



ACG/AIR CONSULTING

**WE CARE FOR
SAFETY AND SIMPLICITY**





**Ultra high pressure water jetting vehicles
(roughening, retexturing and demarking)**

Equipment for cleaning (compact sweepers)

SMETS / water jetting

**40 years in maintenance and
ultra high pressure solutions**



Stephan and Karl Smets

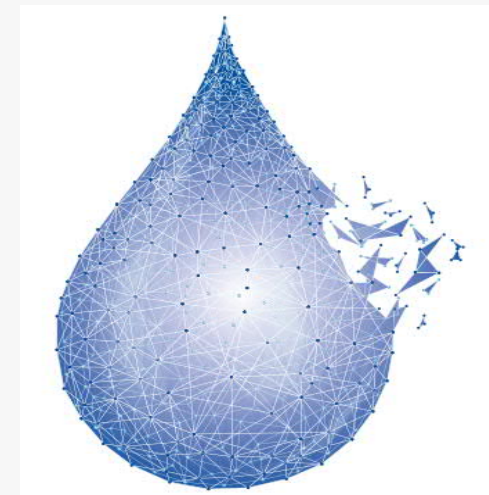
SMETS / water jetting

WE ARE TECHNOLOGICAL MARKET LEADER

We design and supply machines:

1. **the most gentle** to concrete and asphalt surfaces
2. with completely unmatched cleaning performances, and
3. **the most economical** operations in the world

SMETS – reasons for investing in own capacity



SMETS / water jetting

[SMETS Introduction – video](#)



THE LOWEST SURFACE IMPACT
THE GREATEST VEHICLE
PERFORMANCE AND VERSATILITY
CLEANING STRIP UP TO 3,4 METERS

SMETS / Cleaning machines

ARC 0800®

MRT 300/1

ARC 1000®

MRT 300/2

ARC 1600®

OSC 5000

ARC 2400®

OSC 10000

ARC 3000®

ARC 3400®



360 mm discs

Demarking device - standard equipment for ARC 1000 and ARC 1600



1000 mm discs



800 (500) mm discs



3 x 800 mm discs

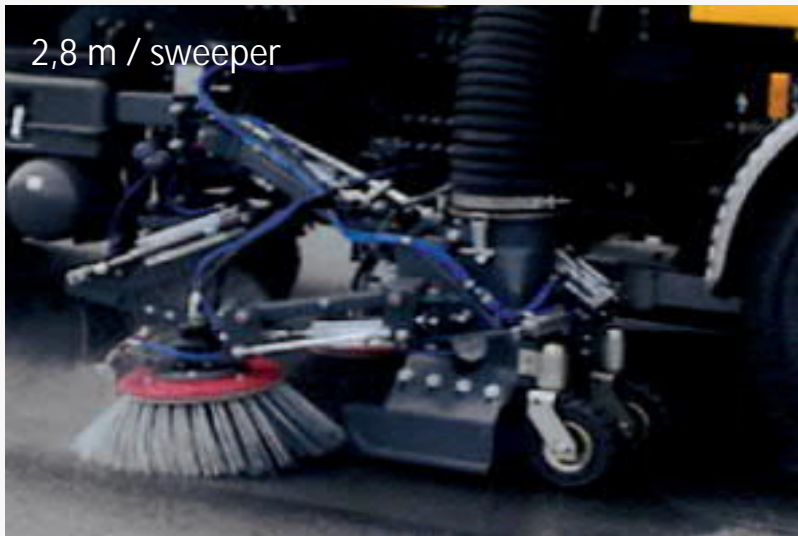
SMETS / Unmatched versatility

5 - 11 ELEMENTS OF OPTIONAL EQUIPMENT

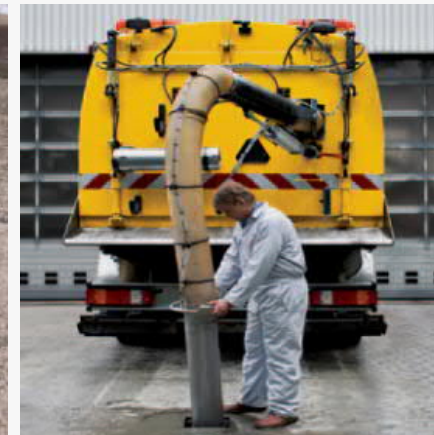
- ultra high pressure water jetting machine
- compact cleaning machine



