

TENNIS SIMULATOR (Construction and technical)

06/2010

Prices are applicable from June 29, 2010
This supersedes and invalidates all previous price lists.

mobile + transportable Tennis Simulator

- ▶ Stretching to the projection screen, to the left, right and in front, a fine steel netting is hung, affixed to rails above and weighted down to the floor.
- ▶ In the entrance area the netting hangs overlapping.
- ▶ The framework of the tennis shooting tunnel is made of aluminium, stretched over with textile netting.

(please ask for the animation trailer and more pictures)

RackSim Construction Dimensions

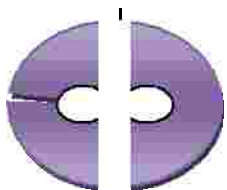
Model A / B

Length/Länge: 7 / 14 Meter

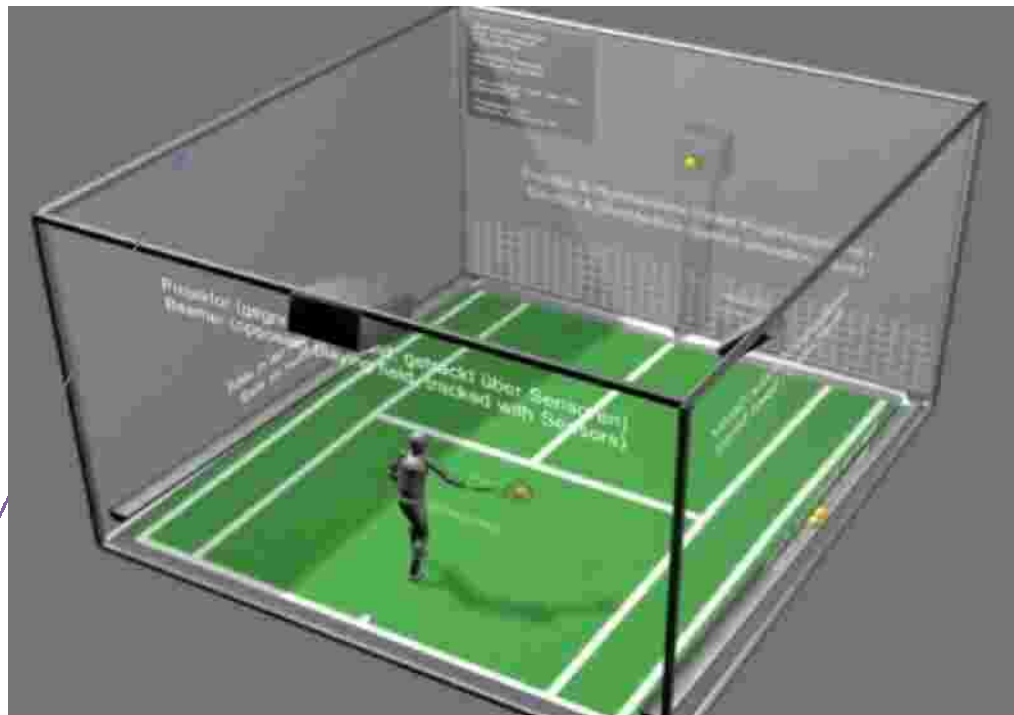
Width/Breite: 6 / 6 Meter

Height/Höhe: 4 / 4 Meter

Alternatives to original size



