EDMS NO.	REV.	VALIDITY
1364926	0.0	DRAFT

REFERENCE : LHC-TCDS-ES-0001

CONCEPTUAL SPECIFICATION

In Work

BEAM DUMPING SYSTEM ABSORBER TCDS

[HL-LHC TCDS]

Equipment/system description

The TCDS is a fixed absorber which absorbs the beam in front of the extraction septa MSD in Point 6 in case of either an asynchronous beam dump or a normal beam dump with beam present in the beam abort gap. The robustness of the present TCDS and the protection of the MSD magnets in the case of an asynchronous beam dump with full intensity HL-LHC beams need to be verified and the absorber material and/or length to be adapted if necessary.

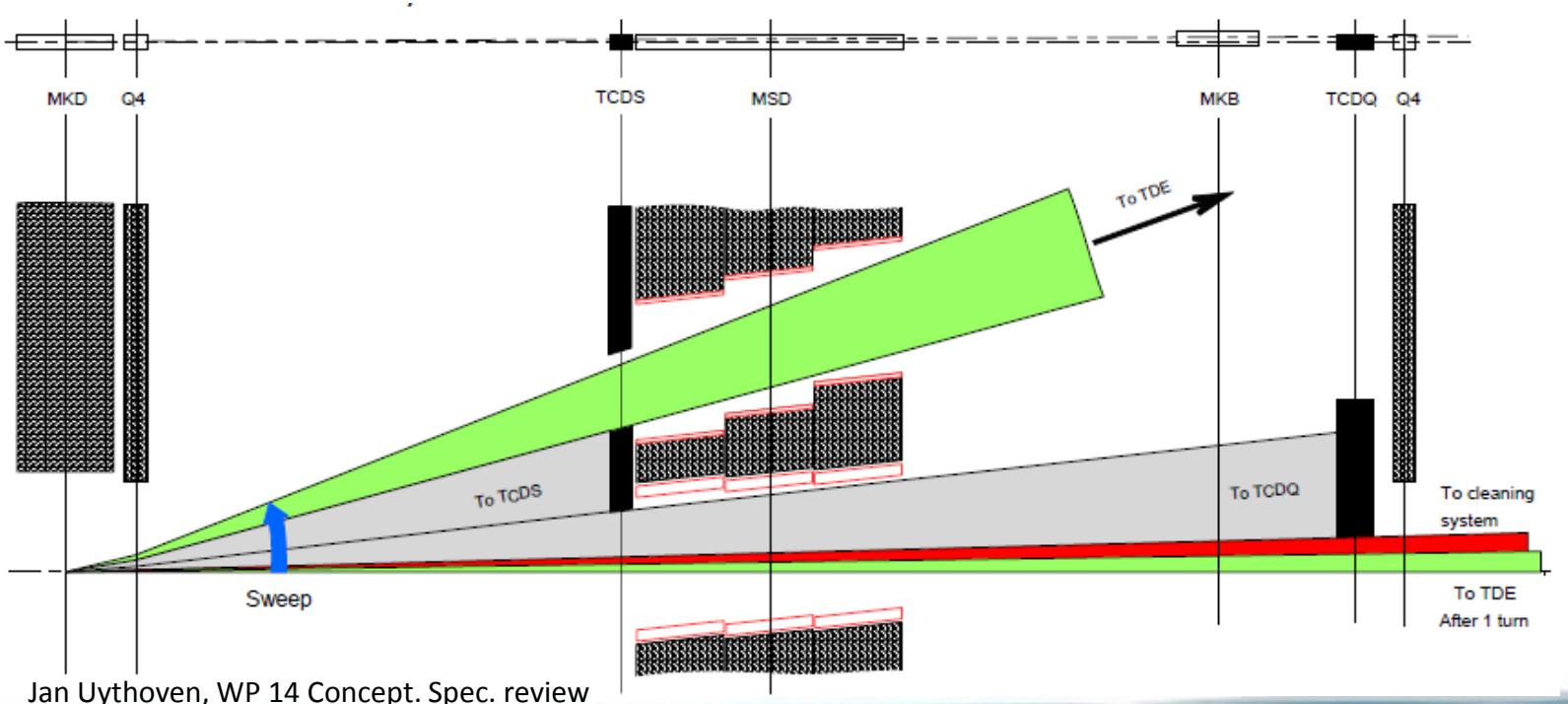
Layout Versions	LHC sectors concerned	CDD Drawings root names (drawing storage):
V 1.0	LSS6	Text

TRACEABILITY

Project Engineer in charge of the equipment	WP Leader in charge of the equipment
Jan Borburgh, Anton Lechner	Jan Uythoven

Main Points

- Protects the septa MSD in case of a beam dump asynchronously with the abort gap
  - Two sided fixed absorber
  - Presently two separate tanks, 2 x 3.3 m
    - Might need to go to ***three*** tanks and possibly different absorber materials
    - Extend upstream, effect on BTVSE and BPMSE which might need to be displaced
- Protection to be verified for HL-LHC beam parameters (and optics if any changes)



Jan Uythoven, WP 14 Concept. Spec. review

Parameters assumed

In Work

Table 1: Beam assumptions for TCDS design

Characteristics	Units	Value
Maximum beam energy	GeV	7000
Rise time MKD kicker	µs	2.8
Re-trigger delay of MKD kickers	µs	< 1.2
Bunch separation	ns	25
Maximum bunch intensity	# protons	2.2e11
Minimum normalised horizontal and vertical emittance	µm	2.5
Betax, betay at entrance TCDS	m	> 150, > 220