Bloom Forging Hints

Lee:

I received the bloom last week - it's a beauty. I was wondering if you had any tips or guidelines for consolidating it into a rough bar. What kind of flux do you prefer - if any? I have a pretty standard coal/coke forge - I wonder if it is big enough to get that whole thing hot. I really look forward to trying this out.

Yours, Jim.

Howdy Jim-

I'm gonna take the opportunity to give you a fairly exhaustive response, and stick it on the website.

In answer to your specific questions: you're unlikely to need any flux, as there's plenty of slag still in the bloom. If you do need flux, borax is just fine. If you need it, it will only be if you close a cold shut in later stages of the bar forging.

As to the forge, I think you'll be fine. A side blast forge is more convenient for this than a bottom blast. But bottom blast is okay- you'll just have to clean the bottom often to keep the slag/clinker from blocking the blast.

My main tip: Heat it slowly, and forge it gently for the first several heats. Here's why:

The bloom still has lots of dispersed slag all through it. That slag has pretty terrific insulative qualities, so the heat is not conducted throughout the piece as quickly as you expect. Combined with the low surface area /volume ratio of such a lumpish shape, it can look hot on the surface and still be cold in the middle. If you go at it too hard now, you'll be tearing the middle apart instead of welding it together.

So now let's go step by step. I'm giving you the way I do it in perhaps too explicit detail, which might make it seem like a big deal, which it's not. This is the way I've found that I can pull the bloom directly into a good working bar, without folding and welding. By going slowly and carefully at the beginning, I save a lot of time later. But if you push it faster and screw it up a little, you can just fold and weld it until everything evens up, no harm done.

1) Look at the bloom piece. It doesn't just look like a slice of pie, it's built like a slice of pie: it has a rim and bottom of loose flaky crust, and a center full of nice dense custard. It should be pretty easy to see which is which. The crust is slaggier and spongier. You'll want to work the pie slice to bar along the radius of the pie: that is, you don't want to stand it on its rim and hammer the point.

2) Figure out how to hold it. Pickup tongs or bow tongs. Adjust tongs as necessary.

3) Put it in the fire, with a nice gentle blast, turning it often, letting the heat soak in. I was working 2 and 3 lb. lumps today, and this first heat took 15 to 20 minutes, that should give you an idea of the time required.

4) As it starts to come to a nice bright orange, start heating some of the edges and protrusions of the crust to a bright yellow, low welding heat, and hammering those protrusions back into the lump. Your most likely point of failure is the junction of the crust and the custard, so your first blows should be hammering the crust into the custard, rather than hammering the crust edgeways.

Take a low welding heat on the part you're going to work, and as you hammer it you'll see the surface is moving more than the metal below, and that it cools off pretty quick, because the heat has not penetrated very deeply. You might only give it 8 or 12 blows before with the hand hammer before it's down to bright orange. Don't work it below bright orange at this point; get it back into the fire.

The superficial nature of these first heats is one reason I prefer a solid fuel forge to a gas forge for this. With the all over heat of the gas forge, it's easy to fool yourself into thinking it's hot all the way through when the heat is only skin deep, and you're likely to go too fast.

5) After a few heats of this pattycake routine, you'll see the thing start to hold heat better. Now you can pick a place (often the point of the pie slice) to take a nice welding heat and forge something into a bar shape you can grab more easily with some box tongs. As it starts to weld up and act more like a regular bar of iron, you'll be able to both start working it hotter and continue working it colder. On those pieces I worked today, this whole gentle pattycake routine took another 15 or 20 minutes, and most of that time was in the fire, not on the anvil.

6) You'll see it- all the sudden it acts like a bar of iron. Turn on the power hammer, or get that good striker you've got, and go at it. The farther you work it down, the hotter you can heat it, and the colder you can work it.

Like I said before, it's not as big a deal as that makes it sound. Just get it to a welding heat and hit it. But the gentler you are at the beginning, the easier the whole thing will be.

Have fun, show me what you make!

Cheers-

Lee