9.9.2022., VEDRAN NEJAŠMIĆ mag.ing.aedif.
SIKA CROATIA

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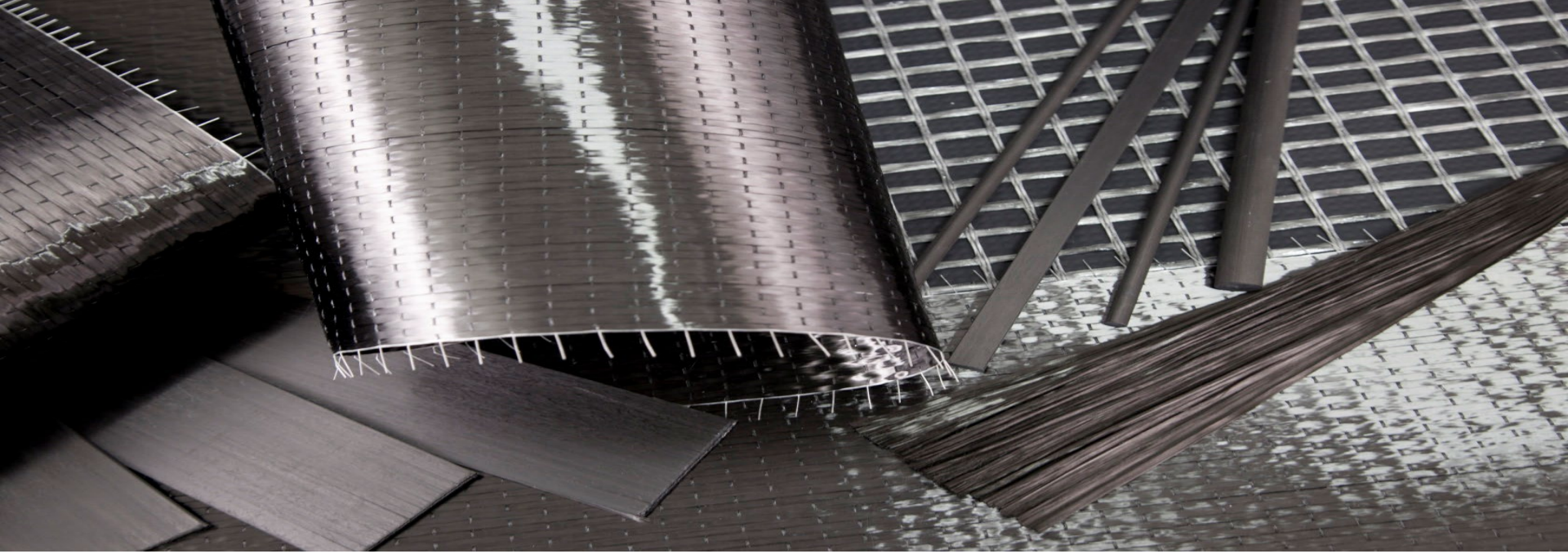

FRP (**F**iber **R**einforced **P**olymers) – lamele i tkanine za ojačanje konstrukcija: Sika® kompozitni sustavi su sistemi za konstrukcijska ojačanja male težine, materijali visokih performansi otporni na koroziju.

- Lamele od karbonskih vlakana raznih širina, debljina i modula
- Tkanine, mreže različitih vrsta vlakana i težina
- Specijalno formulirana 2-komponentna ljepila i smole

Zašto su potrebna statička ojačanja konstrukcija?