Section of steel netting suspension rails

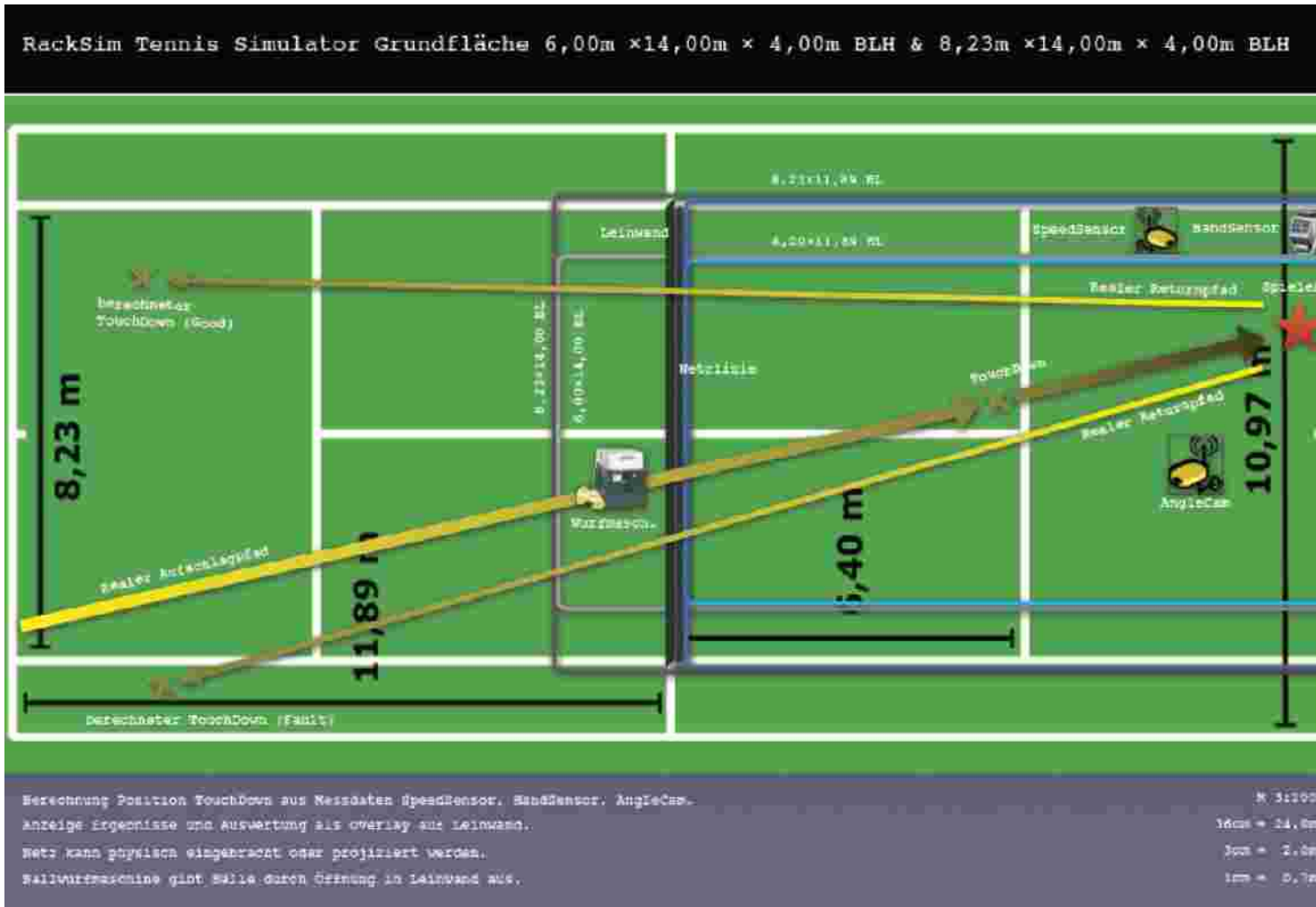
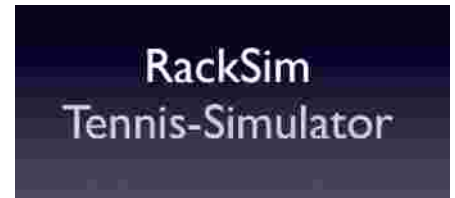


preliminary version (in progress)



[2]

RackSim tennis simulator dimensions WxLxH: 6 x 14 x 4 metres or 8.23 x 14 x 4 metres

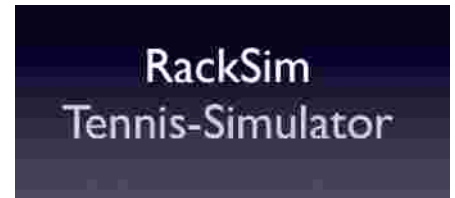


berechneter TouchDown = calculated touchdown
(Good) = (in)
(Fault) = (out)
realer Aufschlagpfad = actual serving path
realer Returnpfad = actual return path
Spieler = Player
Netzlinie = Net line
Wurfmaschine = Serving machine
BL = WxL

Calculated position of touchdown combines data from SpeedSensor, HandSensor and AngleCam.
Representation of the results and evaluation as overlay on the screen.
The net can be physically constructed or projected.
Serving machine launches balls through an opening in the projection screen.

