



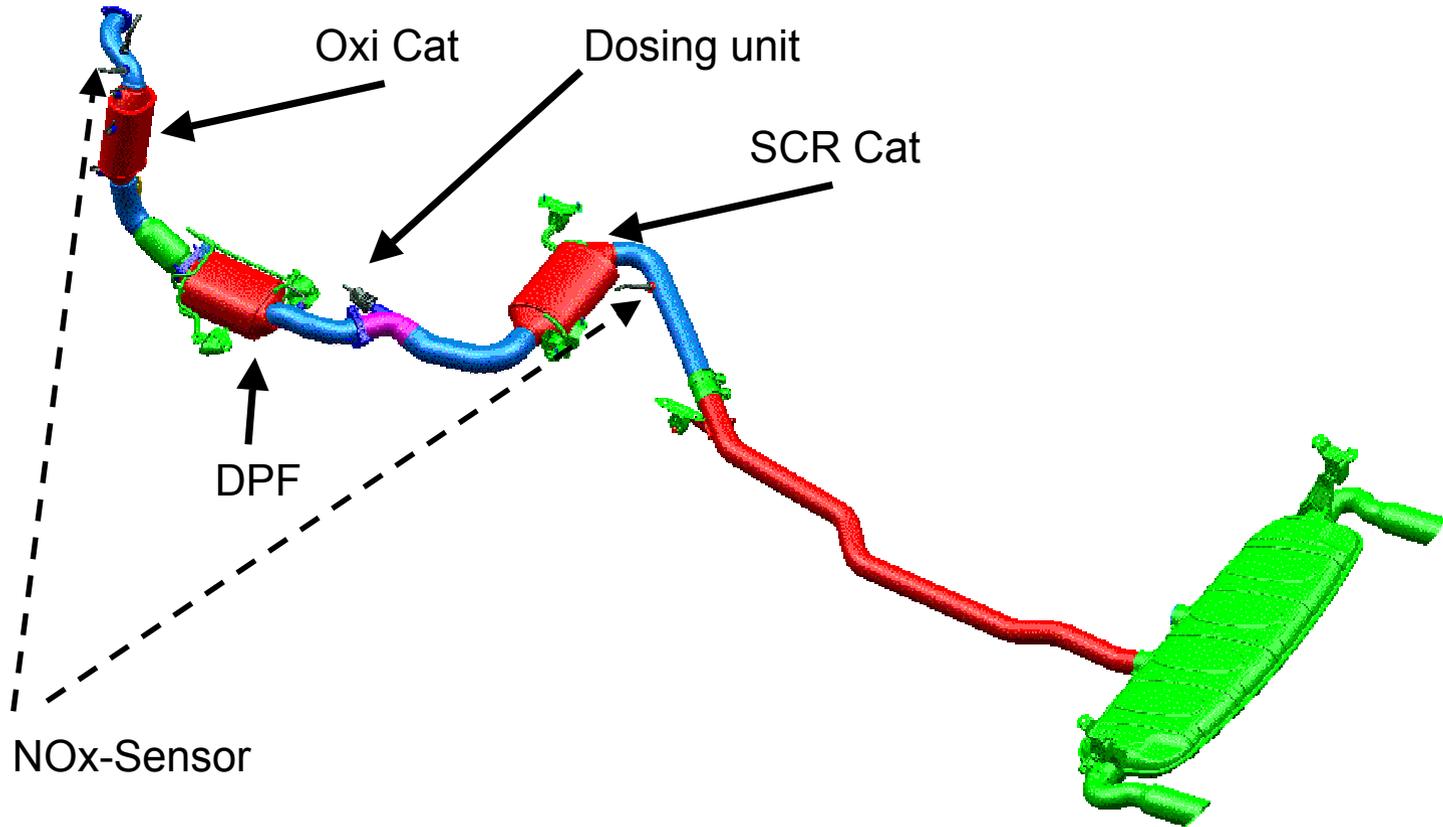
V6 TDI Clean Diesel

LEV II / Bin 5 Program

NO_x-Aftertreatment system

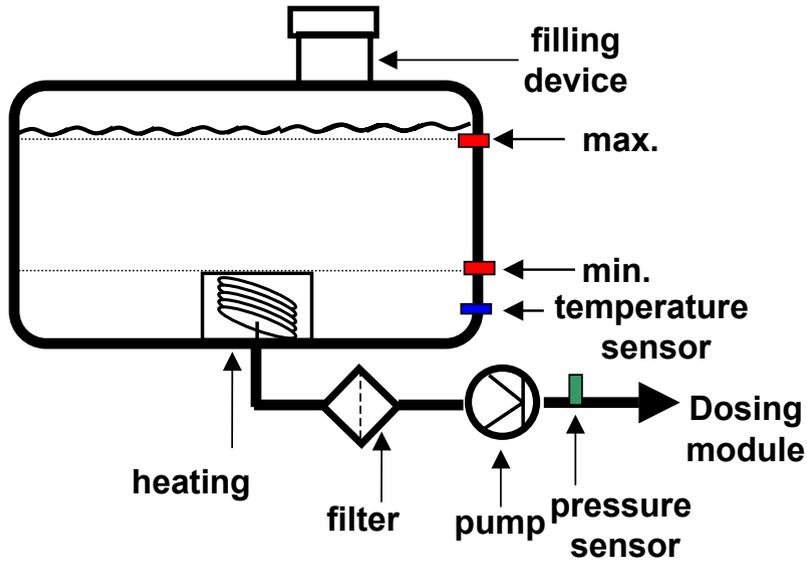
- system overview
- tank concept
- heating strategy
- refill concept
- warning sequence
- wrong medium