2,8 m / sweeper



360 mm / 15 m hose



SMETS / Design features

Balanced high pressure system >> Minimized wear of components

2 engines, 2 pumps

Control system: automated and centralized
(electronic pressure regulation - SMETS software)

Ultrahigh pressure pumps WOMA (29 l / min - 76 l / min)

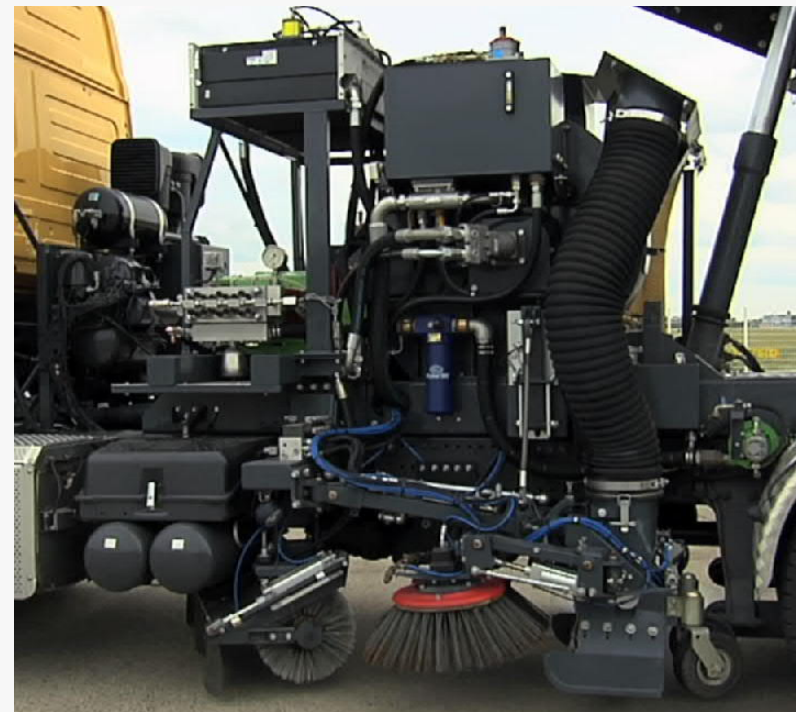
Water jetting discs with protective elements

Powerful suction fan (up to 16 800 m³ / h)

Tilted water tanks (8 000 l / 9 000 l)

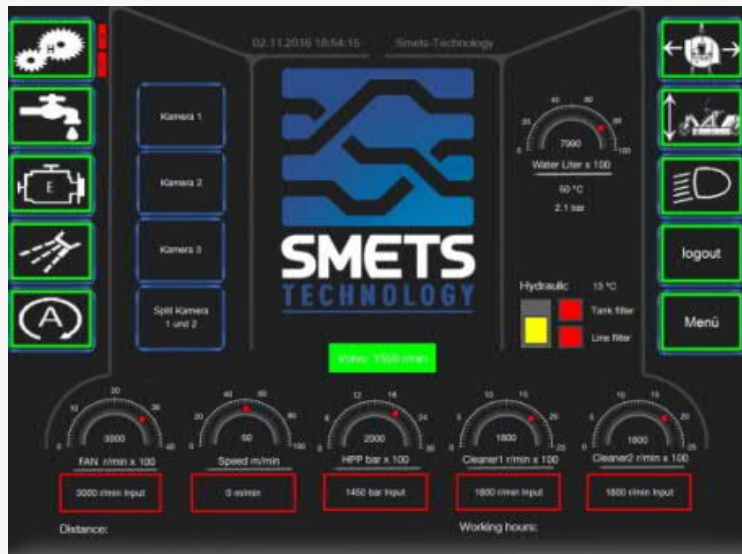
Remotely controlled drain door

RELIABILITY – LIFE SPAN – ECONOMICAL OPERATIONS



SMETS / Control, comfort, prevention

PLC SOFTWARE



EASY PREPARATION

Install: appropriate nozzle type (diameter) and adjust nozzles angle

On site: set working pressure, discs rotation speed, vehicle speed, power of suction fan >> follow 12" control panel (cameras) and drive the vehicle

OPERATOR FAILURE PREVENTION

10 seconds only for "SYSTEM STOP"

Prevention of critical failure – reverse mode or same place run !!

