ESA LARGE DIAMETER CENTRIFUGE SUMMARY

LDC DATA:

- Diameter: 8m
- Number of rotor arms: 4
- Max number 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: 80 kg
- Gondola free volume: 500 mm x 500 mm x 750 mm (W x D x H)
- Door Clearance: 400 mm x 600 mm (W x H)
- Min. Acceleration: 1 g
- Max. Acceleration: 20 g at r=4 m
- Min. Acceleration time: 1 g-20 g in 60 s
- Max. Acceleration time: no limit
- Min. Deceleration time: 20 g-1 g in less than 60 s (no emergency stop)
- Max. Deceleration time: no limit

EACH GONDOLA IS EQUIPPED WITH:

- 230 V AC / 6 A 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 similar
- Ethernet
- USB
- Gas and water supply
- Video out
- "Forced Ventilation"
- Mounting plates and rails
ALL FUNCTIONAL PARAMETERS of the LDC are monitored via the operators bench (OPSBench).

ALL EXPERIMENT 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 (minutes to months).

Foreseen are biological, biochemical, microbiological and physics experiments.

Some of these hypergravity experiments can be used to extrapolate the behaviour of the samples at 0g from results obtained at 1g and higher.