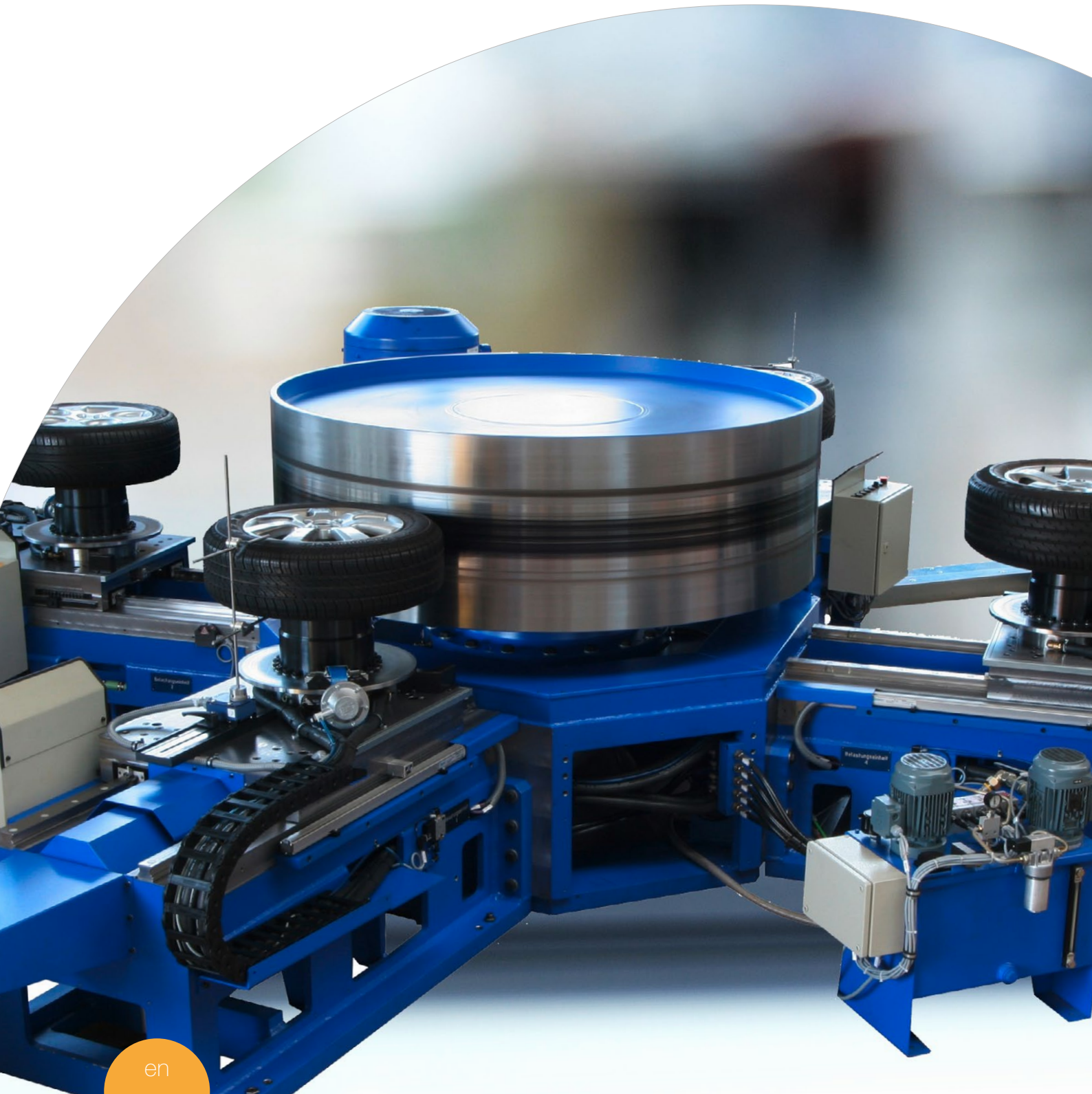
MAKRA
ALPINE METAL TECH

RRH

Radial fatigue test



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The RRH machine performs life time and radial fatigue tests by rolling a wheel under defined conditions on a load drum.