NO_x-Aftertreatment system - system overview

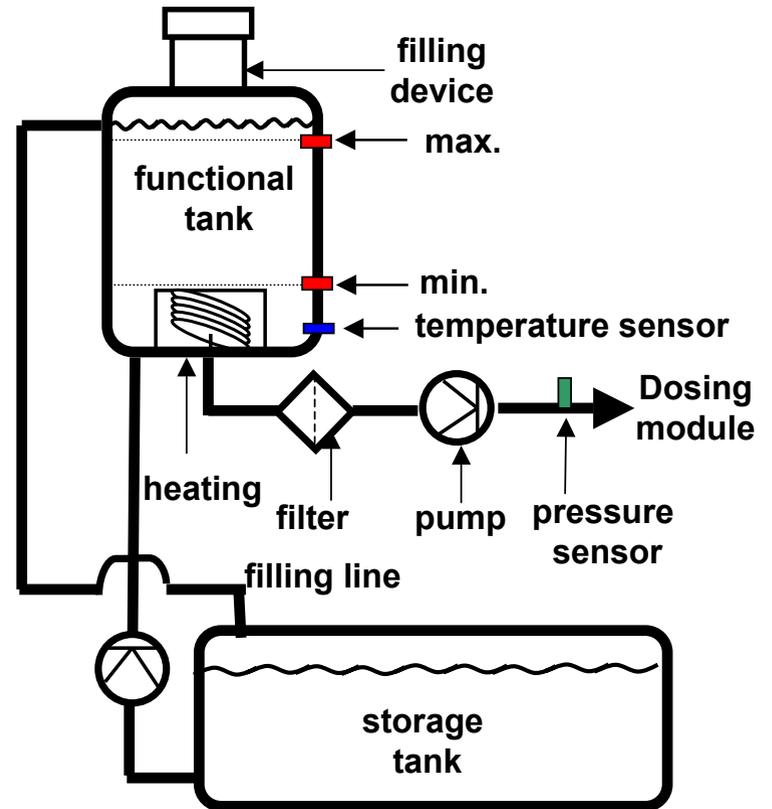


NO_x-Aftertreatment system - tank concept

1 tank concept

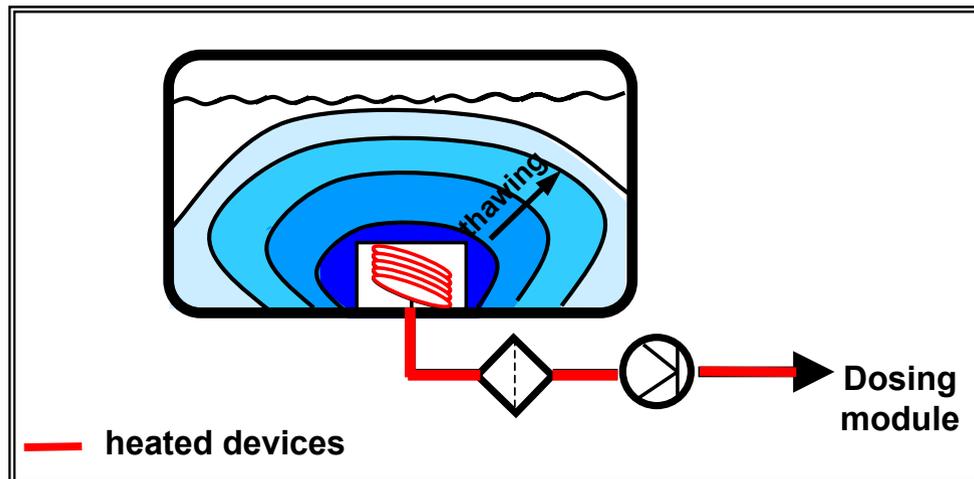


2 tank concept



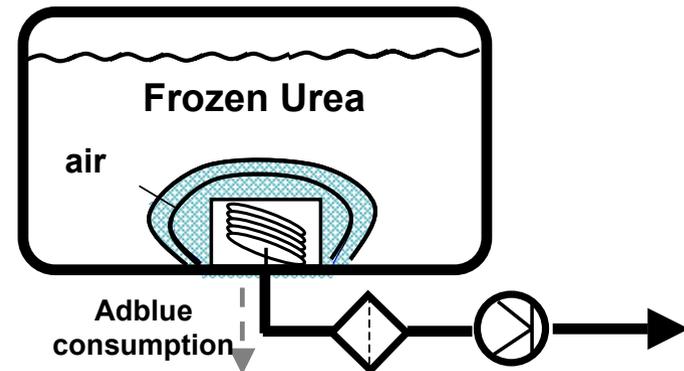
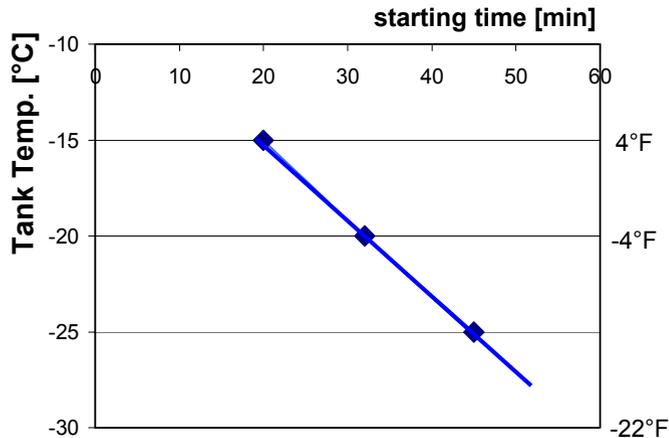
NO_x-Aftertreatment system - heating strategy

- Heating will be activated at temperatures below -11°C (12°F) after engine start
