparison of efficiency within the machine fleet
- > Easier selection of the most effective machine for the project

03 Precise Information about Project Progress

- > Important information (e.g. area and volume performance) readily available through display of project data in the operator's cabin
- > Details of diesel fuel and pick consumption
- > Display of quantities of water and binding agents added

04 Valuable Documentation

- > Precise tracking of additional work for billing purposes
- > Documentation of quantities of binding agents and water added and mixing or milling depths at precise locations
- > Tracking of cuts mixed, including documentation of cut overlaps
- > Manual measurement no longer necessary
- > Data required for billing available immediately after project completion
- > Quick and time-saving final costing



**MACHINE
OWNER**

WR



WPT



OPERATOR



PRECISE INFORMATION FOR THE MACHINE OPERATOR

The control panel shows the machine operator the most important performance and consumption data. **WPT** Setup enables the machine operator to set numerous important application-relevant details such as the main application, sub base characteristics, special aspects of the project, etc.

No additional control unit is required: only the standard control panel is needed for operating and control. After retrofitting **WPT** and the installation of a software update, the existing control panel can be used as before.

The Control Panel on WR Series Machines



HIGH-QUALITY DOCUMENTATION IN EXCEL FORMAT BY E-MAIL

The system continuously documents all construction site information without any intervention on the part of the machine operator. Mixing performance data are transmitted to a data server via a cellular connection. At the start of a new job outside of a defined radius of the previous project, a **WPT** report is automatically generated in Excel and PDF format and sent by e-mail, for example, to the machine owner's computer system. The operator can manually mark a job as finished and send off a report at any time - either in the form of smaller units (e.g. daily) or as a comprehensive report for a specified period of time (e.g. a weekly report).

> Job data, general information, listing of all important performance data

> Precise view of milling and mixing progress on satellite map displays

> Information about areas, milling performance, machine times, consumption figures etc.

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10WR0001
Wirtgen Performance Tracker Report
[Gewerbepark Dachsberg, 53604 Bad Honnef, Nordrhein-Westfalen, 10/08/2022](#)

general

start of job: 10/08/2022 13:39
end of job: 10/08/2022 15:28
order no.:
time zone: Central European Summer Time, CEST

overview

| | | | | |
|---------------------------------------|---------|----------------------------|-----|--------|
| area ¹⁾ [m²]: | 5.174,1 | spraying bar 1 [% and l]: | 3,1 | 75.919 |
| of which addition [m²]: | 2.585,1 | spraying bar 2 [% and l]: | 0,0 | 0 |
| overlap [m²]: | 177,8 | spraying bar 3 [% and kg]: | 0,0 | 0 |
| Ø milling depth [cm]: | 34 | | | |
| job duration ³⁾ [h:m]: | 1:49 | number of layers: | 2 | |
| milling duration ⁵⁾ [h:m]: | 1:14 | number of passes: | 1 | |
| engine operating time [h:m]: | 1:48 | number of approaches: | 22 | |
| transport duration [h:m]: | | | | |
| idletime ⁴⁾ [h:m]: | 0:00 | pick usage: | 156 | |

WIRTGEN

10WR0001
Wirtgen Performance Tracker Report
[Gewerbepark Dachsberg, 53604 Bad Honnef, Nordrhein-Westfalen, 10/08/2022](#)

overview areas

| milling depth [cm] | milling distance [m] | milling area [m²] | milling volume [m³] | milling tonnage [t] | Ø output rate quantity spray bar [%] or [kg/m²] | main application | sub-base | specialty | abrasivity |
|--------------------|----------------------|-------------------|---------------------|---------------------|---|------------------|----------|-----------|------------|
| | | | | | | | | | |
| 15.0 - 19.9 | 1114,1 | 2673,9 | 526,8 | 1264,3 | 4,6 | stabilise | silt | addition | abrasive |

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milling performance

| | |
|-------------------------|----------------------|
| area ¹⁾ [m²] | Ø milling depth [cm] |
| 5.174,1 | 34 |
| overlap [m²] | milling volume [m³] |
| 177,8 | 1.844,5 |

WIRTGEN

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times

| | |
|---------------------------------|--------------------------|
| time at construction site [h:m] | milling time [h:m] |
| 1:49 | 1:14 |
| engine running time [h:m] | transport duration [h:m] |
| 1:48 | |