- Povećanje opterećenja
- Prenamjena
- Oštećenja konstrukcija
- Požar
- Korozija
- Modifikacija konstrukcije
- Uklanjanje nosivih zidova ili stupova
- Otvori u pločama
- Ograničenja progiba i pukotina
- Promjena propisa i zakona
- Greške pri projektiranju ili izvođenju

Tipična područja primjene

- Nosači/grede (savojna i poprečna naprezanja)
- Ploče (betonski podovi, parkirališta)
- Stupovi (tlačna otpornost)
- Kanali, tuneli, dimnjaci
- Silosi, spremnici (prstenasto)
- Zidovi (konsolidacija)

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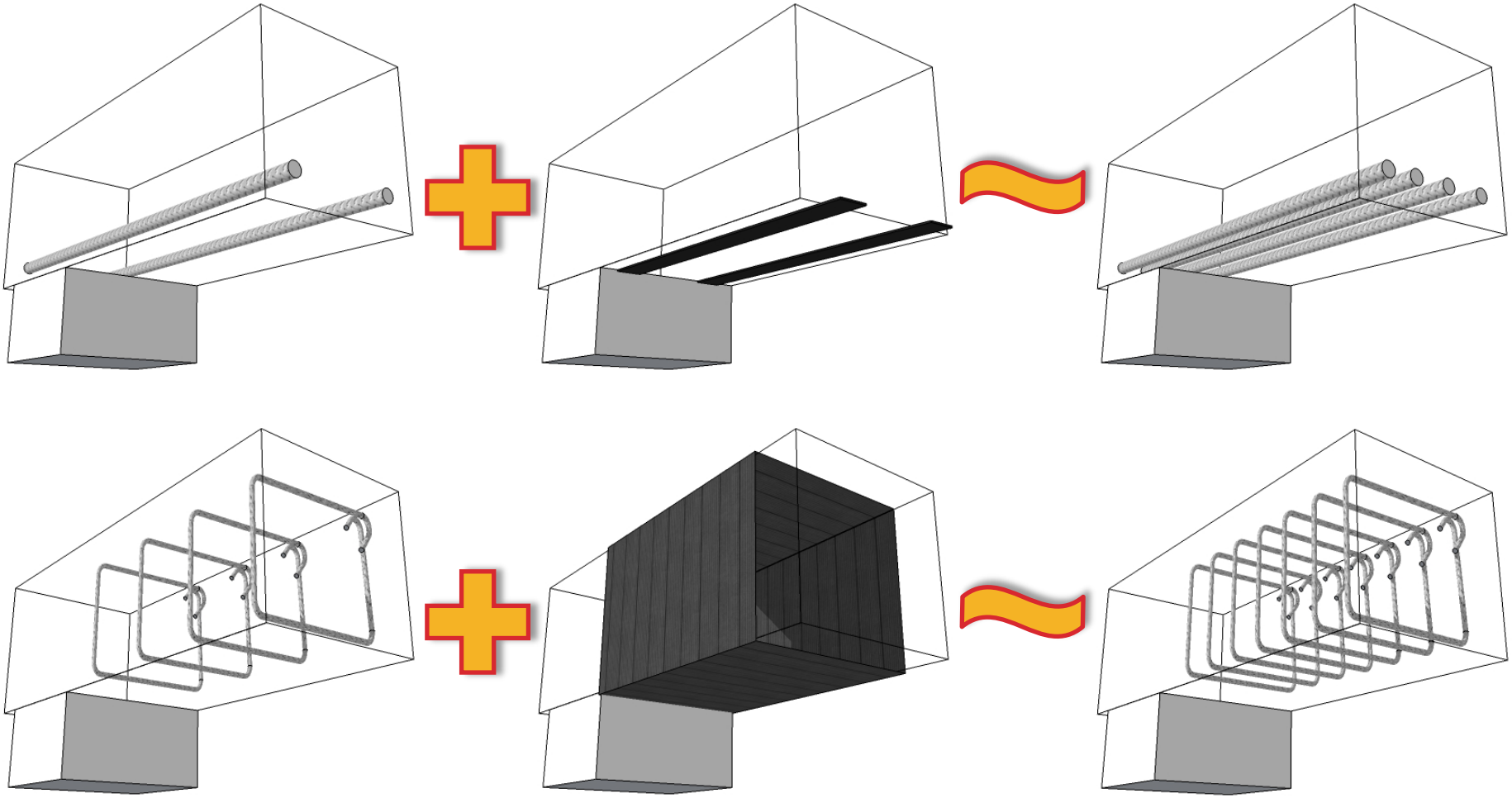
Kako CFRP djeluje na ojačanje grede?



