

Welding experiment, 6th May 2022

The welding pit that was used in the experiment can be seen in the pictures bellow. The pit was dried by burning wood from 14:45 to 15:15 (30 mins) and then it was preheated with charcoal up to 15:30 (15 mins). Air was supplied by a centrifugal fan.



The welding pit in different views and its dimensions

2 bigger, compacted blooms and 7 smaller pieces of spongy blooms were welded in the pit. The 1st bloom was 1,23 kg and less compact and the 2nd one which was 1,71 kg. I don't remember what kind of iron ore they were smelted of. The 1st and 2nd blooms can be seen in the pictures bellow. The 7 spongy bloom pieces had a weight of 1,3kg in total.



The 1st bloom



The 2nd bloom



7 spongy bloom pieces

Welding process

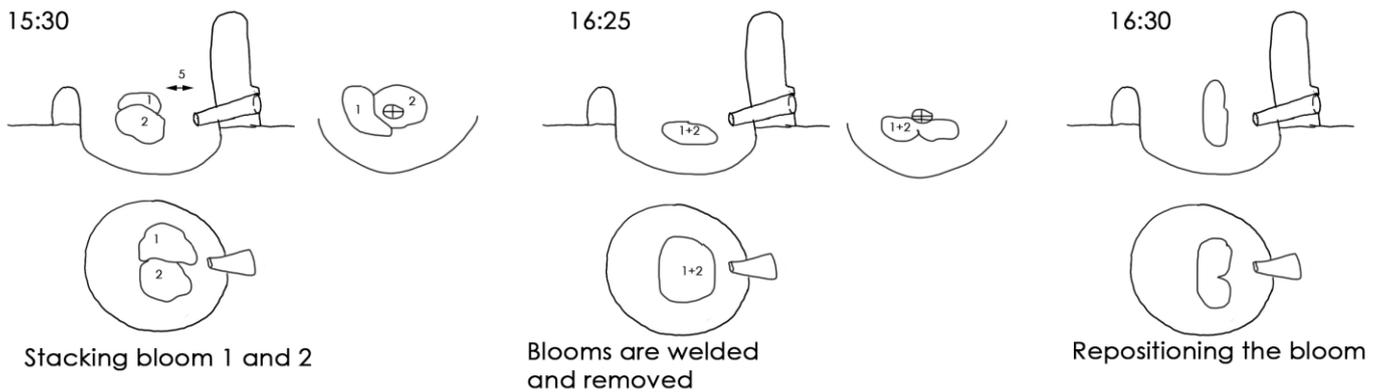
15:30 – The two blooms were put into the welding pit. Air supply: level 0,5.



15:55 – The blooms are too close to the point of the twyer, I have to push them little back.

16:00 – Air supply: level 1.

16:30 – The welded bloom is removed. Only the top is welded. Carefully compressing. Back to the fire. New position can be seen in the welding steps picture.



16:40 – Removing the bloom and compacting. Then heating and compacting in every 10 mins, but not the full volume of the blooms, only the sponge parts. Weight of the compressed bloom: 1,86 kg.



The final welded and compressed bloom (2,54 kg)

Excavation

Next morning the pit was excavated. The slag had a weight of total 1,82kg, from which the slag block was 1,77 kg. Some pictures:



The slag block under the twyer



Slag block, slag pieces and charred branches (from the bottom of the pit)

And finally an interesting observation was taken. At the lower part (almost at the bottom) of the slag block a 0,3 kg heavy metallic iron part was found (see the picture in the right). I have broken a part of it and grinded a flat surface. It had a high carbon content based on its sparks. This bottom metallized iron might be pig iron (highly carburized and melted iron) that was in molten state in the pit or simply a piece of bloom that somehow descended deeply down and was a little carburized.