HIGH-QUALITY DOCUMENTATION IN PDF FORMAT BY E-MAIL

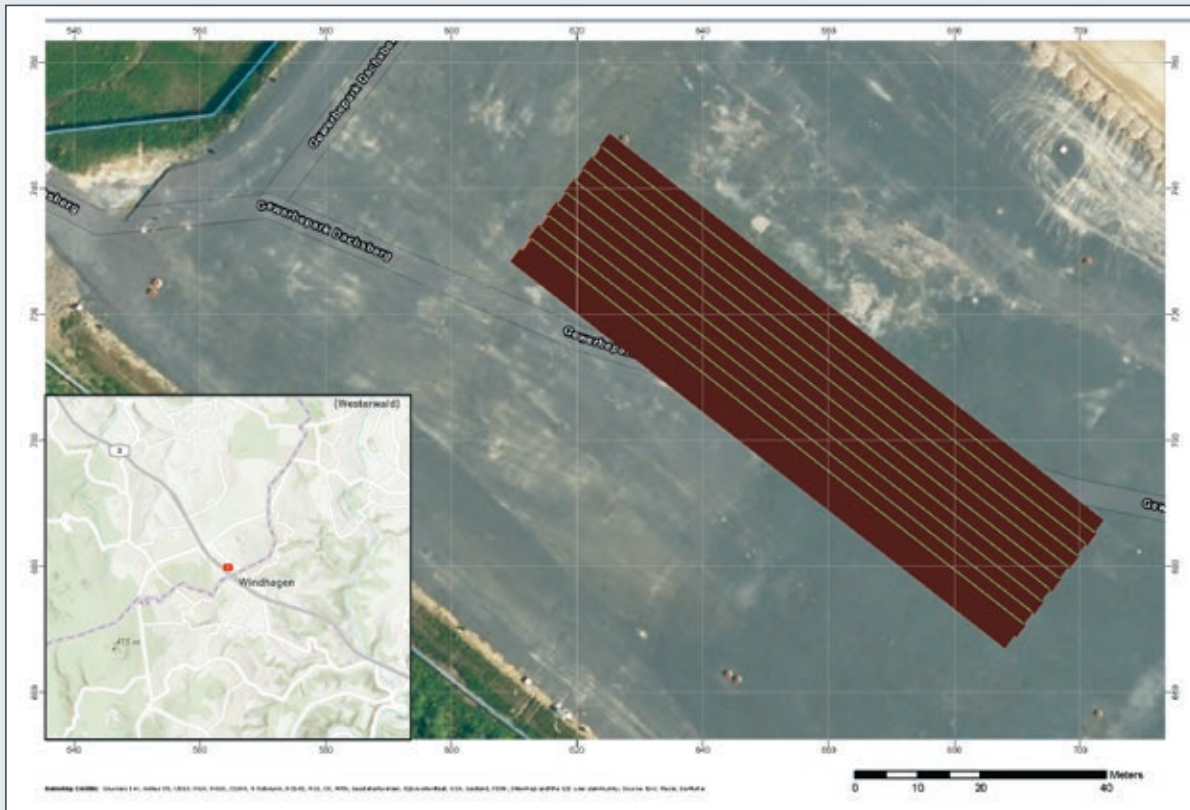
The reports contain high-precision, GNSS machine positioning information and a range of job and consumption data. The GNSS receiver with the licensed SF-RTK correction signal enables accuracy in the range of ± 2.5 cm from strip to strip with a very quick pull-in time of less than 8 minutes. The respective working depths, the degree of overlap, and the precise locations at which water and binding agents were added are shown in addition to the consumption data.

Apart from the Excel file, the **WPT** report also contains a further document in the form of a layered PDF file. The content of this PDF file shows, for instance, the precise positions at which water and binding agents were added and how much of each (see image 02).

