# INOVATIVNÍ METODA POKLÁDKY OPTICKÉ SÍTĚ

FUTURETEC 13. 6. 2019 Orea Resort Devět Skal\*\*\*

THE LAYJET TECHNOLOGY







DURYTET

#### LAYJET - technologie ALL-IN-ONE

#### Vše v jednom plynulém pracovním úkonu s rychlostí pokládky 3 km denně

- Fáze I. FRÉZA vyhloubí 15 18 cm široký a 50 70 cm hluboký výkop
  - vyhloubený materiál se třídí dle hrubosti na prosévací jednotce
  - do kynety se pokládají současně až 3 potrubí, která si stroj veze na bubnech před sebou
  - svazky jsou pokládány do obsypu z jemného materiálu, který propadl prosévací jednotkou
  - nad něj je pokládána výstražná páska
  - výkop se utěsní zbývajícím (hrubým) materiálem
  - přesná GPS pozice vedení s údajem hloubky je zaznamenána do mapy







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Fáze II.



- BAGR dorovná všechen zbývající materiál nad výkop a zhutní ho
  - a opakovaně přejíždí po uzavřeném výkopu a hutní ho kompresním kolem (přítlak 3,5 - 4 t)





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- **Fáze III.** KOMPAKTOR nakonec kartáči vymete z asfaltu odpadnuté části materiálu zpět do krajnice, vozovka tak zůstane naprosto čistá
  - krajnici ještě zhutní a zarovná vibrační deskou silou 70 kN
  - V případě potřeby se krajnice doplní dodatečným materiálem





#### LAYJET = pokládka do krajnice vozovky do hloubky 50 – 70 cm

#### 1) Proč silnice?

- ideální síť spojnic mezi obcemi
- právní jistota 1 majitel, veřejný majetek
- trvalé řešení po desetiletí neměnnost polohy a účelu užívání
- = významné zjednodušení v plánovací fázi = podstatné snížení nákladů



#### LAYJET = pokládka do krajnice vozovky do hloubky 50 – 70 cm

#### 2) Proč krajnice?

- součást pevné stabilní konstrukce vozovky
- přitom asfalt zůstane nedotčený
- minimální dopad na dopravu během samotné pokládky
- rychlá obnova původního stavu pozemku po pokládce
- snadný přístup pro případná následná napojení či jiné úpravy
- = značné urychlení výstavby v realizační fázi = podstatné snížení nákladů



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#### 3) Proč hloubka 50 – 70 cm

- pokládka jen 10 cm pod podložní vrstvu silnice nedojde k mísení materiálů z konstrukce vozovky s
  jiným materiálem
- umožní tak zachovat všechny vlastnosti krajnice nosnost a schopnost odvádět vodu
- z hlediska technologických nároků optických vláken je tato hloubka naprosto dostatečná
- plytší pokládka také znamená méně komplikací při křížení s jinými inženýrskými sítěmi, které jsou obvykle položeny ve větších hloubkách

= minimální nebo žádné dodatečné práce pro obnovu po realizační fázi = podstatné snížení nákladů



### POKLÁDKA metodou LAYJET

#### Další výhody

- Za 1 den se položí až 3 km kabelu (od otevření kynety až po její uzavření)
- Vedení jsou naprosto přímá, to znamená snažší zafukování
- Úzký výkop je okamžitě uzavírán, tím je neustále zajištěna bezpečnost během výstavby
- Minimální omezení plynulosti dopravy
- Nedochází k téměř žádným problémům s rezidenty
- Minimální tvorba prachu a znečištění CO<sub>2</sub>
- Odpadají často vysoké náklady na sanaci





DURYTET

# LAYJET technology







# Introduction & background





### Functional overview











#### Drum support





























Overall length (including 2.40 m drum):

**12.94 metres** 







Overall length (including 2.40 m drum): Overall weight (not including drum): **12.94 metres 16.40 tonnes** 













Overall weight (not including 2.40 m drum): Overall height (incl. cable guide) Overall width: 12.94 metres 16.40 tonnes 3.72 metres 2.70 metres

















• Maximum load capacity: **4,000 kg** 











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- 1 drum 3 metres in diameter











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- or 2 drums with a diameter of up to 2.4 meters











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- Additional drums between guide linkage up to 1 metre in diameter















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  Continuously variable drive, speed of up to 10 metres / hour







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- Monitoring of milling process via 4 cameras
- GPS recording via Trimble receiver





# LAYJET milling machine









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# LAYJET milling machine

Support frame
Milling housing with height guidance







# LAYJET milling machine

- Support frame
- Milling housing with height guidance
- Conveyor belt





# LAYJET milling machine

- Support frame
- Milling housing with height guidance
- Conveyor belt
- Trailing trench shielding device with integrated laying unit











• LAYJET work space: At least 40 cm from the edge of the driving surface

























































































































- LAYJET work space: At least 40 cm from the edge of the driving surface
- Height of 4 metres above asphalt layer
- Drawn off shoulder with banking of at least 10%
- Proper road surface drainage
- Starting trench:
  2 m long x 70 cm deep x 30 cm wide



























































































13 m

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- Starting trench:
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- Expose installations:
  A) Routing over
  B) Dividing and routing under
- Laying distance from obstacles (e.g. walls): 13 metres



# Functional principle









#### • Trench **15 to 18 cm wide**









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- Passage width: > 330 cm
- Clearance: >40 cm
   (e.g. guardrail)













 Milling bottom 35 to 70 cm • Cable sand (produced on site by LAYJET 2.0 screening system integrated HFODWT into the milling system) 8 cm 16 cm 5 cm 3 cm





# 

Functional principle



- **Cable sand** (produced on site by LAYJET 2.0 screening system integrated into the milling system)
- Laying of a warning strip at desired height (default: 20 cm above tube top edge)



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- Trench compacting via compacting wheel (3.5 to 4 tonnes)

















Jakeug

I. HF

















Conventional method: Straight laying impossible due to pipework windings and manual insertion: Injection process aggravated







#### LAYJET method: "Tensioned" laying and immediate sealing **Up to 30% longer injection routes**



















# Conveyor belt with integrated screening unit











 Milled material screening and material processing











Conveyor belt with integrated screening unit

- Milled material screening and material processing
- Empty tubes are encased with fine material











Conveyor belt with integrated
 screening unit

- Milled material screening and material processing
- Empty tubes are encased with fine material
- Trench filling via walk-behind trench shielding device with optimised grain size













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Resource preservation through material processing on site









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- Resource preservation through material processing on site
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- Trench filling with grains optimised on site
- Ballast from lorry only required for start and interim trenches
- Additional compacting via vibration plate















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- No problems with residents since restrictions are almost non-existent







# Route planning







#### LAYJET TECHNOLOGY























































LAYJET TECHNOLOGY







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- STRATECO confirms LAYJET's climate neutrality.
- Every year, LAYJET spends six-figure sums on environmental and climate protection.











#### Thank you very much .... FOR YOUR INTEREST AND YOUR ATTENTION.



