

AV '23 CONFERENCE ASPHALT PAVEMENTS 2023

HOW CAN THE DIGITAL VALUE CHAIN BETWEEN THE CONSTRUCTION AND THE MIXING PLANT CONTRIBUTE TO SUSTAINABLE ROAD CONSTRUCTION

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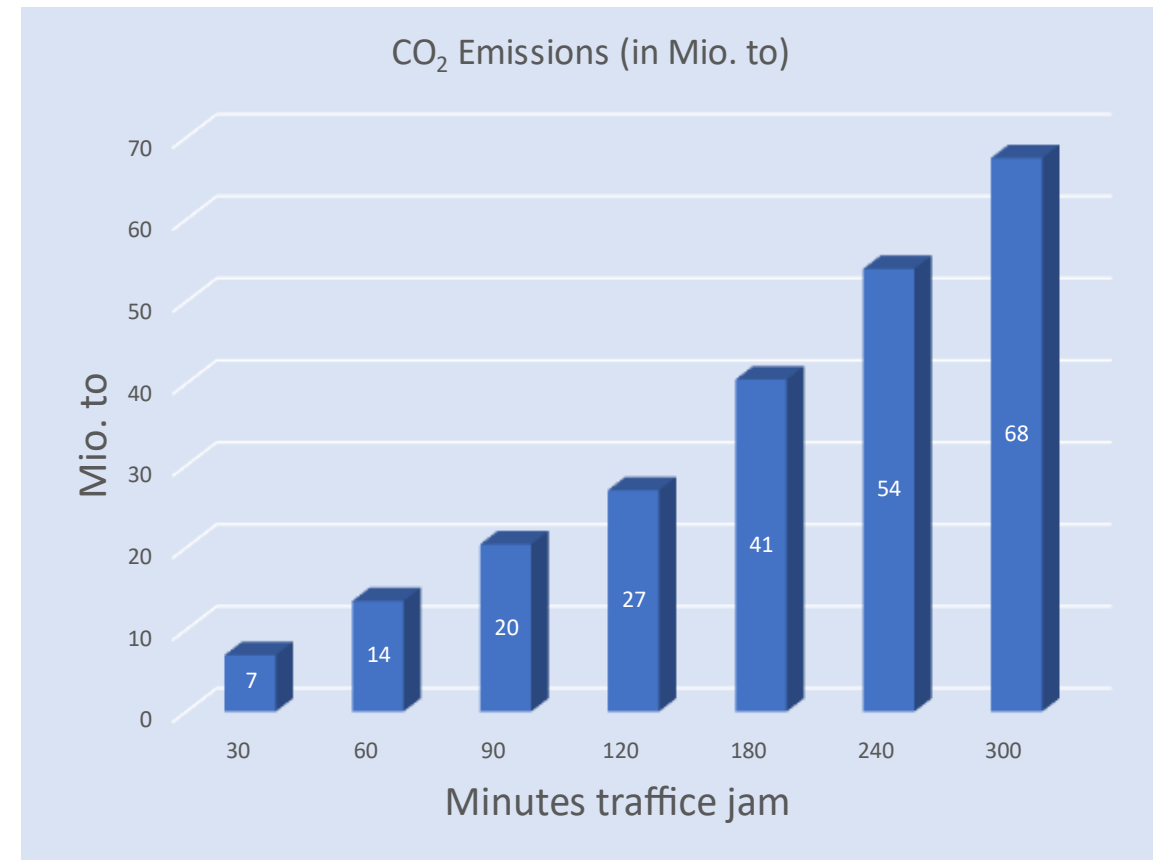
Motto: Let's asphalt out of the crisis

Why sustainable road construction?

				
Mandatory by law	Funded by state institutions	Socially expected	Demanded by stakeholders	Out of a sense of responsibility

Why sustainable road construction?

Potential to reduce CO₂ emissions by reducing traffic jams caused by road construction in EU



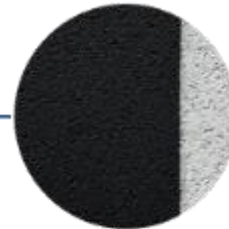
What can be done?



Optimize processes to reduce resource consumption



Improve quality to increase lifetime



Use sustainable (raw) materials to keep the ecological impact low



Use less/green energy to reduce pollutant emissions

How can digitalization help?