SMETS / Highly reliable design



Easy access to all superstructure components
Optimal load for rear axles (tanks separated horizontally)

Own production of unique nozzles

14 years of ARC machines development -
prototype ARC 1000 (Vietnam – Hanoi, 2006)
is still in trouble - free operation

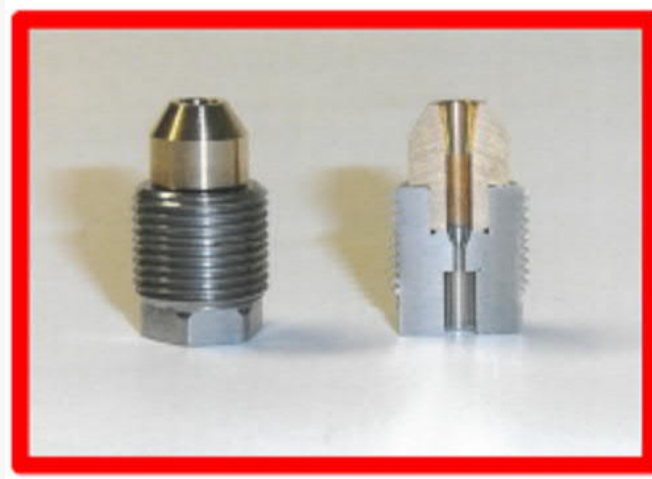
The lowest water consumption of all systems
in the world

The lowest annual costs (about 3,5 % of total investment)

SMETS / the lowest TCO cost

Nozzles: hardened steel / up to 70 hrs of operations / important cost savings

Balanced ultra high pressure system:
great durability and reliability



SMETS / Sensitive technology

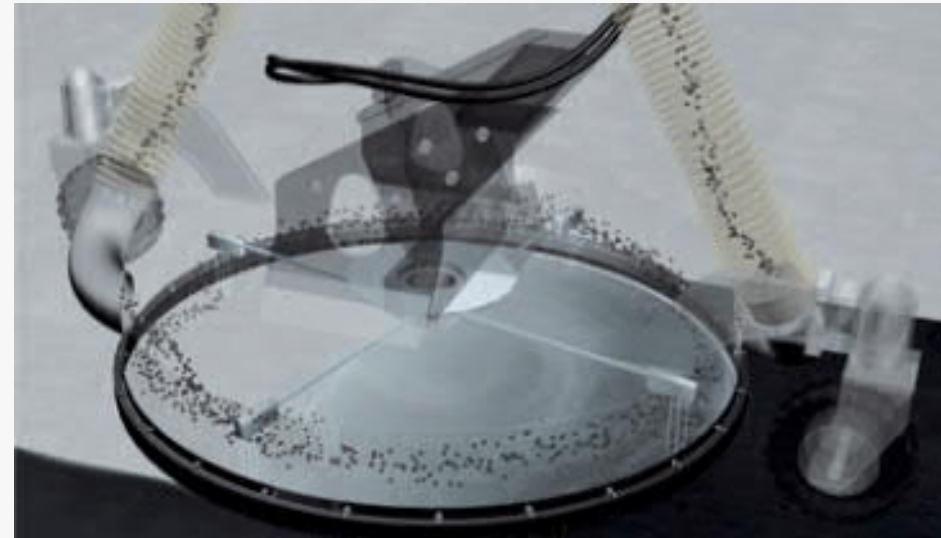


NOZZLES ROTATION SPEED

SMETS (377 km/h / 470 km/h)

HOG TECHNOLOGIES (257 km/h)

WINTER GRUEN (198 km/h)



Not marketing, just physics
and mathematics !!

