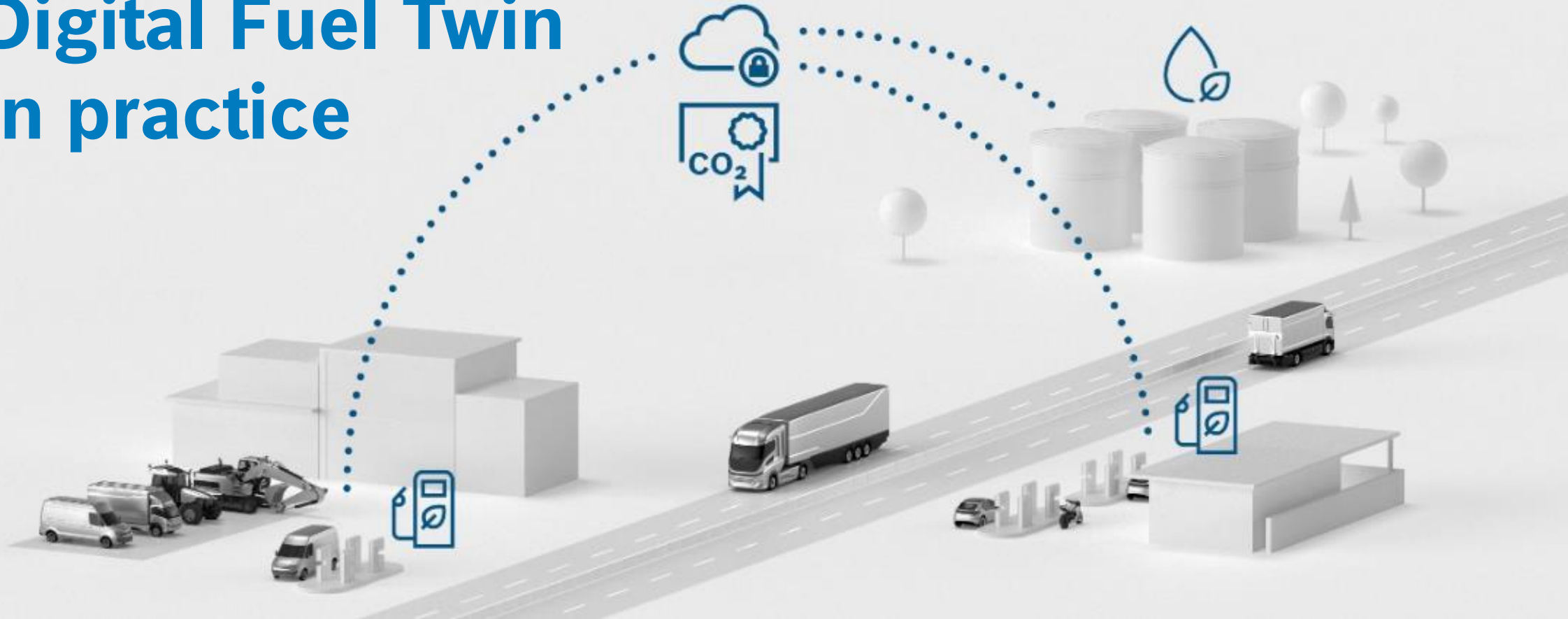


Digital Fuel Twin in practice



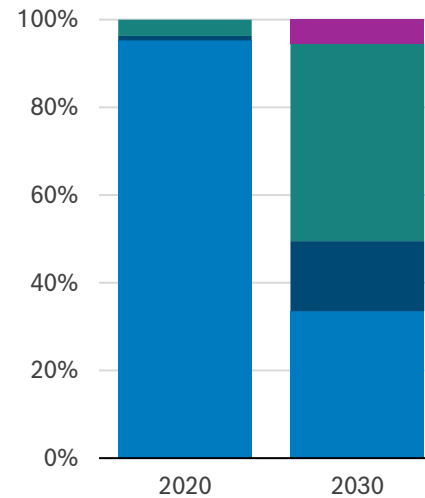
BOSCH Air Quality and Sustainability Solutions