RRH

Radial fatigue test

The RRH machine is used for fatigue and endurance testing of wheels by rolling the wheel on a drum under specific radial load conditions.
The radial fatigue test is one of the required legal tests for alloy wheels in most countries worldwide. The MAKRA RRH fatigue test machine is designed to cover all demanded specifications concerning this test method. The modular design concept enables a variable number of test units, with a maximum of four individual load stations per machine. Additionally, these load stations can also be a combination of passenger and truck wheel test units. As special requirement, an adjustable skew can be added to the load units. Each test unit can apply independent radial loads to the wheel which makes it flexible for testing several wheel types at the same time. The actual force is measured by load cells and is applied and regulated by electrical servo motors and spindles. Options like cooling, temperature measurement, wheel brake, safety fences etc. can be selected according to customer request. The vertical arrangement of the drum axis offers major advantages in user handling during wheel change compared to conventional horizontal drums. As interface, Profibus or Profinet are possible. All measurement results are available through Ethernet connection on the customer network.

YOUR ADVANTAGES

» Certified test machines
The MAKRA radial fatigue test machines are certified from all major German car manufacturers (e.g. BMW, Audi, Volkswagen, Porsche etc.) and are in operation for many years.

» Modular machine concept
The machine can be equipped with one to four individual load stations which can be used for passenger car wheels or for truck wheels.

» User friendly wheel change
The vertical arrangement of the drum offers user friendly wheel change. Little force and manpower is needed to lift and mount the wheel in its testing position.

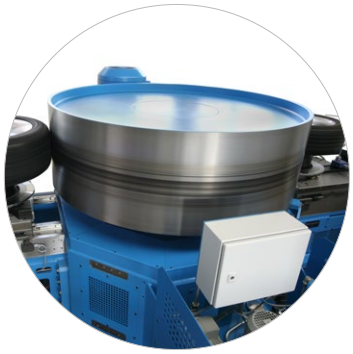
» Oil greasing system
Long operational lifetime guaranteed without extra greasing stops.

» Safety equipment for the wheels
Various safety devices are included (e.g. slide position, tire bubbles, parameter units)
Optionally available: tire pressure, tire temperature

FUNCTION

Load drum

The load drum is made out of steel with welded side walls. Prior to delivery, the steel surface is tested and certified for cracks and other surface defects. For increased rigidity, internal rips are welded into the drum. The drum is balanced in two levels for n max = 400 rpm with a balance quality grade of Q = 2.5.



Main motor

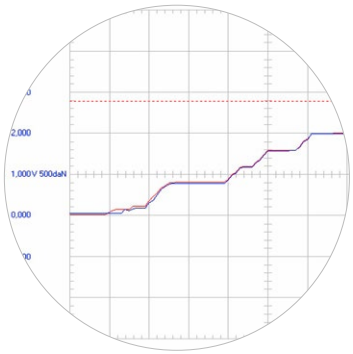
The load drum is driven with an AC-motor which is connected to the side of the drum base frame. The connection is done with a belt including tensioning unit. The requested speed of the drum will be regulated with a frequency converter.

Load units

Up to four individual load units move horizontally in direction to the load drum. They are equipped with linear slides to ensure high precision movement of the load unit. A load cell between spindle and load unit is used for measuring the exact radial force and to regulate the force according the test specification. Additionally, a laser scale measures the horizontal position of the wheel, functioning as a monitoring and control system. These units controll the compression values of the wheel during test procedure.

Testing software / protocol

The test parameters are selected on the PC visualisation of the control system. A load/time diagram profile with up to 10 steps can be displayed individually for each of the four load units. Respectively the revolutions of the wheel (= cycle counter) and the distance in km (or miles) will be stored. If a running test has to be stopped for any reason (e.g. tire change), the actual test cycle can either be continued or reseted. Each test report consists of test time, test revolutions, load protocol and test distance. All protocols will be stored on the PC and can be uploaded to customer server systems, on request.