We do not treat the surfaces with a „beam of
water“, but "scattered drops"

**The drops reach up to 38 % of the sound
speed !!**

SMETS / Methodology for pressures

METHODOLOGY OF SMETS

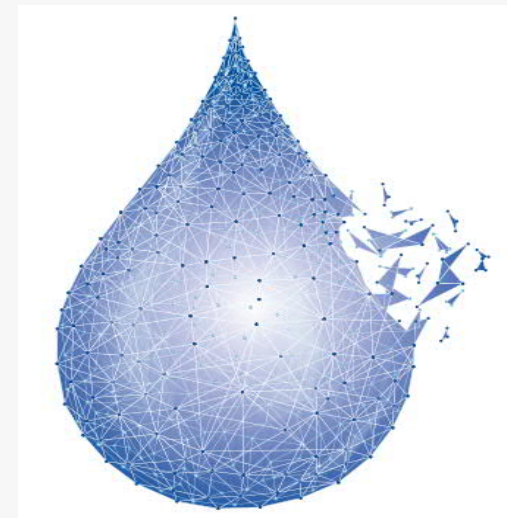
Demarking (paint, cold / thermoplastics) ... 2 200 - 2 400 bar

Removal of rubber ... **2 000 - 2 200 bar**

Roughening >> Retexturing ... 1 800 - 2 000 bar

Cleaning of pores ... 190 bar

Some technologies use pressures of up to 2700 bar (technical maximum of cleaning machines) and the road surface may be overloaded (stressed).



[YouTube – SMETS cleaning video channel](#)

SMETS / Contractually guaranteed performances



Warranty: 4 years for superstructure, 2 years for pumps

Truthful performance data - publication for all types of maintenance and surfaces /
Contractually agreed

Operating optimum instead of the technical maximum of the high-pressure system

Our machines use up to 25% lower pressures than competitors !!!!

SMETS / Unique technology

SUMMARY OF SMETS TECHNOLOGY ADVANTAGES



**WATER AND NOZZLE CONSUMPTION (SPARE PARTS) =
SIGNIFICANTLY LOWER**

PUMP WEAR = LOWER

WORK TIME REQUIRED = LOWER

HUMAN FAILURE RISK = LOWER

(WORKING PRESSURES) STRESS FOR PAVEMENT = LOWER

CLEANING SERVICES PURCHASING PRICE = LOWER

AFTERSALES COST = SIGNIFICANTLY LOWER

SMETS / ARC 3400 – the most powerful machine in the world

[SMETS ARC 3400 – video](#)



SMETS / ARC 3400 – the most powerful machine in the world

3 400 mm active water jetting width
76 l/min pump performance
4,8 km/h (80 m/min)



SMETS / Machines for demarking

We will efficiently clean ANY multilayer contamination



SMETS / Cleaning of oil spillage and municipal use

For municipal and road operations
Working width 1200 mm – 1500 mm
Working pressure 250 bar