Dr. Marko Babic, 11.04.2024

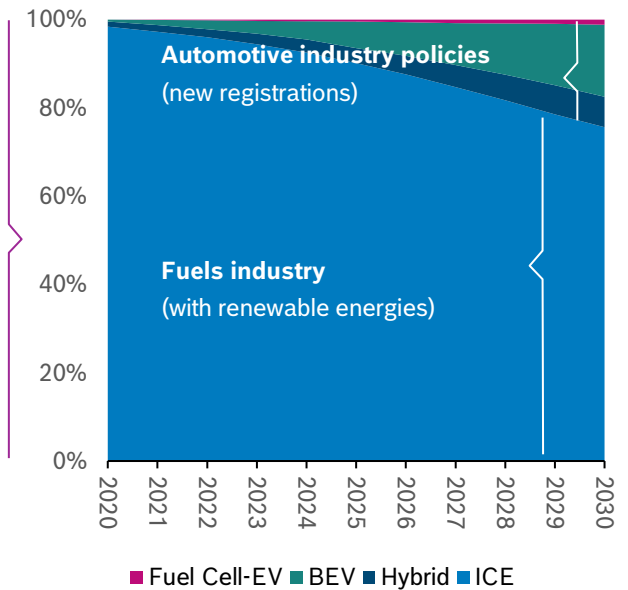


Focus on existing ICE* fleets

New registrations
(EU28 all road vehicles)



Vehicle stock
(EU28 all road vehicles)



Source: Bosch Automotive Market planning 2023

Our mission: products and services for life

We monitor, understand, improve and validate measures to enable excellent solutions through our products and services.



Environmentally Sensitive Traffic Management (ESTM)

Reduction of emissions in densely-populated urban centres through [traffic modelling](#) and sustainable measures

Comprehensive capture & track of air quality (AQDM¹)

Enabler for tailor-made and sustainable measures for emission-critical hotspots by considering [real-time air quality maps](#), dispersion and environmental parameters

Air Quality Monitoring Box (AQMB)

[Monitoring](#) enables precise, real-time air quality maps and the definition of measures accordingly

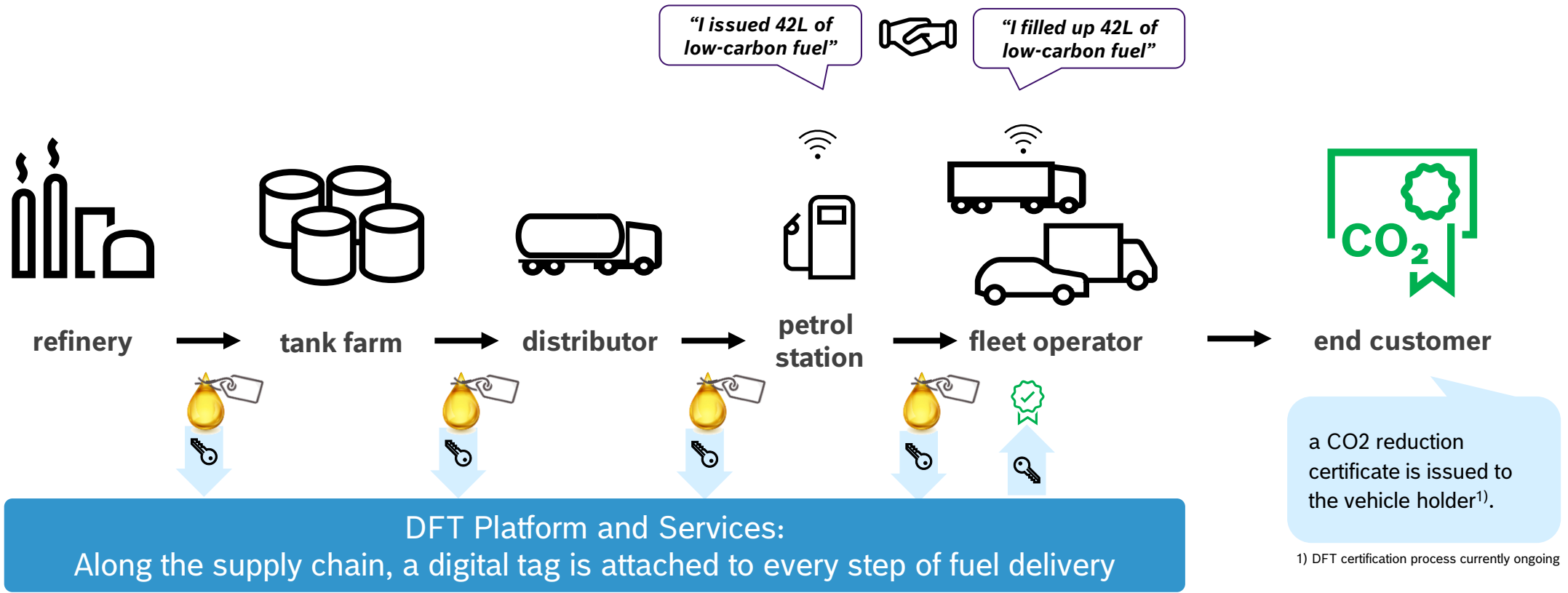
Solution - Digital Fuel Twin (DFT)

