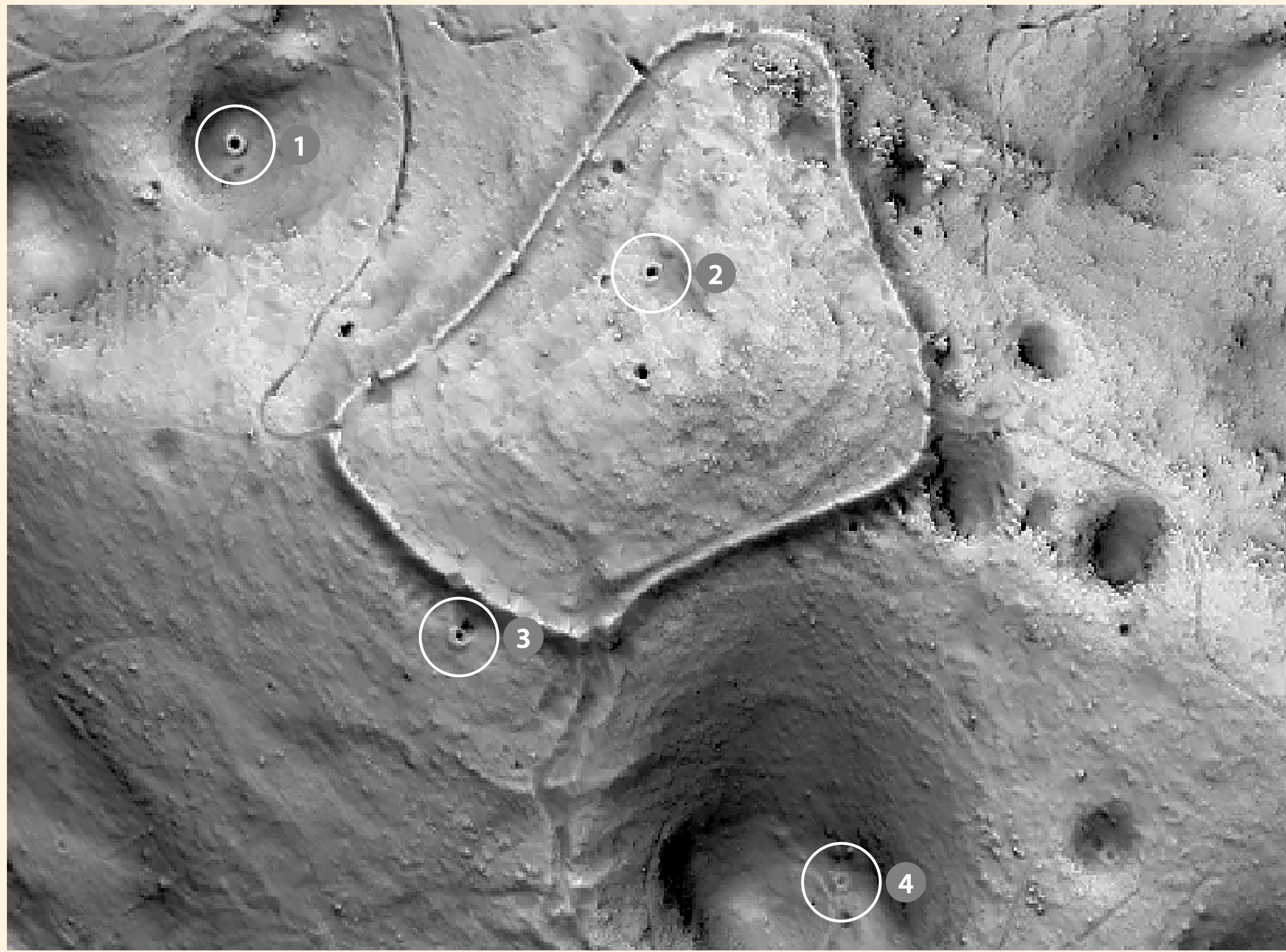# CVINGER

Apnenice

Na prikazu zračnega laserske-ga snemanja Cvingerja (LiDAR) izstopajo štiri kolobarjaste tvor-be. Po terenskem pregledu se je izkazalo, da so to ostanki izpraznjenih apnenic. Čeprav je žganje (kuhanje) apna eden od najstarejših kemijskih procesov, ki jih je obvladal človek, teh polj-skih peči ne smemo povezovati s tukajšnjimi prazgodovinskimi ostanki. Cvingerske apnenice so najverjetneje nastale šele v 19. ali 20. stoletju. Apneničarstvo je bilo nekdaj najbolj razvito na območjih z veliko apnenca in bukovega lesa, ki so ga rabili za kurivo. Svoj čas je bila to po-membna panoga domače obrti.

Vešči mojstri so gradnjo peči pričeli z izkopom jame, v kateri so oblikovali obokano kurišče. Nad njim so naložili apnenče-ve lomljence. Obod so napravili iz pokončnih brun, med katere so vodoravno vpletli okleščene veje. Vmesni prostor so zapolnili z zemljo in jo zbili tako, da so za-tesnili vrzeli med kamni. Takšne začasne apnenčaste kope na obrobju vasi ali v bližnjem goz-du so v višino merile tudi 6 me-trov in več.