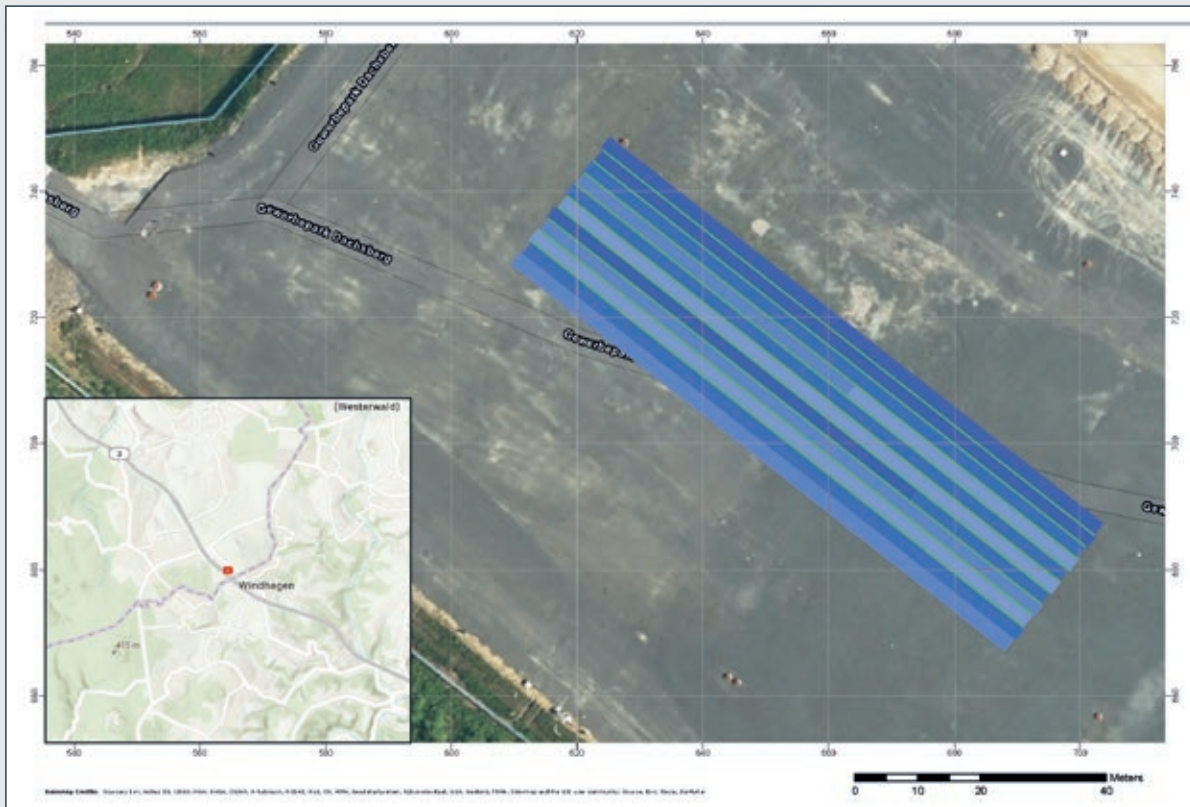
In addition to this, showing and hiding individual layers in the PDF enables users to see exactly where and at what depth mixing and/or milling took place.

The reports enable exact documentation of the mixing performance, the quality of the work, and the efficiency of the process at precisely defined locations. This in turn enables detailed accounting of all processes and the identification of future savings potentials.





The strips show the milling depth and the lines the overlap. The greater the overlap of a milling cut with the previous cut, the thicker the line (shown here in green). Missed sections are also indicated in color.



Displaying or hiding the various layers enables the user to switch from the display of the milling depth to the visualization of the water or binding agent added during the process.