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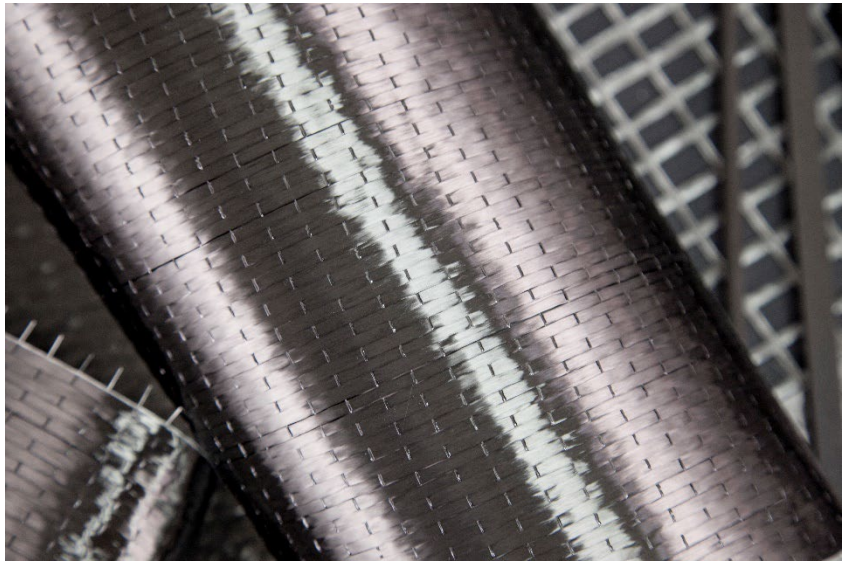
Karakteristike CFRP sustava



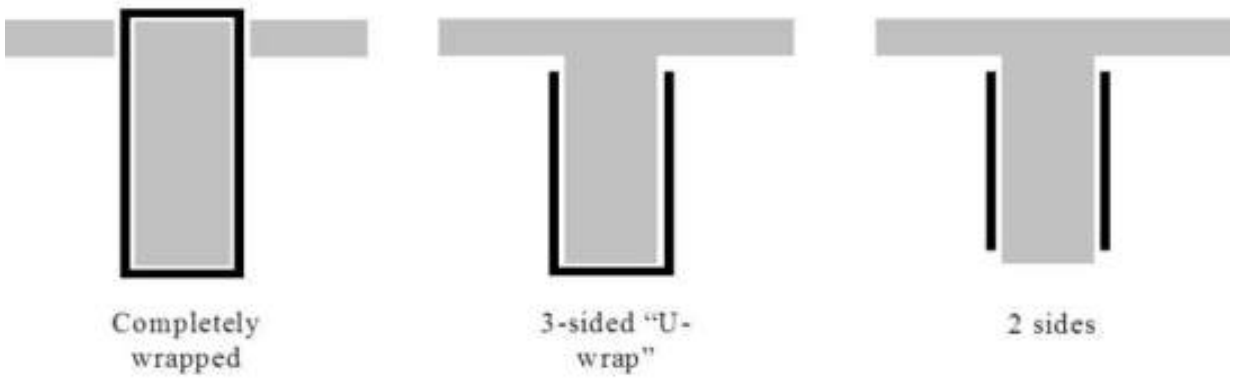
- vlačna čvrstoća :

armatura Ø10 : 27 kN → 2.7 t
lamela M614 : 270 kN → 27 t

lamela M614 ≈ 10 x šipki armature Ø10 !!!