FEATURES

Software

User friendly software for recording measured values

Operator panel / load unit

Individual operator panel for each load unit

Force measuring unit

For detecting the respective wheel load between spindle drive and load carriage

Wheel brake

Pneumatic disc brake with a braking torque of 190 Nm

OPTIONS

Skew

Depending on customer requirements; adjustable up to 15°

Tire pressure regulation

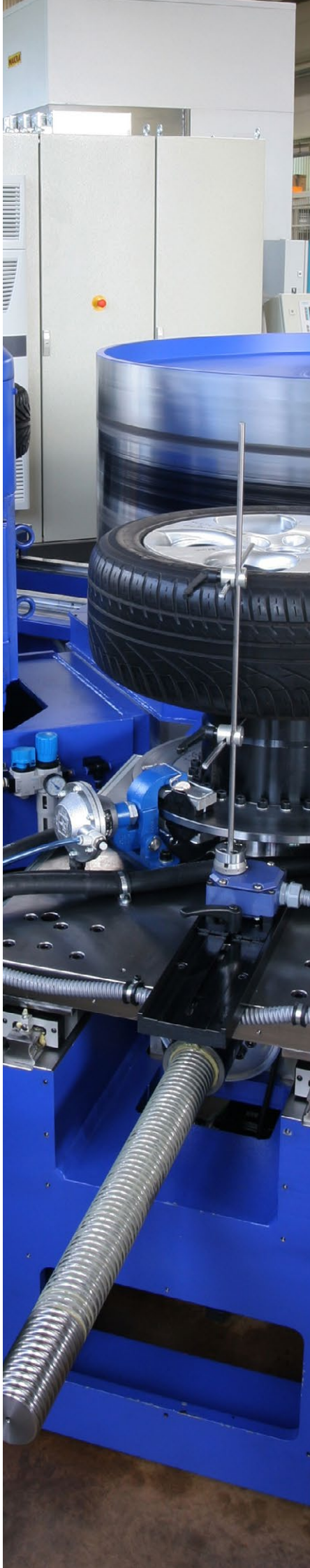
To control the tire pressure during the test run using pressure regulator and gauge set

Tire & surface temperature monitoring

For unguarded durability testing a thermal, non-contact monitoring of the tire surface can be installed

Calibration unit

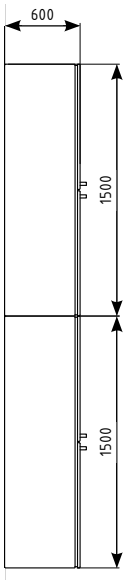
The calibration unit is available with a measuring unit

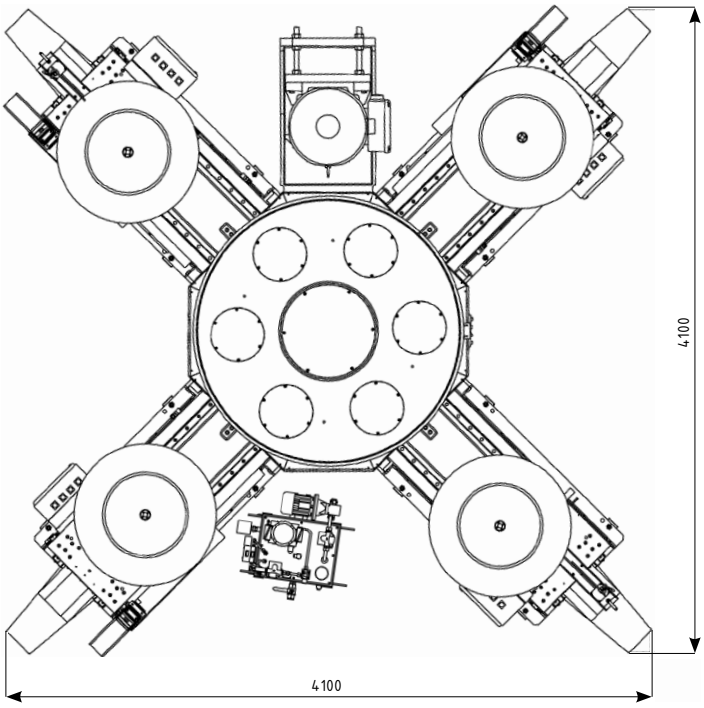


1. Main motor
2. Load drum
3. Circulatory oil lubricant
4. Welded construction
5. Operator panel
6. Load unit slide
7. Control cabinet

TECHNICAL DATA

Machine features	test specifications	SAE J328, StVO §30, NBR 6752, ISO / FDIS 28580, AK-LH08
	cycle measurement	wheel rotations
	distance measurement	km under load, per load station
Wheel parameters	tire diameter	400 – 1400 mm
	tire width	approx. 350 mm
	wheel offset	-60 – +100 mm
Performance characteristics	test speed	10 – 130 km/h, regulated
	number of load units	max. 4 pc.
	radial test load	car: up to 50 kN; truck: up to 100 kN
	load tolerance	±1 %, ±0,1 kN
	travelling distance	600 mm
	skew angle (optional)	0 – 15°, adjustable
Technical components	HMI	20" PC monitor with WinCC software
	control system	Siemens S7 series
Interfaces		Profibus DP/DP unit
Media	electrical connection	3 x 400 VAC, 50 Hz, 55 – 132 kW
		optional 3 x 480 VAC, 60 Hz, 55 – 132 kW
	pneumatic connection	min. 6 bar
Machine dimensions	machine	4100 x 4100 x 1500 mm (L x W x H)
	control cabinet	3000 x 600 x 2700 mm (L x W x H)
	load drum diameter	1707 mm (others on request)
	load drum width	550 mm
Weight	total	approx. 18 000 kg





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