 - thawing of frozen Adblue (urea)
 - avoid freezing of liquid AdBlue during vehicle operation
- Both concepts ensure a continuous melting and dosing of 2 gallons of UREA
- During a long lasting freezing period (< -11°C) the unheated UREA volume could remain frozen. Even in this case the operational range is approx. 4.000 miles after which the tank can be refilled.

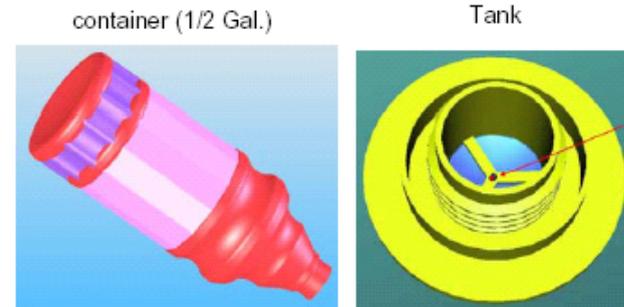
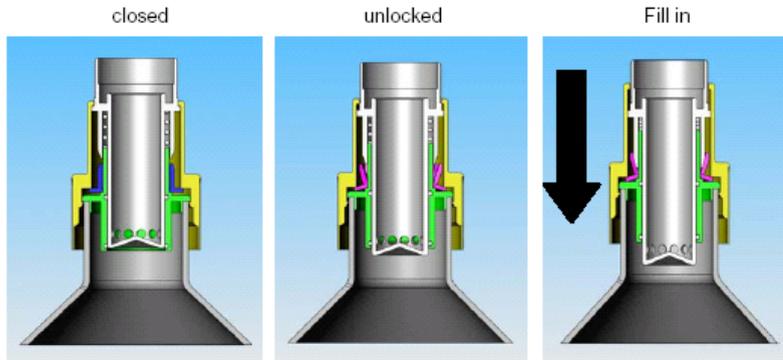