- ne korodira
- visoka vlačna čvrstoća
- mali troškovi ugradnje
- oblikovana i odmjerena prema zahtjevima ugradnje
- minimalni troškovi održavanja
- može se prilagoditi svim geometrijskim oblicima

OJAČANJE NA POSMIK / VILICE



Smanjenje efektivnosti →

Jednostavnije i lakše za izvedbu →

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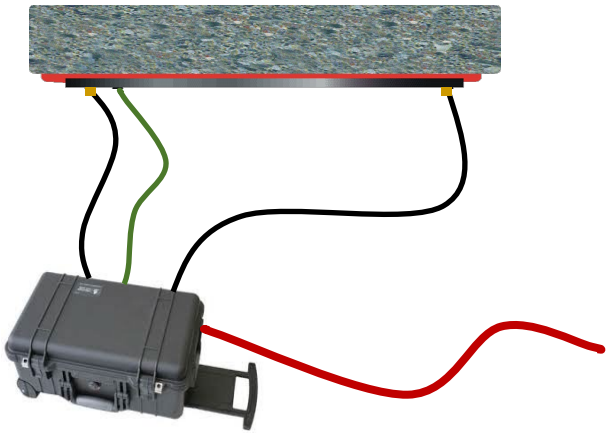
Ojačanja
https://www.youtube.com/watch?v=Wyg7zOxCQoM

- Ojačanje otvora:
  https://www.youtube.com/watch?v=ziMQlO4ZHQE
- Ojačanje stupa:
  https://www.youtube.com/watch?v=NBUwcC1Ponc
- Ojačanje grede:
  https://www.youtube.com/watch?v=2ZdojHToTNo

SIKA® CARBOHEATER 2

- Protok struje kroz CarboDur® lamele putem ugljikovih elektroda
- Ugljikova vlakna se vodiči, ali imaju veliki otpor
- Lamela se zagrijava uslijed protoka struje
- Vruće lamele zagrijavaju sloj ljepila
- Temperatura u sloju ljepila se kontrolira protokom struje
- Rezultat je visoka temperatura vezanja u kontroliranim uvjetima



PRIMJENA

- Ograničeno vrijeme
- Niska temperatura okoline
- Visoka temperatura kod ugradnje / uporabe – povećanje točke tališta ljepila

REFERENCE

Župna crkva Našašća Sv. Križa, Orahovica

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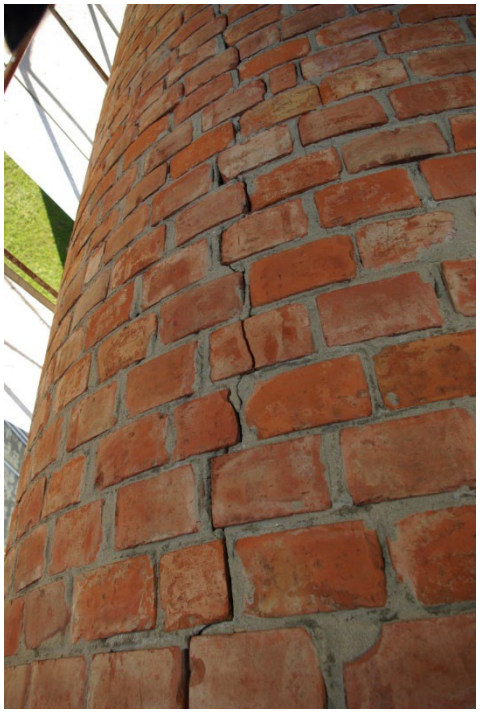
REFERENCE