- ➔ **Increases efficiency by supporting smooth and automated processes**
- ➔ **Delivers better and more up-to-date information so that resource-efficient decisions can be made**
- ➔ **Helps to avoid construction delays through a continuous flow of information**
- ➔ **Monitors, visualizes and documents process and quality parameters as a tool during work and for continuous improvement processes**

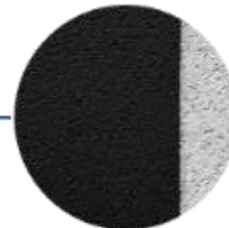
Optimize processes



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Optimize processes

Implement the digital value chain between construction site, plant and transport!



Planning

Ordering

Producing

Delivering

Paving

Compacting

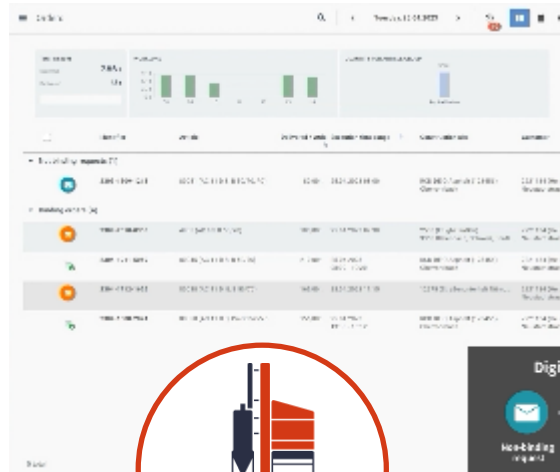
Documenting

Digital process management

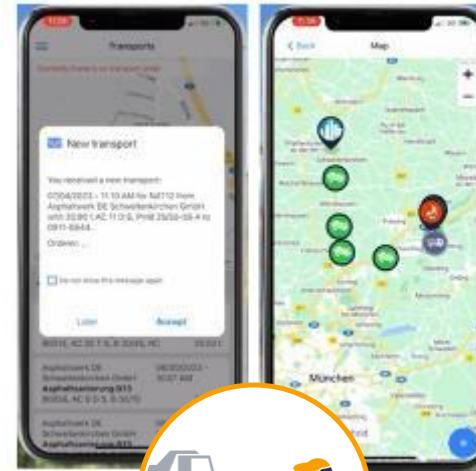
Digital planning and management of the construction



Digital production management



Digital delivery management



Digital asphalt paving management



Digital process management

- ➔ The exact planning of material lead to exact deliveries needed and no waste
- ➔ Short-term adjustments can be made easily and are shared automatically with all participants
- ➔ Errorfree communication with the mixing plant avoids misunderstandings
- ➔ Continuous asphalt paving procedure

- ➔ Information about the forecasted demand enables a energy saving production
- ➔ Utilization statistics help to manage plants effciently
- ➔ Online communiction with all construction sites allows to react at short notice and to avoid faulty and energy insufficient productions

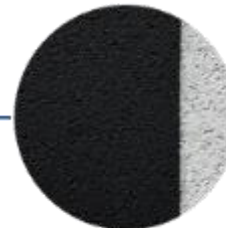
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Improve quality

Continuous quality control during the paving and compaction process

- ➔ Definition of target values to ensure quality but minimize operating time
- ➔ Visualization of quality parameters to all drivers
- ➔ Analyse the results for a continuous improvement process
- ➔ Automatic documentation for maintenance