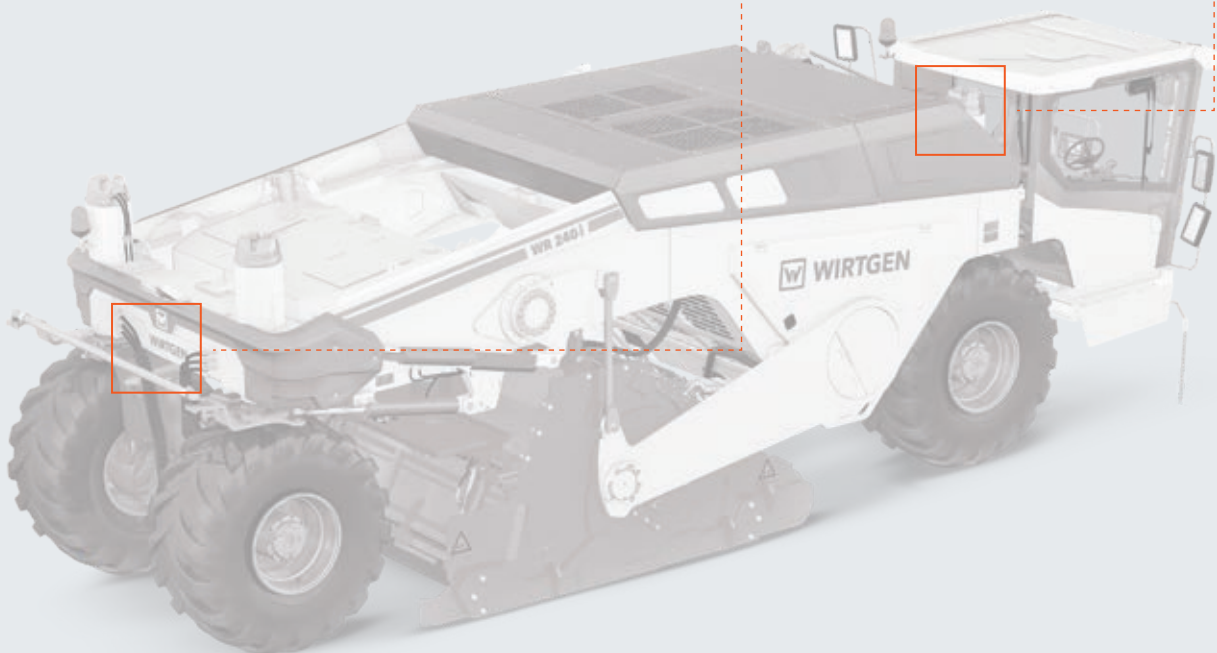
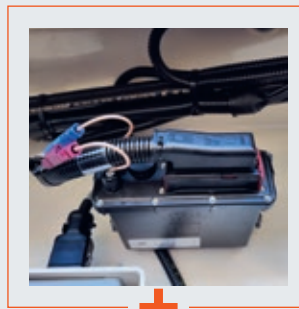
HIGH-QUALITY HARDWARE COMPONENTS

With a TCU (Telematic Control Unit) and a receiver for the GNSS navigation satellite system, **WPT** works with two precisely coordinated system components that are responsible for the exact registration and transfer of the performance and positioning data.

In addition to the hardware components, the complete **WPT** package includes a comprehensive software package, licensed usage rights for the SF-RTK correction signal and access authorization for the WIRTGEN GROUP telematics system.

Package Content

- > GNSS receiver with precise SF-RTK correction signal
- > Telematic Control Unit (TCU)
- > Usage rights for satellite maps
- > Access to the WIRTGEN GROUP telematics system
- > Mobile connection charges for VPN data transfer
- > Comprehensive software upgrade



WPT RETROFIT KITS

WR series machines already in operation can be retrofitted with **WPT** at any time. Thanks to smart hardware and software solutions, retrofitting can be completed within a single day.

Please consult your respective WIRTGEN GROUP sales and service organization when considering the utilization or retrofitting of **WPT**.

If a WR series machine is already fitted with **WPT**, it can also be quickly and easily retrofitted with the **AutoTrac™** satellite-based steering system.

