The most important advantages of water jet are the capability to cut nearly every material, the low cutting temperature and the negligible cutting forces. When end users are interviewed, most of them point out that the most critical problem of water jet machines is the reliability of the system components, together with the difficulty in estimating their life time. As far as the UHP (Ultra High Pressure) intensifier is concerned, there are several components that work under extreme fatigue conditions, as the pressure inside the cylinders can reach 400 or even 600 MPa. Nearly every critical component is located into the UHP intensifier, but different failure scenarios can be envisaged, leading to different pattern deviations from nominal behavior conditions. In this paper a correlation analysis on multiple signal features with the health status of the machine is presented. Then a multi-sensor based monitoring approach is discussed and tested on a real case study: it is based on the usage of control charts for in-control region definition and possible detection of faults.