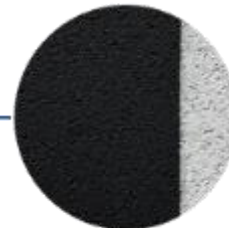
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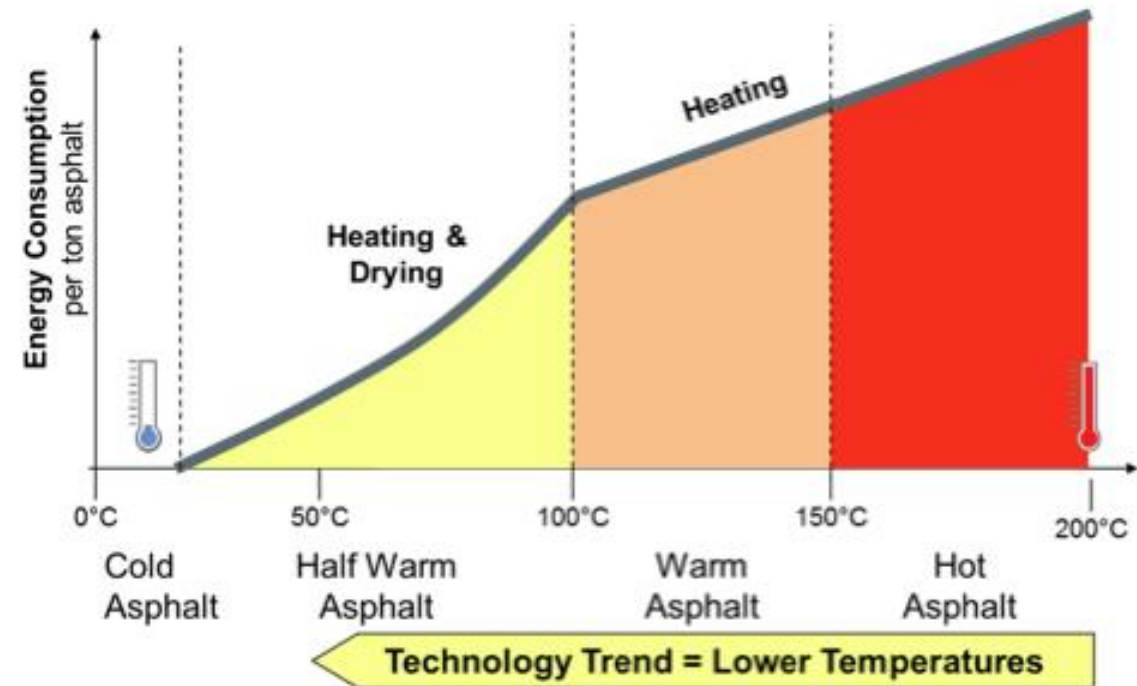
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Warm-mix-asphalt

- ➔ Controlling the delivery process by digital solutions
- ➔ Digital control of paving and compaction process to receive high quality roads



Source and copyright: EAPA

Digital production management at the asphalt plant

➔ Analyze usage of raw material to identify savings in raw materials

The screenshot displays the 'Q.plant' interface with a sidebar menu on the left and a main table titled 'Productions' for the year 2023. The table lists various production runs with columns for time, duration, temperature, quantity, batches, recipe, and material usage for Pulver, Haftmittel, and Gesteinskörnung. Each row includes a bar chart comparing actual material usage against a target value.

Time	Duration	Temp	Quantity	Batches	recipe	Σ Pulver	Σ Haftmittel	Σ Gesteinskörnung
3:13 PM	3:39 min	145 178 187 °C	12.14 t	5	10022.22.0 (L...	01.09	01.09 kg	10,830.72 10,771.89 kg
3:00 PM	34:29 min	148 150 165 °C	128.25 t	39	70000.00.0 (L...			48,045.24 48,000.00 kg
2:57 PM	2:44 min	170 177 178 °C	14.12 t	4	70000.00.0 (L...	00.70	00.70 kg	8,950.48 8,865.55 kg
2:54 PM	31 s	184 184 187 °C	1.69 t	1	70014.14.0 (L...	00.20	00.20 kg	1,408.47 1,375.80 kg
2:47 PM	1:23 min	170 170 171 °C	7.2 t	2	4808.09.0 (A...			4,500.62 4,662.42 kg
2:45 PM	2:08 min	181 193 205 °C	5.93 t	2	4007.09.0 (A...	00.00	00.62 kg	4,544.72 4,539.81 kg
2:40 PM	15:01 min	149 169 167 °C	50.83 t	15	70000.00.0 (L...			22,674.40 22,500.00 kg
2:34 PM	10:03 min	225 230 234 °C	20.48 t	7	2011.11.0 (A...			14,252.65 14,258.62 kg
2:33 PM	1:22 min	193 196 198 °C	7.11 t	2	10028.28.0 (L...	00.21	00.21 kg	6,277.04 6,261.35 kg
2:25 PM	30 s	166 166 166 °C	2.19 t	1	10025.25.0 (L...	00.20	00.20 kg	1,840.40 1,831.20 kg
2:10 PM	42 s	187 187 187 °C	1.61 t	1	10013.13.0 (L...	00.21	00.21 kg	1,389.86 1,371.20 kg
2:06 PM	31 s	191 191 191 °C	3.19 t	1	10022.22.0 (L...	00.28	00.28 kg	2,784.36 2,765.20 kg
2:08 PM	10:40 min	225 227 229 °C	19.99 t	7	2011.11.0 (A...			13,905.44 13,907.13 kg
2:00 PM	31 s	192 192 192 °C	2.32 t	1	10028.28.0 (L...	00.20	00.20 kg	2,228.40 2,207.50 kg
1:57 PM	1:19 min	161 161 161 °C	5.91 t	2	70000.00.0 (L...			5,245.88 5,105.00 kg