Value Proposition: Certified “CO₂ per litre” data at fuel pump



Bosch Digital Fuel Twin Platform (DFT)

Working Principle



Digital Fuel Twin (DFT)

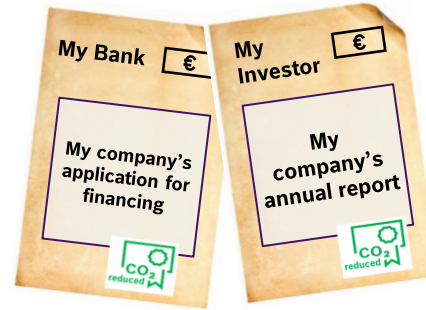


In the next years, companies will need to comply with more and more CO₂ reporting duties

... due to **legal duties**



... for **banks and investors**



... in **sales, marketing** and advertising

for products



and services

... for offering products or services to public or private **contractors**



⇒ reliable, verifiable, audit-proof, easily accessible CO₂ tracking and reporting as business success factors



DFT Applications

Use-case: Carbon reduction report for mixed refuelling



05.06.2023	48,3 L	🏆
07.06.2023	51,5 L	🏆
08.06.2023	50,1 L	🏆
10.06.2023	42,2 L	🏆
11.06.2023	37,9 L	🏆
13.06.2023	38,1 L	🏆
14.06.2023	49,9 L	🏆
17.06.2023	53,3 L	🏆
18.06.2023	45,3 L	🏆
19.06.2023	52,7 L	🏆



Date	Refueled quantity	CO2 reduction *
03.01.2023	82,3 L	🏆 20%
04.01.2023	72,5 L	0%
06.01.2023	83,1 L	🏆 25%
07.01.2023	94,2 L	🏆 90%
08.01.2023	71,9 L	0%
11.01.2023	99,8 L	🏆 90%
12.01.2023	79,9 L	🏆 90%
14.01.2023	84,3 L	🏆 90%
15.01.2023	75,3 L	🏆 25%
17.01.2023	62,7 L	🏆 90%

Total : 🏆 **54% CO2-reduced**



03.11.2023	503,2 L	🏆
04.13.2023	498,3 L	🏆
06.14.2023	399,1 L	🏆
07.05.2023	512,2 L	🏆
08.06.2023	504,9 L	🏆
11.01.2023	398,6 L	🏆
12.01.2023	376,2 L	🏆
14.01.2023	511,3 L	🏆
15.01.2023	476,2 L	🏆
17.01.2023	503,6 L	🏆

Calculation example: add-on cost for renewable fuel

	Passenger Car	Truck
CO2 reduction	7L / 100 km	30L / 100 km
-10%	+0,1 Cent / km	+1,5 Cent / km
-20%	+0,3 Cent / km	+3,0 Cent / km
-30%	+0,4 Cent / km	+4,5 Cent / km
-50%	+0,7 Cent / km	+7,5 Cent / km
-90%	+1,4 Cent / km	+15,0 Cent / km

assumption:
0,20 €/L price add-on for HVO
compared to classic Diesel

Calculation example (for a given leasing contract for a business passenger car):

Extra cost for carbon-reduced fuel: +0,20 € / Liter (for HVO100)

Average consumption Ø 7,0 Liter / 100km

Mileage per month 1.800 km

Additional Cost: 25 € / month ~ 2% additional cost

@ monthly leasing rate **1.300 € / month** for 90% CO₂ reduction

DFT Applications

CSRD¹ driving for CO₂ footprint of transport/mobility in supply chains

Companies obliged to report carbon footprint

	● 2024	● 2025	● 2026	● 2028
	Companies already under NFRD ²⁾	“big companies”	SME’s ³⁾ (capital-market orientated)	Companies with parent in 3 rd countries
employees	<ul style="list-style-type: none"> Banks insurance companies companies listed on the stock market 	> 250	> 10	
net turnover		> 40 mio €	> 0,7 mio €	> 150 mio €
Balance sheet		> 20 mio €	>0,35 mio €	
Criteria		if 2 out of 3 are met		
Expected nr. of affected companies			50.000	

Every commercial move along the supply chain has to be reported over the product life cycle !

⇒ Reporting can be

- associated with high administrative effort
- exposed to “greenwashing” lawsuits if not based on verifiable, audit-proof data or
- built on worst-case assumptions not taking maximum CO₂ reduction into accounting
- ...

Sustainability reports as decisive business success factors – also for small companies !

- Bigger companies will only work with suppliers complying with reporting obligations as input data for their reporting framework

Digital Fuel Twin (DFT)

THANK YOU



Sustainable
Mobility & Transport
with
Digital Fuel Twin