OSC 5000



WATER JETTING / Competition

WINTER GRUEN – PEELJET
HOG TECHNOLOGIES
EHR - SODIAN, BGS STRATE,
SMETS TECHNOLOGY



JETTING OF PAVEMENTS / Water jetting and shot blasting

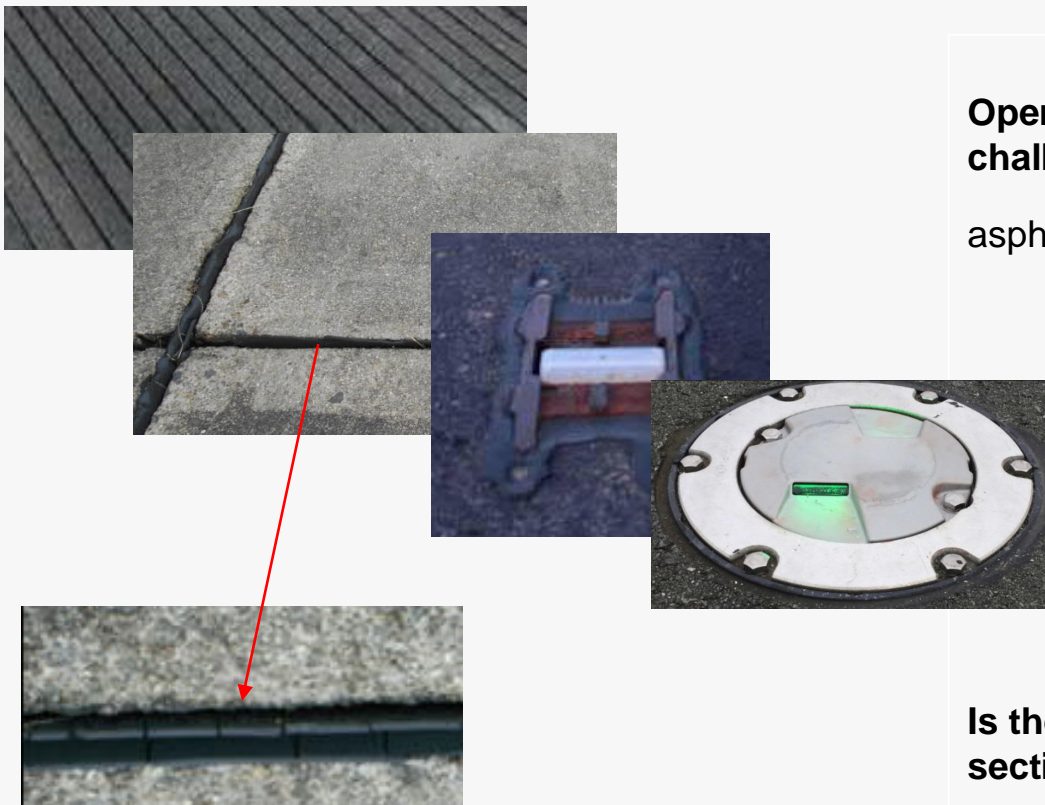


Shot blasting - suitable for multi-layer contamination and not very suitable for texture restoration (wear of the top layer) / anti-skid values increase but will not last – application of curing hardener is needed (otherwise the stones might release !!)

Water beam (jetting) - efficient technology for all types of surfaces (more gentle for the pavement) / optimal for application for both large-area and linear cleaning / heavy texture contamination usually requires repeated application

JETTING OF PAVEMENTS / Sensitive surfaces

[SMETS Tokio Narita – video](#)



Operator and contractor face many challenges:

asphalt,

grooving,

AGL,

road buttons,

expansion joints

Is the technology suitable for given pavement section ?!!

Alchemy of cleaning: technology,
vehicle / set-up, human factor

WATER JETTING / Fictions

FICTIONS IN WATER JETTING

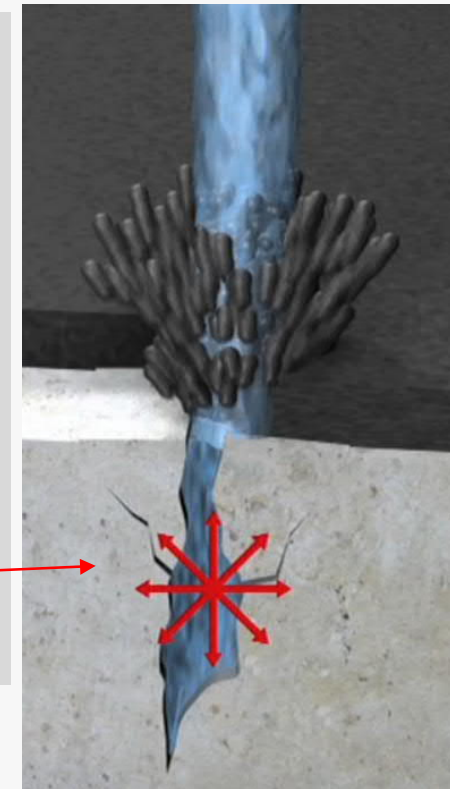
Maximum working pressure and amount of water = optimized vehicle performance