Župna crkva Bezgrešnog začeća, Valpovo

REFERENCE



Dimnjak Belje

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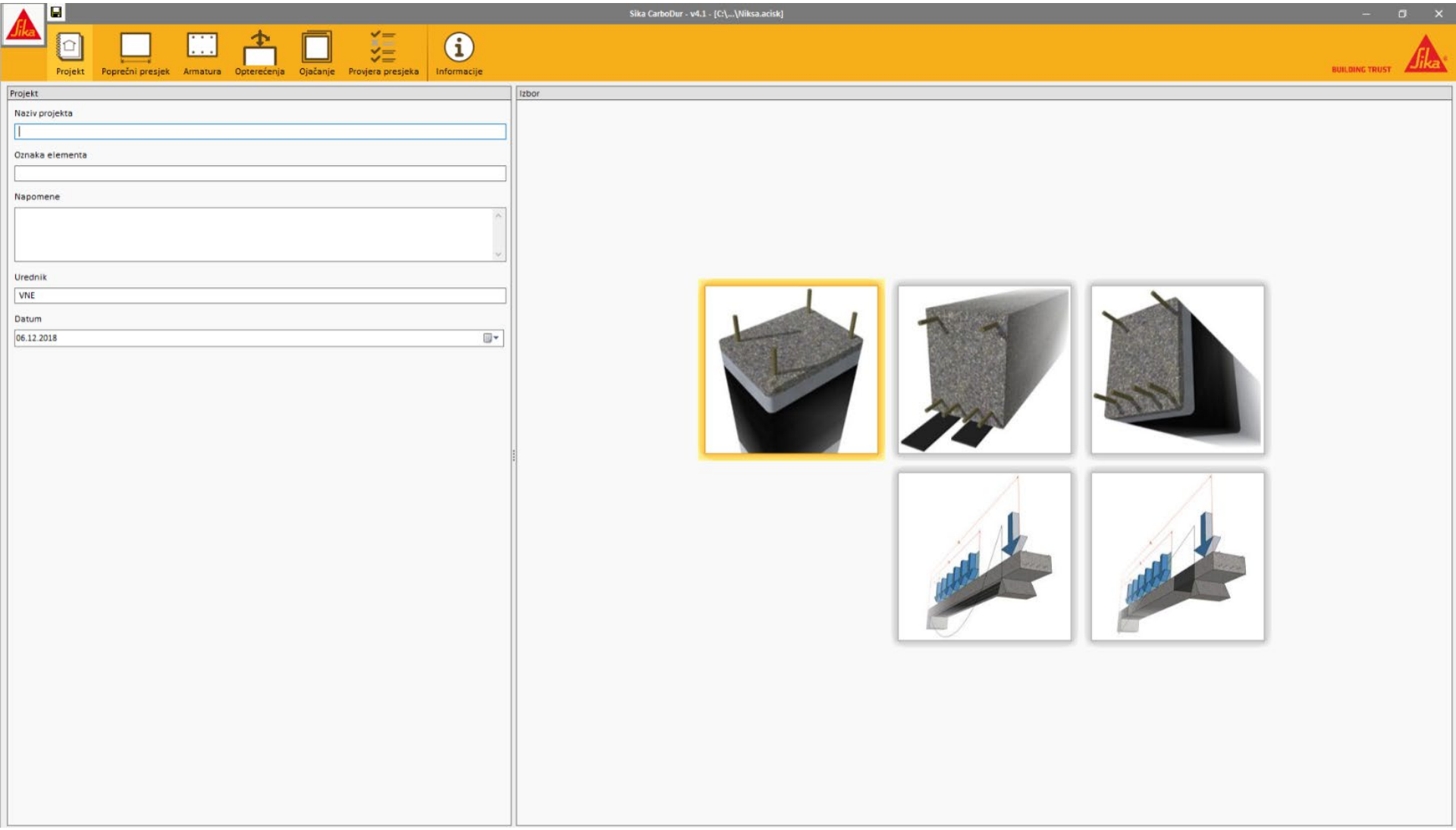
SIKA CARBODUR SOFTWARE



