



Contribution ID: 226

Type: **Contributed**

New aluminium beam pipe upgrade for the LHC experiments during the LS2

Tuesday 19 June 2018 09:30 (20 minutes)

In 2019-2020, the LHC machine will be stopped and will enter a new phase of maintenance and consolidation called the long shutdown (LS2). During this period, all the LHC experiments will undergo significant upgrades and important modifications. One of the main objectives of the changes is to reduce the radiation dose to personnel following the ALARA (As Low As Reasonable Achievable) principle at CERN. In order to achieve this goal, new vacuum components with low-mass materials have been designed and will replace the old parts with higher material activation, induced by the interaction with the beam. In this framework, the aluminium plays a major role. The use of aluminium in vacuum application is increasingly widespread, but the re-design of the old components with this different material is not straightforward.

This work will highlight the main issues encountered on the use of aluminium and its alloys for the ultrahigh vacuum (UHV) purposes and details the problem of the grain size for thin-walled beam pipe and its material production. Moreover, the results of the numerical mechanical calculations of the new CMS beam vacuum chamber designed with aluminium EN-AW 2219 will be also presented.

Author: DI PAOLO, Chiara (CERN)

Co-authors: SESTAK, Josef (CERN); BREGGIOZZI, Giuseppe (CERN); CHIGGIATO, Paolo (CERN)

Presenter: DI PAOLO, Chiara (CERN)

Session Classification: Vacuum Science & Technology

Track Classification: Vacuum Science & Technology