

European Cultural Heritage Days and Cultural Heritage Week at the Sitarjevec Mine Litija - 11 and 12 October 2024

Demonstration of iron mining in the Iron Age

European Cultural Heritage Days (ECHD), as the name suggests, is a joint action of many European countries under the auspices of the Council of Europe and the European Commission. Almost every year, a new community joins the participants, and each year, once again, the organisers choose a variety of themes to present Europe's cultural heritage to the local public, Europeans and the world. Cultural Heritage Week aims to promote awareness of the importance of cultural heritage and to promote this type of content among children, young people and adults.

To this end, the Heart of Slovenia Development Centre will organise a two-day ethnological event in front of the Sitarjevec Mine in Litija, entitled Iron Mining in the Iron Age on Friday 11 and Saturday 12 October 2024.

The tradition of mining and smelting ore in Litija and its surroundings goes back a long way. Archaeological excavations in the centre of Litija have unearthed small pieces of slag - the remains of smelted ore, which, according to the location of the layers, dates back to the 3rd millennium BC. Traces of dwellings, ceramics and the remains of an ore smelting furnace were also found at this site. Pieces of slag, which were also found at an archaeological site a thousand years younger, on Sitarjevec Hill, below which the Sitarjevec Litija mine is located, are proof that interest in mining and ore processing in this area did not die out over the centuries and continued into Roman times.

Medieval mining in Litija can be inferred indirectly from the earliest written sources, which date back to the beginning of the 16th century.

At the end of the 17th century, the Sitarjevec mine was mentioned in the *Slavia vojvodina Kranjske* (Slavia vojvodina Kranjske), written by the polyhistor and explorer Janez Vajkard Valvasor. Although the mine was abandoned at that time, Valvasor concludes that it was a very important source of lead and mercury ore in the past.

Archival records show that attempts were made to revive the mine at the end of the 18th century, but intensive work did not begin until after 1873, when mining was concentrated first on mercury ore and then on lead ore. In addition to these, iron, zinc, copper and silver ore have been mined throughout history. During the last period of the Sitarjevec mine, i.e. from the end of the Second World War until the mine closed in 1965, the main focus was on barite mining. The mine was closed due to the miners suffering from silicosis and the lack of investment in modernising mining technologies and research.

In 1880, a smelter was built on the left bank of the Sava River to smelt the ore extracted from the Sitarjevec mine, mainly lead and mercury ore. The ore was transported across the Sava River by a 364 m long freight cableway, as well as by carts over a wooden bridge built in 1855. The smelter caused many problems, as it had a negative impact on the health of humans, animals and vegetation due to the emission of toxic sulphur gases. Despite additional and higher chimneys built by the management as a result of numerous complaints about pollution, a mass bee die-off occurred in 1920.

The Beekeepers' Lawsuit is the name given to the struggle of the Litija beekeepers against the Litija Smelter after the bee die-off. After several years, the final verdict was given by the Zagreb High Court

in favour of the beekeepers. The Litija bee hive was closed down and the machinery moved to Topusko in Croatia. The Beekeeping Trial (1921-1926) was the first successful ecological trial in Slovenia.

By organising an ethnological event, we want to revive an economic sector that was once important for Litija.

FRIDAY, 11 OCTOBER 2024

Installation of an Iron Age ore reduction furnace

From 9:00 to 13:00

Mentor for the construction of the furnace: Peter Urbanija, mentor of the geology club at Stanet Žagar Primary School in Lipnica

Materials: clay, hay, water, stones

Pupils from Šmartno pri Litija Primary School and Litija Primary School will participate in the construction of the Iron Age ore smelting furnace. During the installation of the Iron Age furnace, guided tours of the mine are available for primary school pupils and other visitors.

SATURDAY, 12 OCTOBER 2024

Ethnological event in front of the Sitarjevec mine Litija - Iron Age iron mining

Mentor.

From 9:00 to 14:00

Join us for a unique ethnological event in front of the Sitarjevec Litija mine, where we will demonstrate how iron ore was extracted in the Iron Age.

Some four to five thousand years in the past, people realised that iron ore, in the presence of heat and charcoal, would part with its impurities (oxygen) to form iron. This all starts to happen at a temperature of around 700°C, which is much lower than the melting point of iron. As the ore and charcoal are added in layers, the reduction process is constantly taking place. The incomplete combustion of the charcoal produces carbon dioxide. This, in turn, removes oxygen from the oxide ores to form carbon dioxide. As this reaction takes place between 700°C and 1200°C, the finely crushed ore has the opportunity to give off all the oxygen. This leaves fairly pure iron.

When the reduction furnace goes out, a lump of iron called a wolf is pulled out. The lump is very porous and pitted, and its openings are full of slag, i.e. the remains of ore and charcoal. To get rid of them, the lump has to be heated and hammered. The hammer blows on the broken mass and the bits of impurities are expelled from the openings. Unfortunately, reduction furnaces give a very low carbon content in the wolf. This iron is quite soft and unsuitable for hardening and tempering.

When the pig iron is taken out of the reduction furnace, it contains about 1% carbon (Fe-Fe₃C diagram) or less, and this amount is further reduced during forging. This happens because, at the high temperatures at which forging takes place, the carbon in the iron likes to bind to the oxygen in the air.

While such iron is very convenient for forging, being suitably soft and plastic, a sword made of it is not very useful, as it is too soft and can be bent.

You will be able to watch the whole process on the platform in front of the mine between 9:00 and 14:00 on Saturday 12 October. There will be a cultural programme with Celtic music at 11:00 and 12:00. Ana Novak and Gašper Šinkovec, members of the ethno band Noreia, will provide a pleasant atmosphere.

The event will be further enriched by a selection of handicrafts and culinary offerings.

During the event, it will be possible to visit the mine.

For more information, please contact us at info@visitlitija.si or 051 312 739 (Mojca Hauptman).

You are invited to join us and experience the heritage of our ancestors in a very special way!