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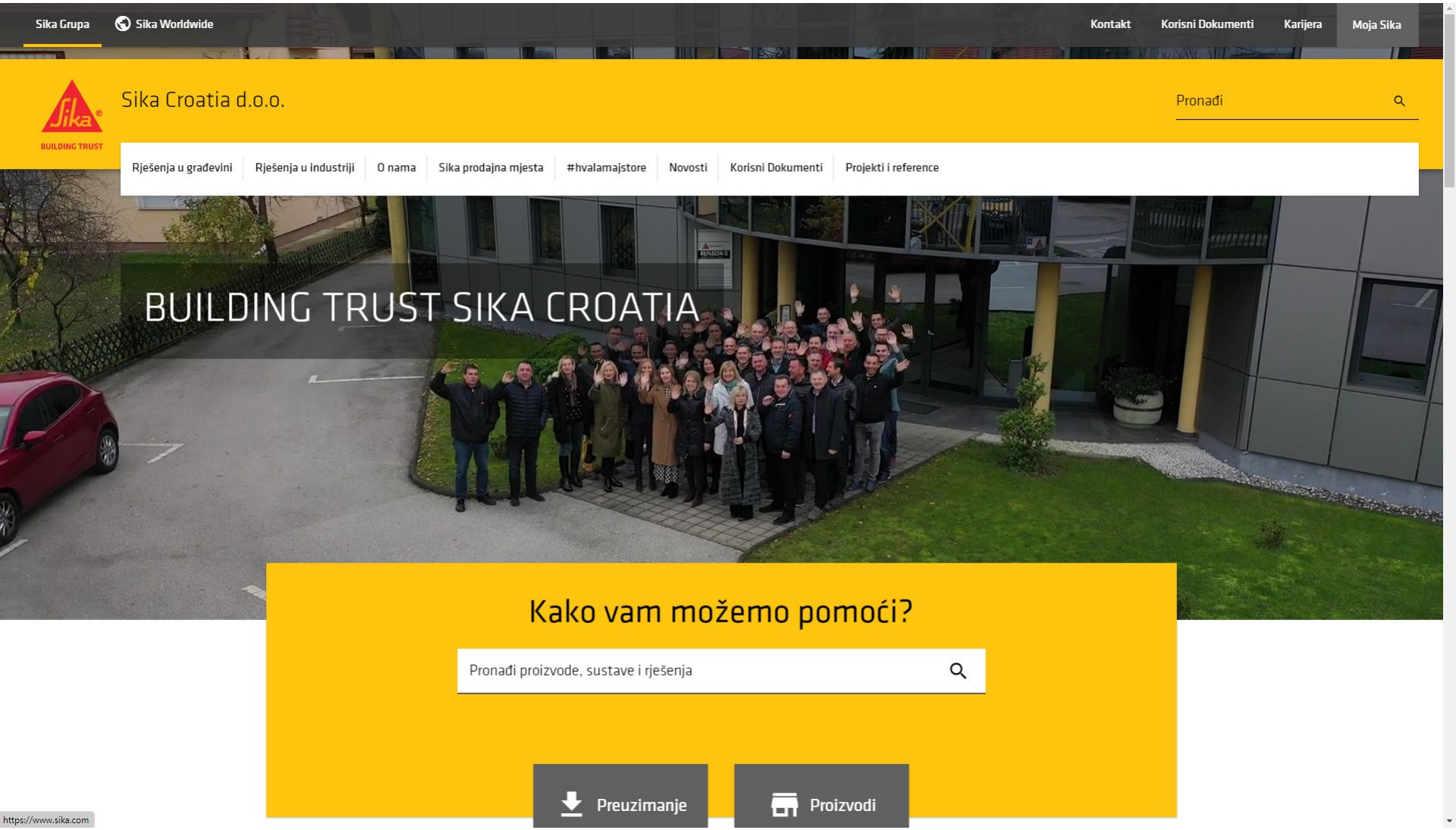
POSTUPAK INSTALACIJE SOFTWARE-A



POSTUPAK INSTALACIJE SOFTWARE-A

Sika Grupa | Sika Worldwide | Kontakt | Korisni Dokumenti | Karijera | Moja Sika

Sika Croatia d.o.o.