The biggest cleaned area in specified time = the best quality of works

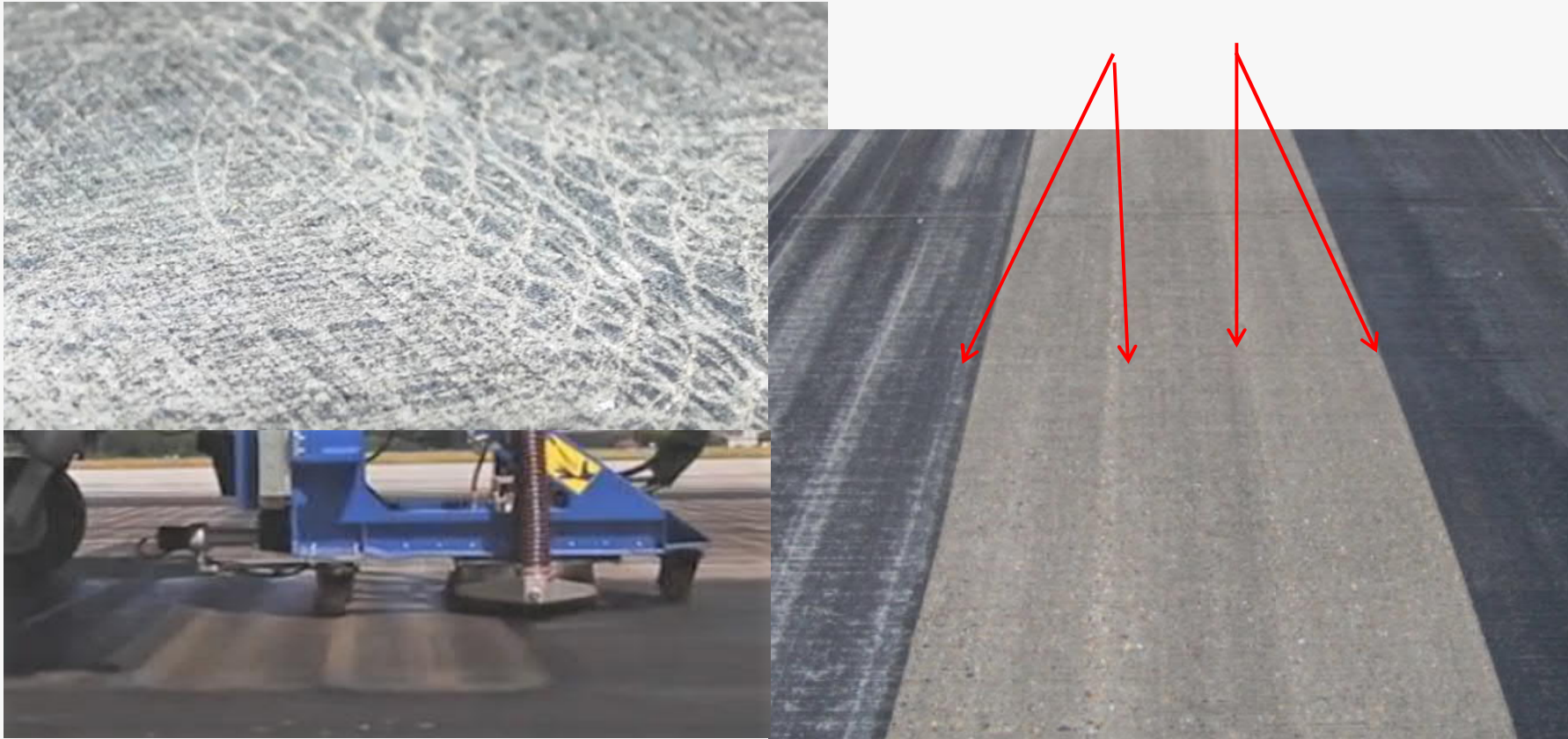
Water jetting machines do not differ - impact and durability of cleaning services is the same

Perform all cleaning jobs at once – remove contaminants (paint, thermoplastic, rubber) and repair the texture