Po prižigu peči se je kamen v notranjosti segreval in z višan-jem temperature (~ 1000 °C) je postopoma zažarel. Iz apnen-ca (kalcijev karbonat) se je po nekajdnevnem kurjenju izločil ogljikov dioksid. Po ohladitvi apnenice, ki je glede na njeno velikost lahko trajala več dni, so iz njene sredice pobrali žgano (živo) apno (kalcijev oksid). Tega so nato v ločenih, z lesom obda-nih apneniških jamah gasili (zali-vali) z vodo, s čimer so pridobili široko uporaben proizvod – ga-šeno apno (kalcijev hidroksid).

Primerno odleženo gašeno apno so nekoč v velikih količi-nah rabili v gradbeništvu (vezi-vo), strojarstvu, usnjarstvu, za beljenje stanovanj in razkuževa-nje ter pri konzerviranju jajc. Z mešanico apnenih ostankov in pepela so za zaključek pog-nojili še polja in travnike.
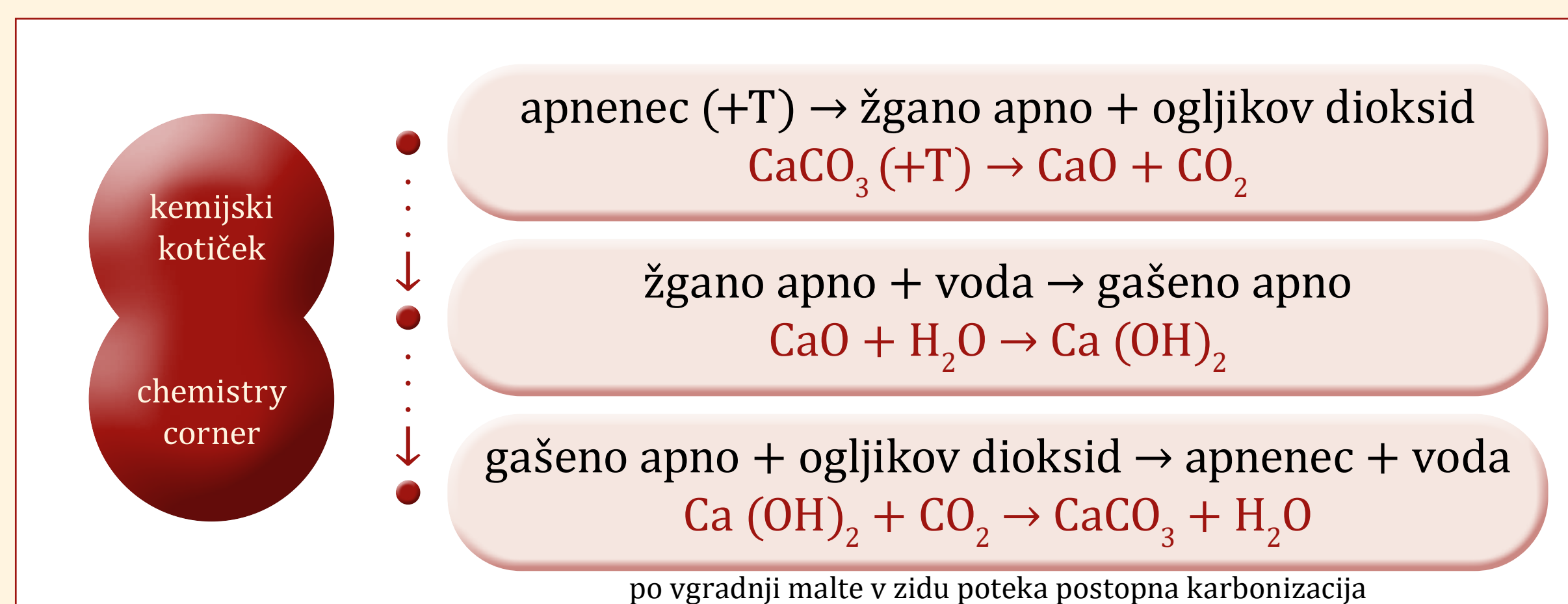