Rješenja u građevini | Rješenja u industriji | O nama | Sika prodajna mjesta | #hvalamajstore | Novosti | Korisni Dokumenti | Projekti i reference

Rezultati pretraživanja

frp design software

Sve (87) | Products (6) | Events (0) | Knowledge Base (2) | News (0) | Projects (12) | Documents (29)

All results

Sika® CarboDur® *FRP Design Software*

https://hrv.sika.com/hr/korisni-dokumenti/sika-carbodur-frp-design-software.html

projektiranju Intuitivna primjena Automatski update Besplatan Pogledajte naš primjer kalkulacije u Sika® CarboDur® *FRP Design Softwareu:* Da bi instalirali naš *software* prvo ga trebate preuzeti! Preuzmi sad

Benefits of BIM

https://hrv.sika.com/hr/korisni-dokumenti/sika-bim/benefits-of-bim.html

When Building Information Modeling is used to its greatest potential, it can optimize the entire process of building, from early preliminary *design* through to construction and operations. Sika BIM

POSTUPAK INSTALACIJE SOFTWARE-A

Rješenja u građevini | Rješenja u industriji | O nama | Sika prodajna mjesta | #hvalamajstore | Novosti | Korisni Dokumenti | Projekti i reference

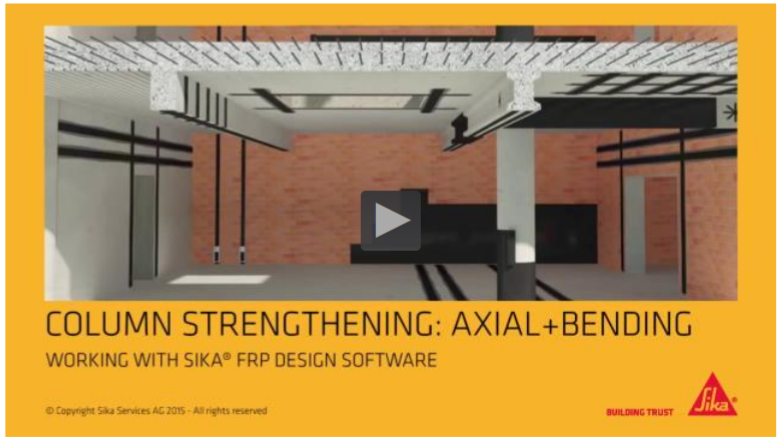
Korisni dokumenti > Sika® CarboDur® FRP Design Software

Sika® CarboDur® FRP Software temelji se na slijedećim standardima TR 55 - EN 1992-1-1, CNR-DT 200 R1/2013, SIA 166 – SIA 262, ACI 440 – ACI 318, i služi kao smjernica za projektiranje i ugradnju površinski lijepljenih FRP sustava za konstrukcijsko ojačanje betonskih konstrukcija.

KLJUČNE ZNAČAJKE

- U skladu sa zadnjom verzijom internacionalnih smjernica
- Transparentna kalkulacija
- Sveobuhvatan pristup projektiranju
- Intuitivna primjena
- Automatski update
- Besplatan

Pogledajte naš primjer kalkulacije u Sika® CarboDur® FRP Design Softwareu:



Da bi instalirali naš software prvo ga trebate preuzeti!

PREUZMI SAD

Sika Croatia | Sika rješenja | Pratite nas | Sika Croatia d.o.o.

NATIONAL RESEARCH COUNCIL

ADVISORY COMMITTEE
ON TECHNICAL RECOMMENDATIONS FOR CONSTRUCTION

Guidelines for the Design and Construction of Externally Bonded FRP Systems for Strengthening Existing Structures

Metallic structures

Preliminary study

CNR-DT 202/2005

ROME – CNR June 2007

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Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

Member of EOTA
www.eota.eu

European Technical Assessment

ETA-21/0276 of 30/06/2021

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	Sika® CarboDur®
Product family to which the construction product belongs	Kits for the strengthening of concrete elements by externally bonded CFRP strips
Manufacturer	Sika Services AG Tuffenwies 16-22 CH-8064 Zürich Switzerland
Manufacturing plants	Manufacturing plants No. 1001, 1053 and 1168
This European Technical Assessment contains	16 pages including 3 Annexes which form an integral part of this Assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document EAD 160086-00-0301 "Kits for the strengthening of concrete elements by externally bonded CFRP strips"

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Hvala na pažnji !

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