Water jetting always **damages the surface**



WATER JETTING / Damage



WATER JETTING / Damage

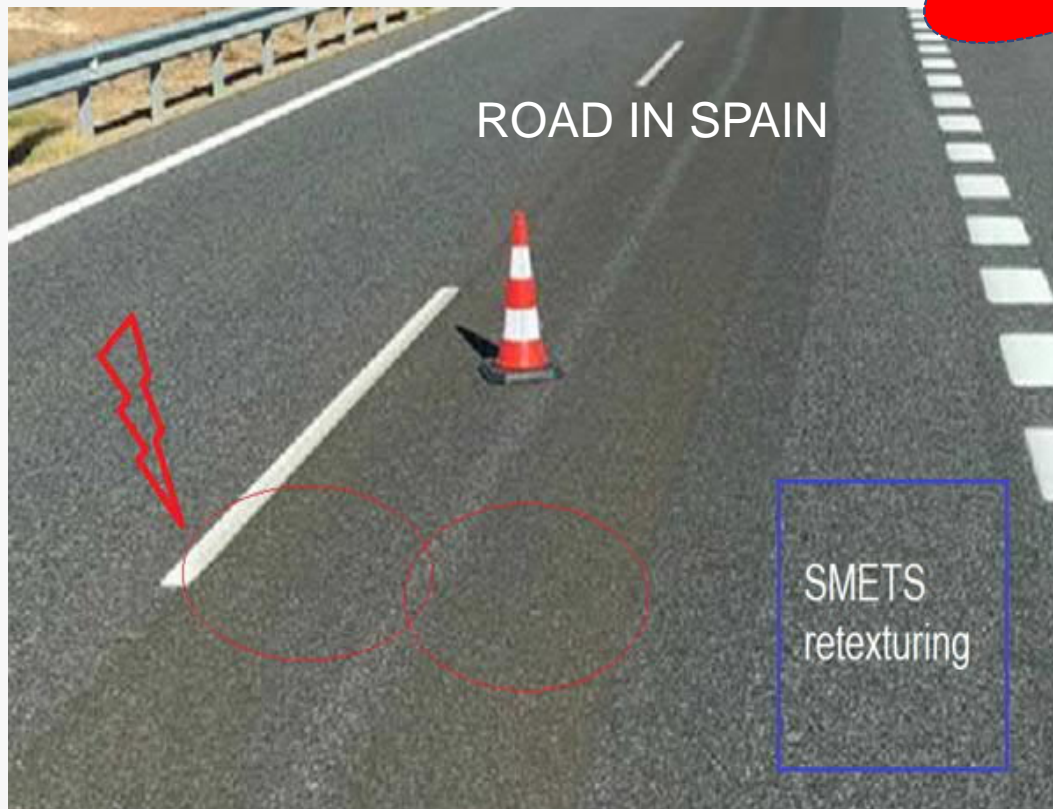


Rings and lanes, not only in grain



WATER JETTING / Damage

Comparison
test



AGGRESSIVE CLEANING LEADS TO:

- **DECREASE OF ROAD SURFACE UPPER LAYER**
- **DISINTEGRATION OF TEXTURE** with surface smoothing and worse anti-skid properties than before treatment
- **BREAK OUT OF STONES** up to a depth of several mm (in the picture as yellowish strips caused by 2 working discs)
- NOTE: retexturing must not remove more than 1,5 mm of top layer !
- NOTE Removing of rubber (marking) must not remove the top layer of road !

WATER JETTING / Contracting risks

CONTRACTING AUTHORITY – risks of miscommunication and lack of control („vague“ contract, „testing“ supply, on-site „supervision“)

CONTRACTOR – risk of technology, vehicle and operator - risk of human factor failure



CLEANING SERVICES

combination of factors HUMAN X MACHINE X CONTRACTOR =

- greater pressure on the evaluation
- variable (unknown) risk
- administration of purchasing the services
- additional costs in case of deficiencies

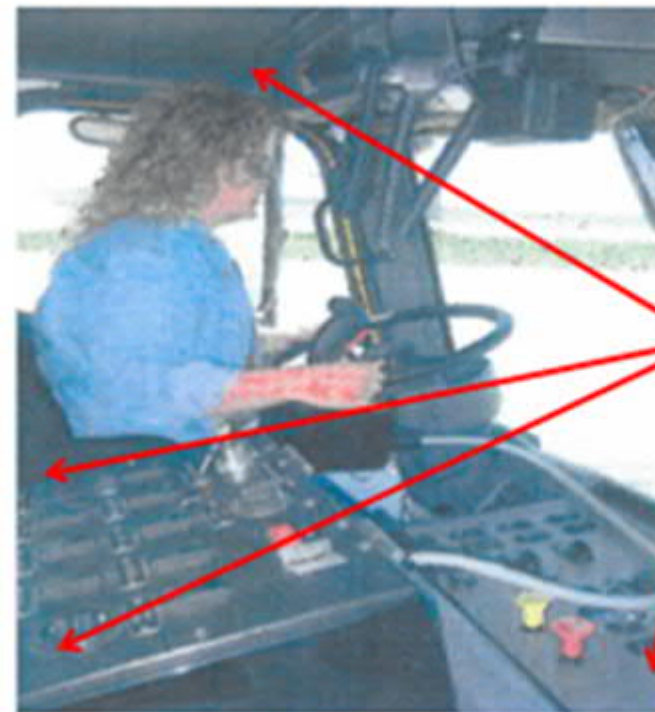
WATER JETTING / Contracting risks

Personal misconduct of machine operator

(e.g. by „same place cleaning“, in reverse mode or by inadequate pressure or with too much water) can cause:

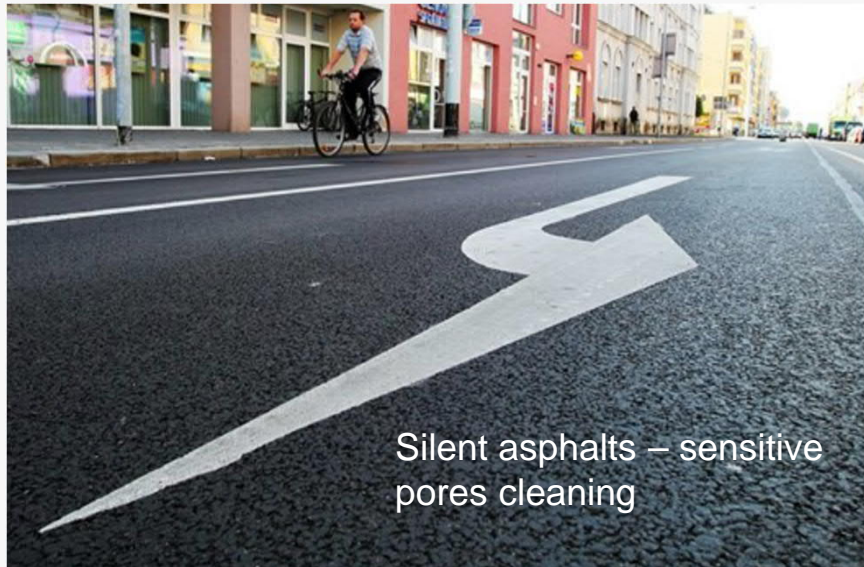
LOCAL DAMAGES OF THE TOP LAYER – so called "circles and overlaps"

AREAL DECREASE OF THE TOP LAYER

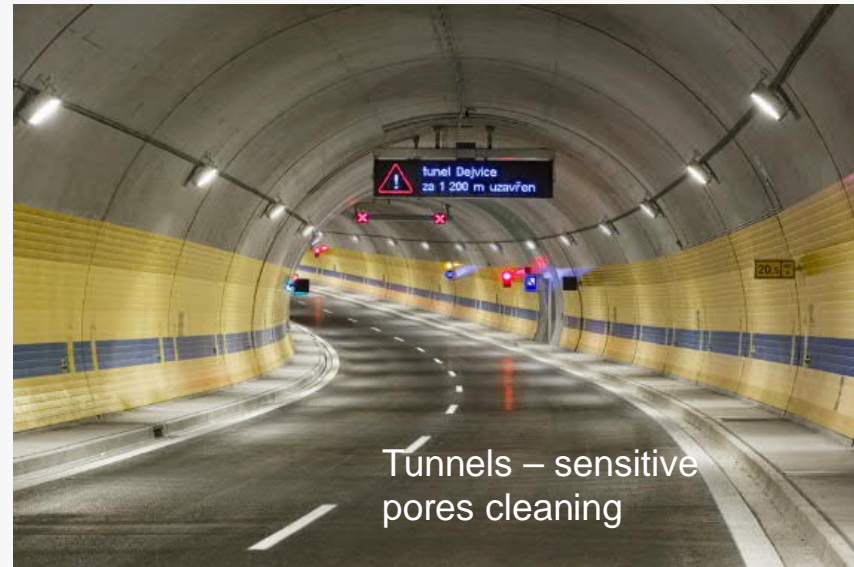


The drivers gets „over-loaded“ by too many information and to many “settings” he has to do. The area 180°) around the driver’s seat is equipped with instruments and switches.

SMETS / Surface friendly



Silent asphalts – sensitive pores cleaning



Tunnels – sensitive pores cleaning

SMETS TECHNOLOGY is due to extremely high rotation of cleaning discs >> dynamics of scattering water drops and up to 25 % lower working pressures >> one of the most „**surface friendly**“ technologies

Contact details



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