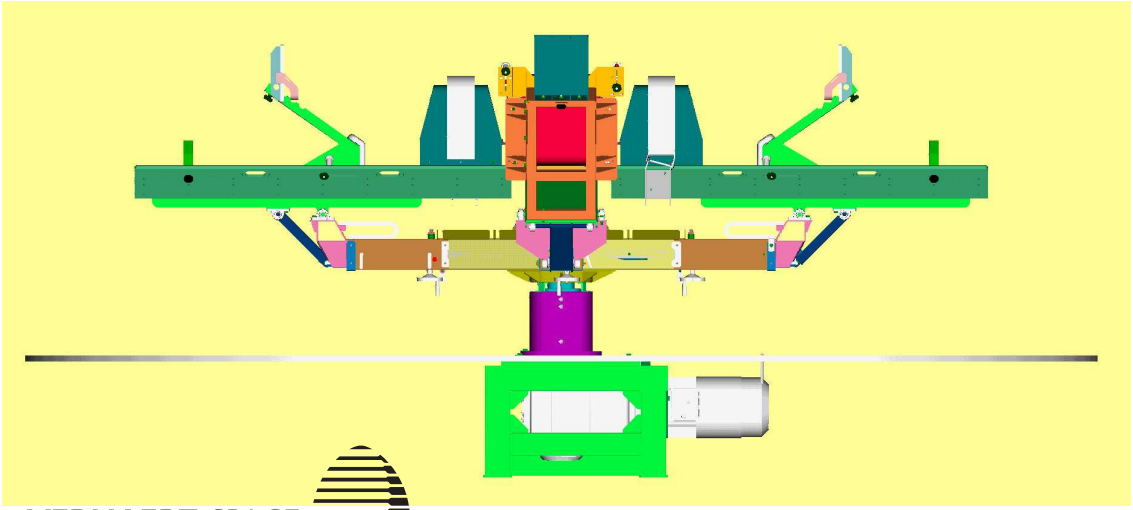
Short Arm Human Centrifuge

SYSTEM PROPERTIES

Max. rotor radius (adjustable)	r_{max}		2.82	m
Max. radial acceleration at outer radius of rotor	$a_{n\ max}$		6,40	g
Max. radial acceleration on a test person (at foot level)	$a_{n\ maxTS}$		6,07	g
Number and type of nacelles (test person accommodations, modular exchangeable)			**2 beds** **2 seats** **2 seats (in beds)**	
Max. payload mass (up to 4 test persons + scientific equipments)	$m_{payload}$		550	kg
Mass of rotor (excl. payload)	m_{rotor}		850	kg
Mass of stator	m_{stator}		1500	kg
Total mass of system (incl. max payload)	m		2900	kg
Rotational mass inertia moment of centrifuge rotor	I		3500	$Kg.m^2$
Max. centrifugal acceleration (at outer radius)	$a_{n\ max}$		62	m/s^2
Max. rotational speed (centrifuge axis)	ω_{max}		4.66	rad/s
Max. rpm on centrifuge axis (software limit)	n_{max}		45	rpm
Min. centrifugal acceleration (at outer radius)	$a_{n\ min}$		1	m/s^2
Min. rotational speed (centrifuge axis)	ω_{min}		0.6	rad/s
Min. rpm on centrifuge axis	n_{min}		5.7	rpm
Max. rotational (tangential) **acceleration (from 0 to n_{max} in 20s)**	α_{max}		0.23	rad/s^2
Max. axis couple (needed for emergency brake only)	M_{brake}		13.000	Nm
Minimal acceleration accuracy achieved (for all speeds)		**Below**	0,5	m/s^2
Typical relative accuracy on all settings (over range)		**Below**	0,3	%



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KEY SELLING POINTS

- Low investment with an excellent price / value ratio.
- 100% certified safe, compliant with international normations and directives.
- Very smart modular system, adaptable for a wide range of applications and experiments
- Rotor is designed to accommodate up to 550 kg co-rotating payload.
- Fully equiped, automated and user friendly control station, including health monitoring.
- Ergonomic design for test subjects and operators, compatible with hospital environments.
- Robust motor system, with tremendous reliability, high accuracy and low maintenance.

ADDITIONAL FEATURES

- The nacelles can easily be adjusted (without use of tools) to safe and comfortable accomodate persons of all sizes (between 10 percentile Japanese female and 90 percentile Caucasian male). Test persons can sit (seat), lie down (bed, flat supine) or lie in in “supine seated” position (bed). The rotor is specialy designed to transfer test persons from hospital beds and trolleys (for bed rest studies).
- After being loaded with the test persons, the nacelles can easily be positioned in different settings with integrated mechanisms (no tools) so that acceleration gradients can be personalised.
  - translation along the arm over a range of 400mm
  - rotation in a vertical plane (range from –10° to + 90° (seat) or +45° (bed)
- The nacelles have local “dark environments” to eliminate external visual stimuli (in order to avoid motion sickness). These (removable) dark environments provide also following features:
  - Digital face surveillance camera
  - Bi-directional audio link (headphones & microphone) with the control room
  - Internal illumination with LEDs (Visual and IR light)
  - Mini - TFT screen for non verbal communication or distraction (e.g. DVD)
- A state–of-the-art control station (touch screen, MS Windows XP PC, LCD flat screens) provides easy control and monitoring. It even allows the operator and scientists to run automated sequences and automatically combine motor parameters with scientific results, even from remote computers (LAN, Ethernet, Internet).
- The centrifuge rotor standard provides medical heath monitoring, including heart rate, 3-lead ECG, non invasive blood pressure, respiratory indices, O_2 saturation, etc. It furthermore has all provisions for experiment specific (co-rotating) scientific equipment, such as 230VAC power (8 outlets) and Ethernet (7 outlets). It carries standard 2 silica disk PC’s with DVD players and 2 Ethernet routers (200Mbit direct connection with the control room via 7 IP sockets).
- The complete system is safeguarded with a certified Class III safety system (5 hardwired Emergency Stops + Safety PLC, 100% redundant motor speed control, etc.)
- All safety features, such as surveillance cameras, emergency stop buttons, signalisation poles, buzzers, warning lights, centrifuge room access door interlocks, etc. are an integral part of the installation.

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