

ESA Large Diameter Centrifuge



Large Diameter Centrifuge

LDC data:

- Diameter: 8.00m
- Number of Rotor Arms 4
- Max No.: of Gondolas: 6 + 1 fixed in the centre as control experiment gondola
- Gondola positions per arm: 8 (20,5 cm apart)
- Max payload per Gondola 80kg
- Gondola free volume 600mmx600mmx800mm (WxDxH)
- Door Clearance 400mmx600mm (WxH)
- Min. Acceleration 1g
- Max. Acceleration: 20g at r=4.00m
- Min. Acceleration time: 1g- 20g in 60s.
- Max. Acceleration time: no limit
- Min. Deceleration time 20g - 1G in less then 60s (no emergency stop)
- Max. Deceleration time no limit

Each Gondola is equipped with a:

- 230V AC/6A socket
- Serial data connection
- Analogue input via NI-Rio controller module: input 16 x 0-10 V + 4 to be used for temperature sensors or alike
- Ethernet
- USB
- Gas und Water supply
- Video out
- "Forced Ventilation"
- Mounting plates and rails

ALL FUNCTIONAL PARAMETERS of the LDC are monitored via the operators bench (OPS-Bench).

ALL EXPERIMENTAL PARAMETERS inside the gondolas are monitored via the science operation Bench (SCI-Bench).

SPECIAL: Any off-nominal operation regarding the LDC or the experiment will be reported to the Operator/Scientist per SMS and/or e-mail (programmable).

The implemented S/W, based on Lab View, allows the user to choose freely the profiles for his experiments. These profiles can be changed during the ongoing activity.

The LDC is foreseen to perform short term as well as long term experiments up to the duration of six month.

(A six month run is possible without any maintenance on the LDC)

Foreseen are biological, biochemical, microbiological experiments and physical and opto-physical experiments.

Aim of these kinds of experiments is to investigate the extrapolation of the reaction of the sample form 0G via 1G to higher G-levels.