NO_x-Aftertreatment system - heating strategy

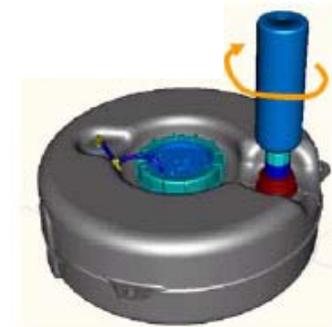
- If ambient temperature is constantly below $<12^{\circ}\text{F}$ ($< -11^{\circ}\text{C}$) the urea tank will be completely frozen after several days.
- These environmental conditions are unusual
- In this case, injection of UREA will start approx. 20 min. after engine start.
- This waiting time is needed to ensure continuous dosing - a certain amount of liquid urea has to remain in the tank to guaranty further thawing (avoiding thermal isolation).



NO_x-Aftertreatment system - refill concept

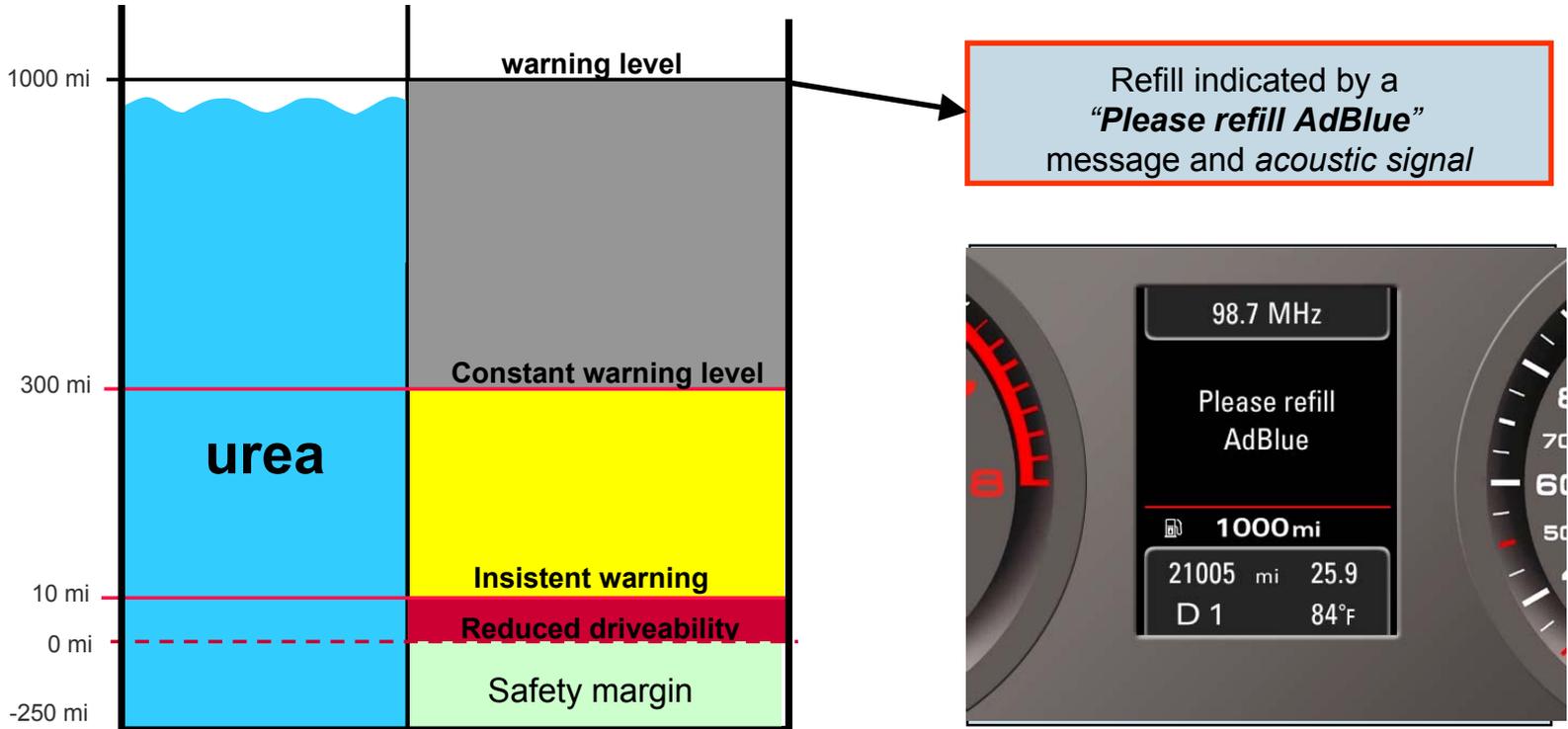


Connect container
Turn container
Press container down and hold container in that position
Filling process will start
Fill in will stop if container will no longer be pressed down



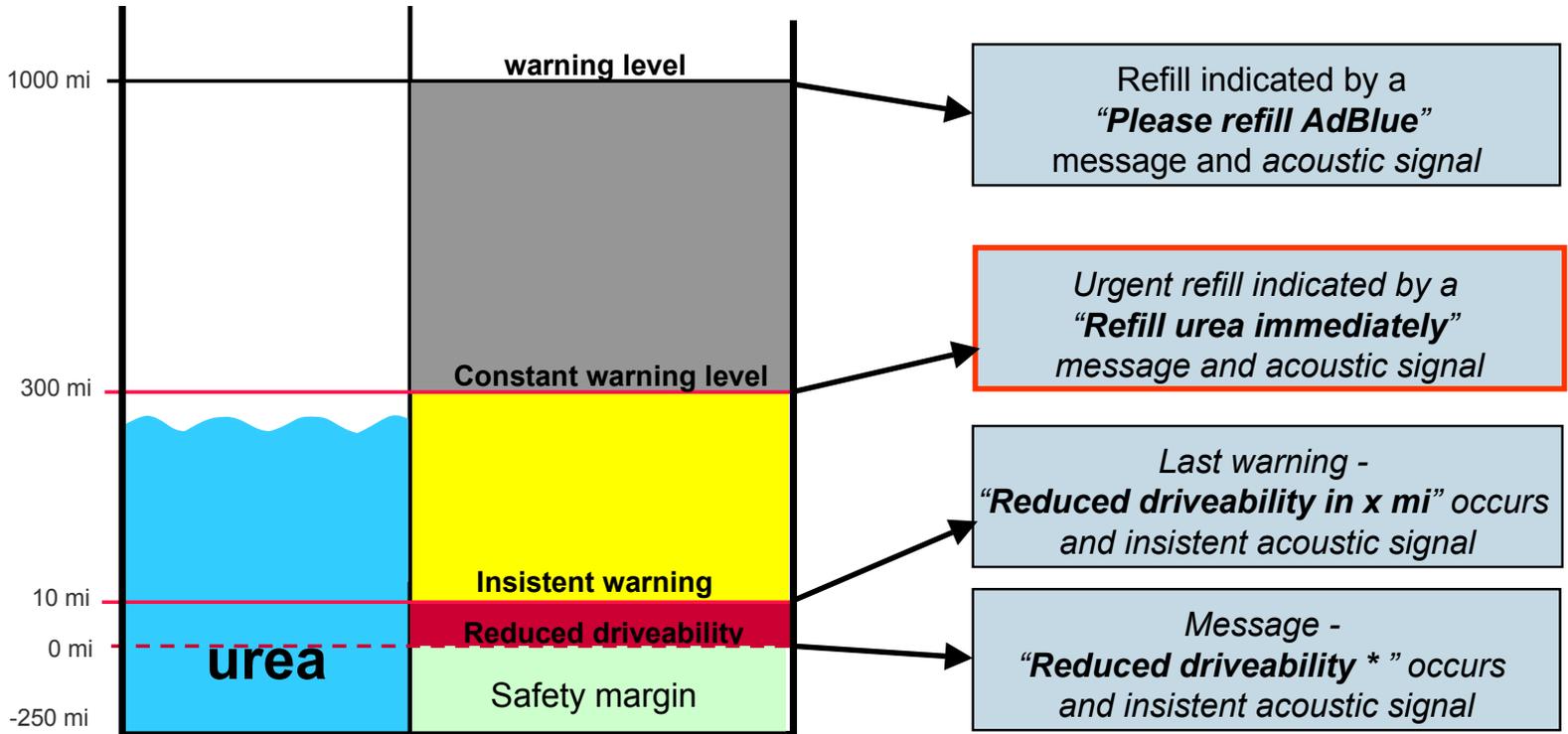
- Customer refilling through „Kruse bottle“ (0.5 gal.)
- Service refilling through nozzle with „Kruse adapter“
- leakproof concept - sufficient solution for customer and service staff
- Refilling of the wrong medium is avoided
- „Kruse“ system is recommended as a standard solution for all manufacturers