Digital production management at the asphalt plant

- ➔ Dynamic planning of recycling material by using modern control systems maximizes the usage with the best quality



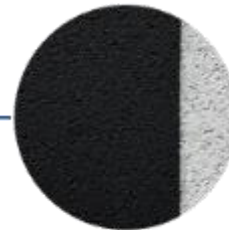
Use less / green energy



Optimize processes to reduce resource consumption



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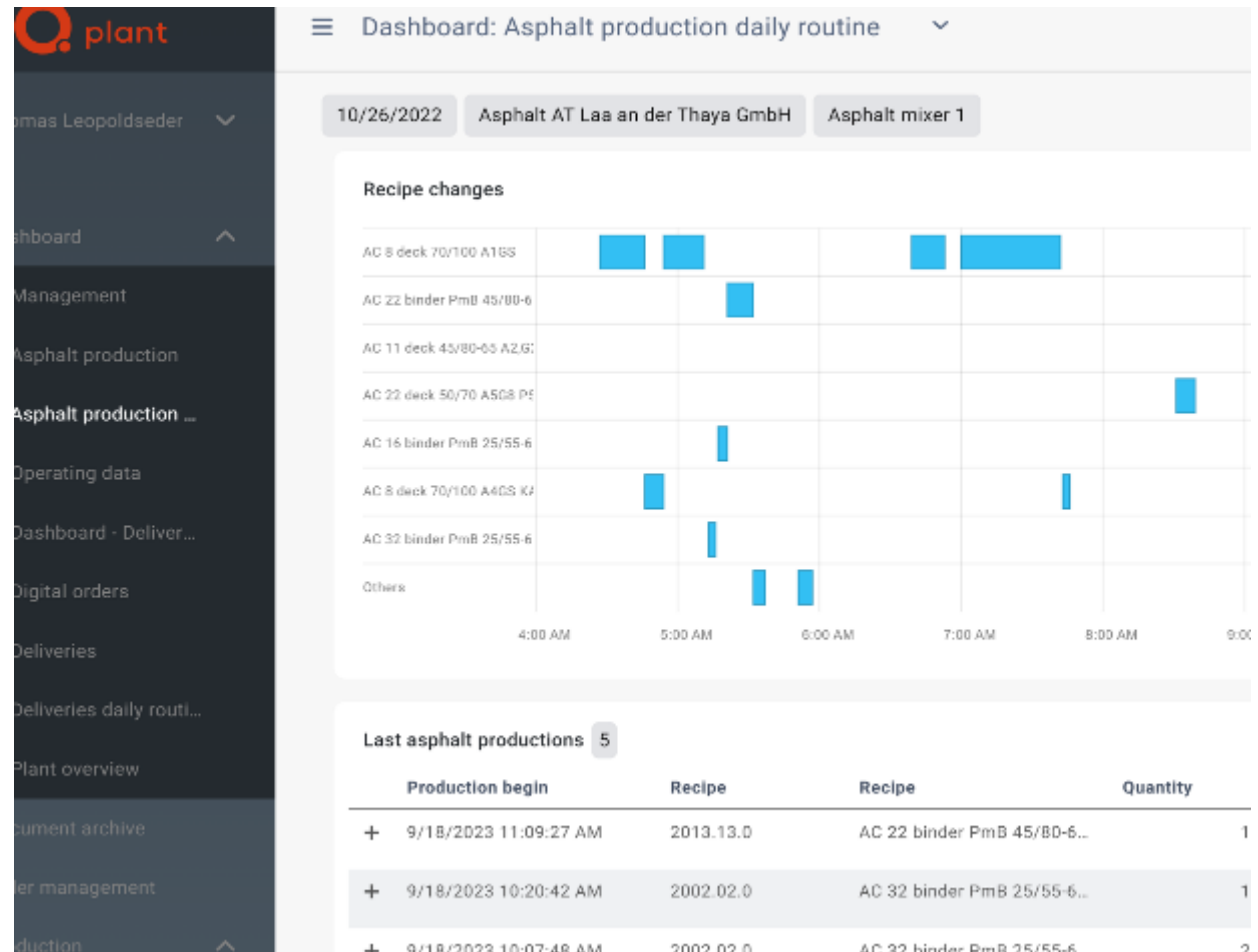
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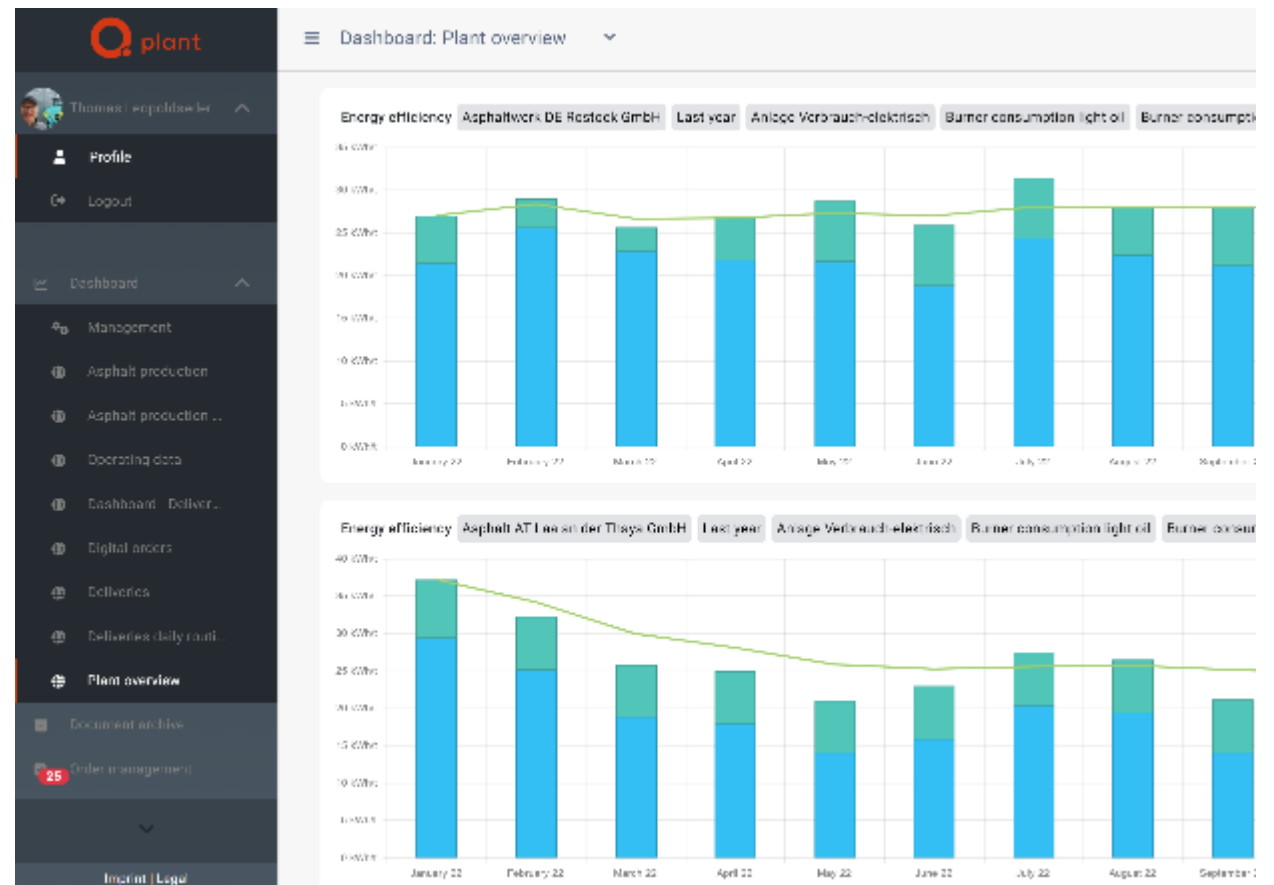
Digital production management at the asphalt plant

➔ Production dashboard enable exact analyses to optimize the production sequences for an energy saving production



Digital production management at the asphalt plant

➔ Analyze energy efficiency to identify energy saving potentials



Gas
Electricity

Digitalization can support the sustainability



Digitalization is . . .



**. . . an important
contribution to a
sustainable asphalt
industry!**



Thank you very much for your attention!

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