

## HD-PE Pipe connecting with the fusing method

### Gas driven HD-PE fusing machine

Because in the villages where arche noVa works for the rehabilitation respectively the construction of water supply systems often no electricity is available, for us it was important to find a solution working with gas. The machines arche noVa uses (like shown in figure 1) are developed from local engineers in Pakistan.

Figure 1

Gas driven HD-PE fusing machine



The machine is connected with a normal propane gas cylinder (liquid petrol gas/ LPG) and the burner is located under a aluminium body. On the top of the aluminium body is a drilled hole for a thermometer. The caps for the different pipe diameters have a Teflon finish. It takes around half an hour to heat up the machine to the required temperature of 180°C. Once heated up the aluminium body will hold this temperature for nearly one hour. The caps for the inner diameter of the fitting and the outer diameter of the pipe which seem together are mounted at the opposite sites of the aluminium body.

The costs for such a fusing machine in Pakistan are around 200 USD.

### How to use the fusing machine

The usage of the machine needs some experiences, because there are some sources of trouble. So it is very important that the pipes and the fittings have the right softness for a

perfect connection. Also it needs practice to get a straight connection. But all in all with some training everybody is able to produce the pipe connection in a proper quality.

Before starting the cut pipe must be cleaned from any burs. Press the fitting on the one and the pipe on other side of the machine like shown in figure 2. After a short time both parts will have the right temperature and you are able to connect them. This needs some pressure, too (figure 3).

**Figure 2**

Working with the fusing machine



**Figure 3**

Connecting of the pipe with the fitting



### The result

After a short time of cooling the connection is complete, no more steps are necessary. It is important that the cooling doesn't happen as a shock because this will reduce the quality of the connection (for example if the hot pipe is put under cold water).

With some practice and if everything is done right the result will be a very strong pipe connection, normally stronger than any solutions with any screw fittings (figure 4, 5).

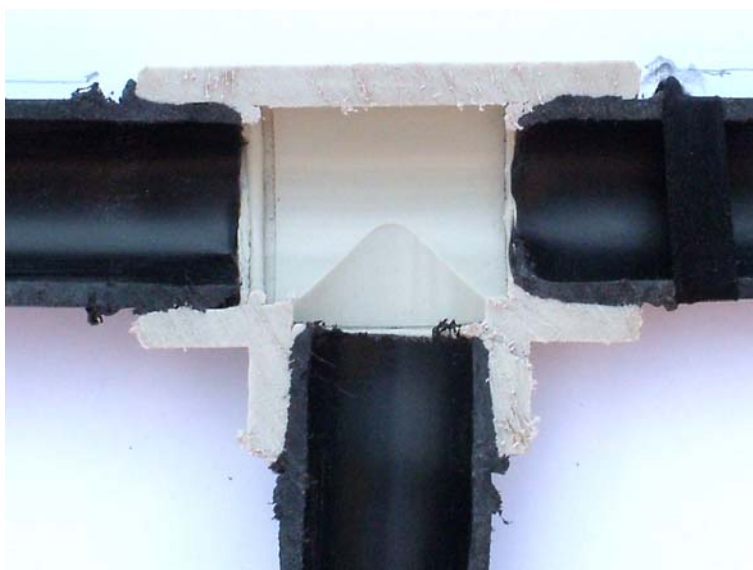
**Figure 4**

Sample of a fused pipe connection



**Figure 5**

The sample in an interior view



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