A problem related to plug bodies positioned in wellhead ports of a hydrocarbon producing well, is that the well need normally to be taken out of production if the plug body is to be replaced. For example, a plug body may occasionally leak, in which case the plug body may need to be substituted for a new plug body. Also, it may be desirable to deploy a monitoring or measuring system in a previously unused port, in which case the blind plug needs to be removed and a plug body comprising a sensor needs to be positioned in its place.

In prior art plug assemblies, the well normally needs to be taken out of production in order for the plug body in the port to be replaced. This, of course, is a major disadvantage in a business where well uptime is paramount.

The present invention addresses this problem and seeks to provide a wellhead port plug assembly and a method allowing replacement of a plug body without having to take the well out of production.

Summary of the invention

According to an aspect of the invention, there is provided a wellhead port plug assembly, comprising:

- a first sensor unit comprising a first plug body comprising connection elements allowing the first plug body to be sealingly and removably mounted in a port of a wellhead of a hydrocarbon well, which port is in fluid communication with a channel leading to an annulus of the wellhead and which first plug body comprises a sensor for measuring a physical parameter related to a fluid in the channel,

wherein the plug assembly comprises:

- a spool unit displaying an axial through-channel extending between a first end and a second end of the spool unit, which spool unit comprises a first flange section arranged at the first end for sealingly mounting the spool unit to the wellhead aligning the through-channel with the port, and a second flange section arranged at the second end;
- a second sensor unit comprising a second plug body comprising connection elements allowing the second plug body to be sealingly and removably mounted in the through-channel, which second plug body comprises electronics for receiving signals from the sensor;
- a signal transmission unit for forwarding the signals to a location separate from the plug assembly; and
- a blind flange which is sealingly and removably mounted to the second flange section allowing the second sensor unit comprising the second plug body and the first sensor unit comprising the first plug body to be removed from the wellhead via the second end of the through-channel.

The plug assembly according to an embodiment of the invention comprises:

- a spool unit displaying an axial through-channel extending between a first end and a second end of the spool unit, which spool unit comprises a first flange section arranged at the first end for sealingly mounting the spool unit to the wellhead aligning the through-channel with the port, and a second flange section arranged at the second end;
- a second plug body comprising connection elements allowing the second plug body to be sealingly and removably mounted in the through-channel; and
- a blind flange which is sealingly and removably mounted to the second flange section allowing the second plug body and the first plug body to be removed from the wellhead via the through-channel.

The method according to an aspect of the invention comprises the steps of:

- removing the blind flange from the second flange section;
- mounting a valve to the second flange section and mounting a plug placement and removal tool to the valve aligning the valve and the tool to the port and the through-channel;
- inserting an arm of the tool through the valve, disengaging the second plug body from the spool unit using the arm, and withdrawing the arm and the second plug body through the valve;
- closing the valve;
- detaching the tool from the valve, removing the second plug body from the arm, and reattaching the tool to the valve;
- opening the valve;
- inserting the arm through the valve and the spool unit, disengaging the first plug body from the port using the arm, and withdrawing the arm and the first plug body through the spool unit and the valve;