Položaj ostankov apnenic na Cvingerju. | The location of the remains of the former limekilns.

Apnenica pred žganjem in po njeni izpraznitvi (Kostanjevica na Krki, foto Boris Orel, hrani SEM).
A limekiln prior to firing and after the removal of its contents (Photo: Boris Orel; kept by SEM).

Ostanki štirih cvingerskih apnenic. | The remains of four limekilns on Cvinger.

kemijski kotiček / chemistry corner

apnenec (+T) → žgano apno + ogljikov dioksid
$$CaCO_3\,(+T) \rightarrow CaO + CO_2$$

žgano apno + voda → gašeno apno
$$CaO + H_2O \rightarrow Ca\,(OH)_2$$

gašeno apno + ogljikov dioksid → apnenec + voda
$$Ca\,(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$$

po vgradnji malte v zidu poteka postopna karbonizacija

Lime kilns

Four ring-shaped structures on the aerial laser scan plot (LiDAR) of Cvinger. Field survey revealed that they were the remains of empty limekilns. Although the burning of lime is one of the old-est chemical processes known to man, these limekilns were not connected with the prehistoric remains in the area. The limekilns on Cvinger were probably built in the 19th or 20th Century. Lime burning was formerly highly de-veloped in areas with considera-ble deposits of limestone and ex-tensive supplies of beech wood, which was used as fuel. It was formerly an important compo-nent of local craft production.

An experienced crafts man began kiln construction by digging a pit, in which he constructed a domed hearth. They stacked limestone rubble above this. The circumfer-ence made up of upright wooden posts, interlaced horizontally with branches. The intervening space was filled with earth and com-pacted to close the voids between the stones. These temporary lime-kilns on the edges of villages or in neighbouring woodland usually 6 m or more in height.

After firing the stone in the in-terior was heated and with the raised temperature (~ 1000 °C) of gradually burnt. The gradually fir-ing of the limestone over several days burnt off the carbon diox-ide in the limestone. After cool-ing, a process that might take several days, depending on the size of the kiln, the burnt (quick) lime (calcium oxide) was collect-ed from the centre of the kiln. It was in the making of a widely used product – slaked lime (calci-um hydroxide). This was made by combining quick lime with water in timber-lined pits.

Properly aged slaked lime was for-merly used in great quantities in building (mortar), tanning, leather working, painting dwellings, dis-infection and the preservation of eggs. A mixture of lime and ash was used as a final layer of fertil-iser on fields and meadows.