[3]

RackSim tennis simulator dimensions WxLxH: 6 x 7 x 4 metres or 8.23 x 7 x 4 metres

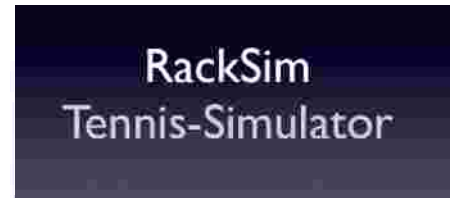


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The net can be physically constructed or projected.
Serving machine launches balls through an opening in the projection screen.

[4]

RackSim badminton simulator dimensions WxLxH: 5.18 x 9 x 5 metres



berechneter TouchDown = calculated touchdown
(Good) = (in)
(Fault) = (out)
realer Aufschlagpfad = actual serving path
realer Returnpfad = actual return path
Spieler = Player
Netzlinie = Net line
Wurfmaschine = Serving machine
BL = WxL

Calculated position of touchdown combines data from SpeedSensor, HandSensor and AngleCam.
Representation of the results and evaluation as overlay on the screen.
The net can be physically constructed or projected.
Serving machine launches balls through an opening in the projection screen.

Specifications of the tennis / badminton Simulator System (Version 1):

Features and play procedure

- The simulator runs interactively
- The player can hit up to 10 balls
- The player steps about 0.5-1 metre into the court
- The player faces the opponent's court where there is a tennis ball / badminton shuttle launching machine
- The wall in the opponent's court shows a high-quality projection of an interactive player, who carries out a variety of applicable movements
- A tennis / badminton launching machine hurls the ball / shuttle towards the player
- The player strikes, various measurements are taken and assembled for the evaluation
- The evaluation results visibly as an overlay in the projected picture opposite
- Scoreboard display: player name, number of points (from-to), highest score, winner of the day
- Selectable languages: English, French, German
- The player wears a hand sensor, which evaluates his stroke
- The simulator contains a dedicated speed sensor to measure the ball's velocity
- The simulator contains a dedicated angle sensor to measure and predict the ball's flight path
- The sensor system combines the measures of speed of the ball, striking distance and angle. The impact is further measured by its effect, so you can determine where the ball is in the virtual court or would touchdown in order to be sure whether it left the actual court
- Once struck the ball is depicted in the projection

Equipment & services included

- 1 serving machine: optional tennis, badminton, hockey, squash
- Sensor hardware incl. HandSensor, SpeedSensor and AngleSensor for tracking balls
- Computer-Hardware
- Video projector hardware, mounting, cables
- Audio hardware (amplifier, loudspeakers, mountings, cables)
- Video content (animation of opponent)
- Audio content (interactively reacting watchers)
- Tennis simulation application framework
- Sensor evaluation software
- Show controller software: server, video, audio
- Integration of the serving machine and the sensors in the processing of the show controller
- Player Evaluation Software
- Results Display Software
- Video Content Display Software
- Audio Content Playback Software
- Controls/interface with slider for presets of ball serving machine
- Construction framework for securing the ball catching nets
- Integration of the components listed above in the overall system
- Setup of the delivered components "on location"

The functionality and components of the simulator have undergone substantial development and it differs markedly from light curtains typically installed on soccer simulators. The equipment, software and components are significantly enhanced, so that the simulation achieves a whole new level of quality. It is now ranks as an extremely high-quality product.

Improvements in detail:

The graphics are improved; the animation techniques used have been changed so it is technically ready for the planned extremely interesting mode in version 2.0 of a real match with rallies of several connected shots.

For the expected usage in daylight conditions a much brighter projector is included.