NOx-Aftertreatmentsystem - Warning Sequence



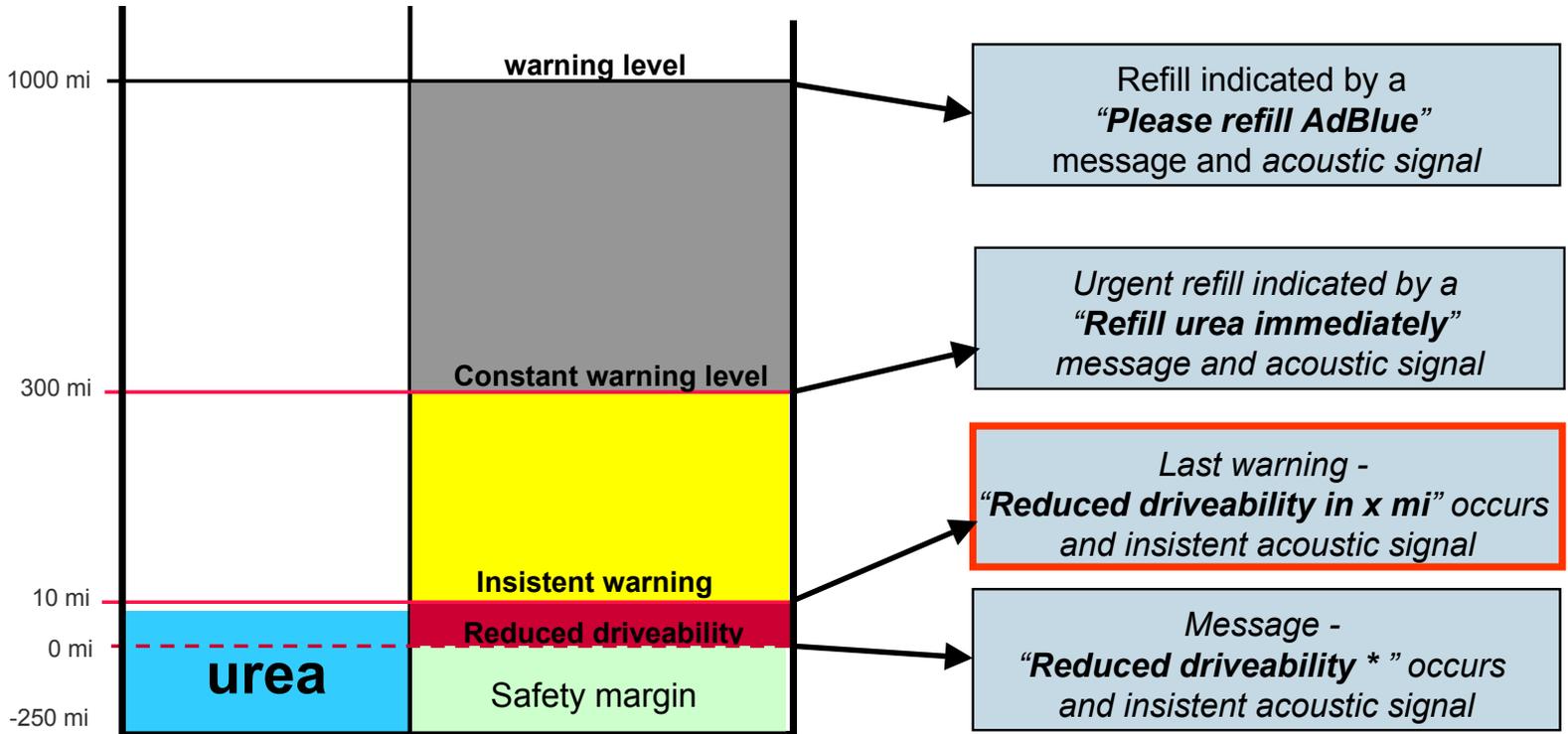
*) reduced driveability = max. speed 60 km/h