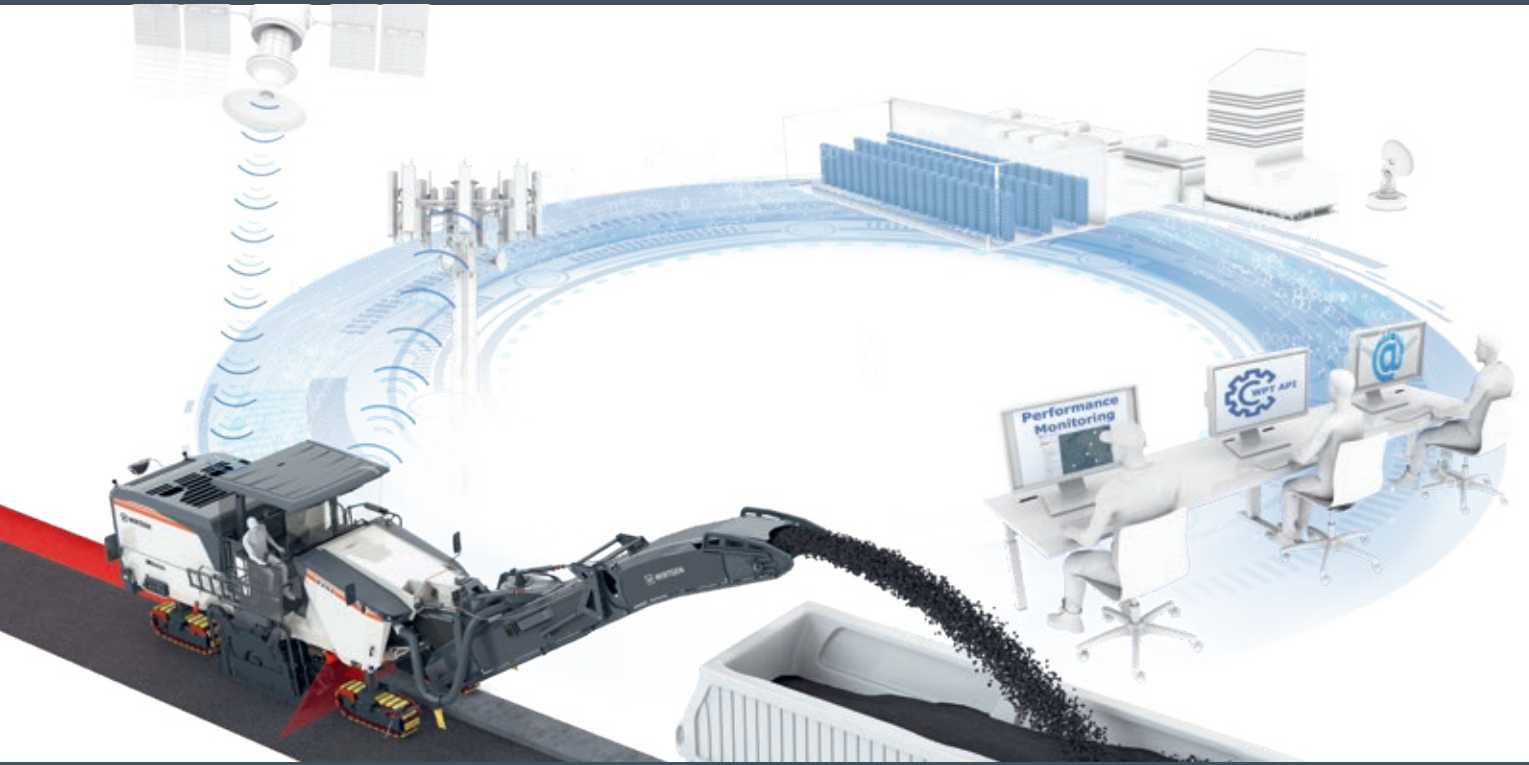


01 Your WIRTGEN GROUP service technicians can quickly and professionally retrofit your machine with **WPT**.

WPT - WIRTGEN PERFORMANCE TRACKER RETROFIT KIT

| Machine type | Series | Serial nos. | Mobile radio standard 2 | | Mobile radio standard 3 | |
|--|------------------------------|--|-------------------------|------------------|-------------------------|------------------|
| | | | WPT | WPT + AutoTrac™* | WPT | WPT + AutoTrac™* |
| WR 200 / WR 200 XL WR 200i / WR 200 XLi | 06WR 09WR | 06.WR.0067 - 0084 09.WR.0001 - 0133 | 3083959 | 3083962 | 3083960 | 3083963 |
| | 06WR 09WR | 06.WR.0085 - 9999 09.WR.0134 - 0296 | 3083946 | 3083950 | 3083948 | 3083951 |
| | 09WR | 09.WR.0297 - 9999 | 3065266 | 3065267 | 3065266 | 3065267 |
| WR 240 / WR 240i WR 250 / WR 250i | 07WR 08WR 10WR 11WR | 07.WR.0275 - 0311 08.WR.0039 - 0259 10.WR.0055 - 1187 11.WR.0001 - 0024 | 3083965 | 3083968 | 3083966 | 3083969 |
| | 07WR 08WR 10WR 11WR | 07.WR.0312 - 9999 08.WR.0260 - 9999 10.WR.1188 - 1473 11.WR.0025 - 0210 | 3083953 | 3083956 | 3083954 | 3083957 |
| | 10WR 11WR | 10.WR.1474 - 9999 11.WR.0211 - 9999 | 3065266 | 3065267 | 3065266 | 3065267 |

* Retrofit kit for AutoTrac™ (3095470) is available only with machine option **WPT**

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