The newly expanded projection screen size of 8.23 x 5 metres is made use of to give a realistic tennis court feeling.

The ball serving machine (tennis or badminton) is included, in order to optimise the integration with the show controller. The serving machine can vary the flight of the ball by computer control.

The SpeedSensor is included, the device for precise measurement of the maximum ball speed achieved directly after the stroke.

The AngleSensor is included, meaning the high speed camera, PC for picture analysis, motion tracking software and sundry related equipment, after it turned out that the sensors in the light curtain provided too slow a response for tennis and badminton.

The AngleSensor enables the representation of the ball in the projection and permits a prediction of whether the ball will land inside or outside the court. The information is precisely integrated into the projection.

Advantages of the Tennis Simulator, Badminton Simulator, Squash Simulator

- ▶ Real tennis / badminton / squash racquets and real balls / shuttlecocks give the player an authentic sports experience
- ▶ Ball flight paths of the virtual opponent are highly variable covering the entire court, yielding a realistic, and of course challenging, playing experience
- ▶ The strength of the opponent can be selected. The Simulator can therefore be used in fitness studios and fun parks for players of many different grades of dexterity
- ▶ SpeedSensor, BallTracking, and ImpactAnalysis allow for the objective measurement of the player's performance
- ▶ By means of regular measurements during the season, e.g. in a fitness gym, the player can document his/her objective performance increase
- ▶ The MatchBall function enables the player to engage in a real match against his opponent, thus increasing the realism of the game
- ▶ Tennis Simulator, Squash Simulator: Ball collection system collects most balls and feeds them back to the throwing system automatically, thus easing the burden of collecting balls
- ▶ The realistic interactive sound wall of a fully-seated court in 360° surround sound will motivate and inspire the player to unknown heights because the crowd precisely reacts to his playing, thriving and pushing him as he is approaching his first Wimbledon victory!

Hand sensor with completely integrated sensor unit for tennis / badminton



- ▶ Handy small sensor unit
- ▶ Small and light
- ▶ Radio and accumulator
- ▶ The player can try out different racquets in quick succession without worrying about the sensor.

- ▶ Casing size: 5 x 7 x 1 cm
- ▶ Weight: 59g
- ▶ High-resolution acceleration detector for all three dimensions
- ▶ The raw data is transmitted to the computer by radio for evaluation and display.
- ▶ As well as the sensor, the unit includes an accumulator, which is fully recharged in 1 hour and assures 10-12 hours operation.
- ▶ The player can wear this tiny, feather-light box on the back of his hand, affixed with an elastic band or Velcro tape.
- ▶ If the unit is worn on the wrist like a watch, then to determine the amount of spin the sensor unit must fully detect such movement by itself, in order to be able to measure it.

[7]

approx. 7 m depth

approx. 14 m depth

Produktion time: approx. 6 months
plus transport boxes, delivery costs and support on site
The payment of the total amount follows firm order placement.
Technical modifications and printing errors are excepted.
All prices are in Euro, net of additionally due V.A.T.
Payment: in advance

Equipment not included

▪ Floor covering with court markings (optimally with springy properties in red with white lines e.g. for tennis)

The system can be extended for badminton functionality with relatively little effort and low costs

The badminton shuttlecocks must have a colour that is easily detectable by the AngleCam, neon yellow badminton shuttles of about the same colour as tennis balls. Badminton shots attain a higher speed than tennis, but the SpeedSensor has been so selected it can cope with this. In addition the court projection differs for badminton; there is a higher net than with tennis, an alternative racquet for the opponent, a different court layout and size, as well as differing angular characteristics to calculate.

Specifications of the tennis / badminton simulator system (version 2):

An extended version, with the appropriate games programming, would permit interactive play with returned shots from the opponent using the ball serving machine. The second version would make it possible for the simulator to act as an opponent; one who hits the balls back in such a way that the simulator can be regarded as a training partner.

Options for further simulators :

- **Badminton**
- **Handball simulator**
- **Squash simulator (possible with a special serving machine, specific to this sport)**
- **Hockey simulator (possible with a special serving machine, specific to this sport)**