NOx-Aftertreatmentsystem - Warning Sequence



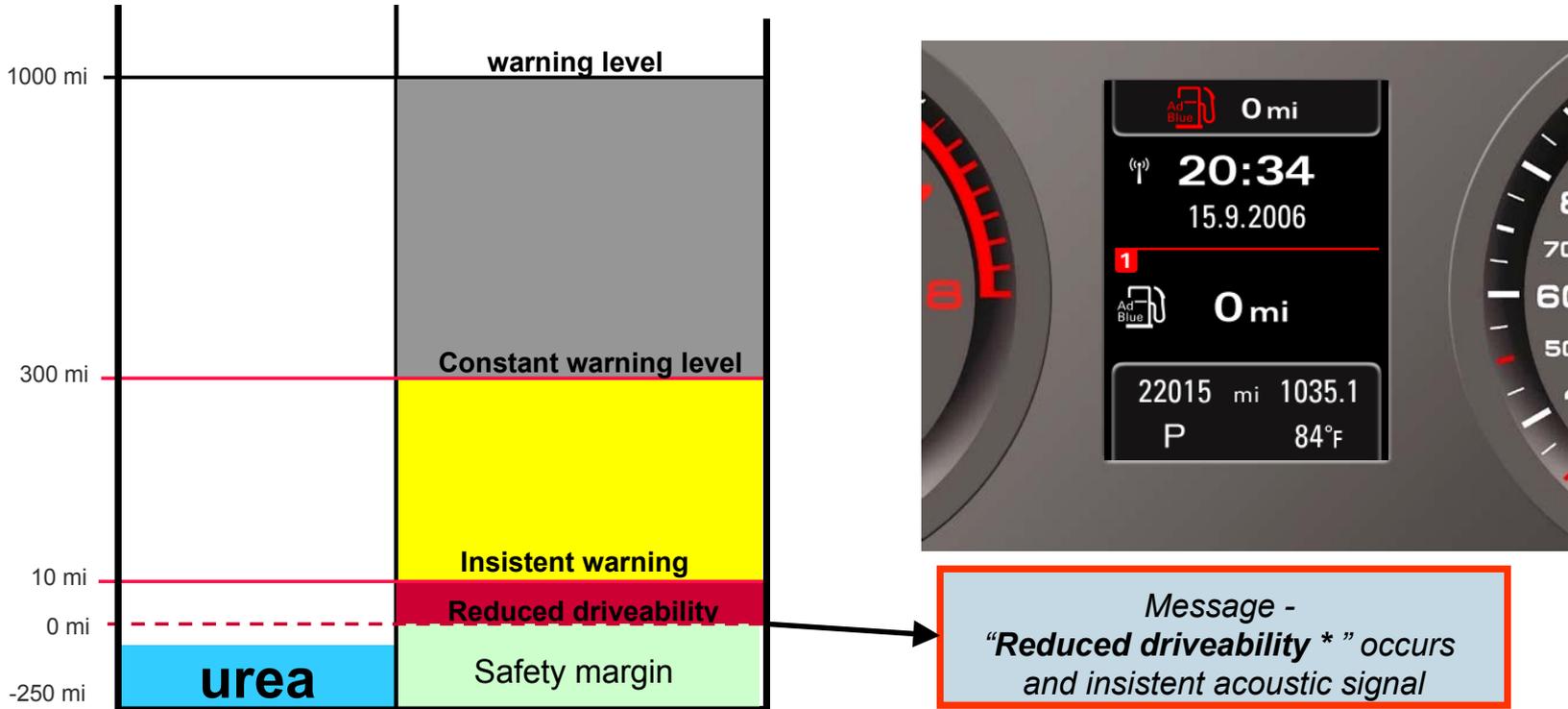
*) reduced driveability = max. speed 60 km/h

NOx-Aftertreatmentsystem - Warning Sequence



*) reduced driveability = max. speed 60 km/h

NOx-Aftertreatmentsystem - Warning Sequence



- „Reduced driveability“ is a limitation of the maximum speed (e.g. 35 mph)
- After this mode is activated there is still urea left (operational range: approx. 250 mi)

NOx-Aftertreatmentsystem – OBD

