ADAL 3D-Walking analysis

The new tools of biomechanics

Dynamometric treadmill for the continuous dynamic measurement on each leg, and recording of the 3 spatial components (3D) of the ground reaction forces while walking.

Applications

- Normal and pathological walking study
  (after effects of hemiplegia, neuromotive troubles)
- Assistance in pre-operation diagnosis and post-operation follow up.
- Quantification of functional impotence, measurement of progress.
- Rehabilitation (recovery of functional locomotive independence)
- Dynamic qualification of external prostheses for amputees.
- Clinical research from quantitative criterion.

Measurement equipment for standard model
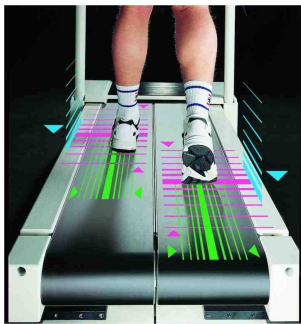
- Equipped with 2 Kistler 3 axis sensors on each side, left and right.
  Totally 4 sensors and 6 charge amplifiers.
- 6 analog channels (3 for each side) for the measurement of the following raw data's :
  - Vertical forces (Z axis): *Fz right and left   – range 3 000N*
  - Antero posterior forces (Yaxis): *Fy right and left   – range +/- 500N*
  - Medio lateral forces (X axis):   *Fx right and left   – range +/- 500N*
- 2 quick numerical inputs for the instantaneous measurement of the displacement and speed of the belts left and right (from 2 encoders' 3600pts/200mm).
- This configuration allows the measurement of global forces: Fztotal, Fytotal , Fxtotal.
- Delivered with a National Instrument data acquisition board (Ref. PCI 6024E) and the adapted acquisition and analysis software: ADiSOFT2004©.
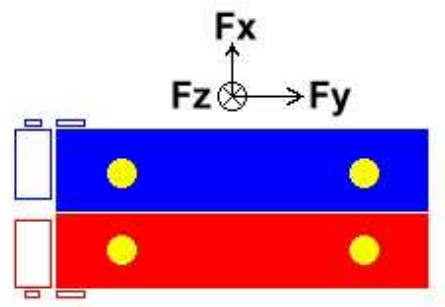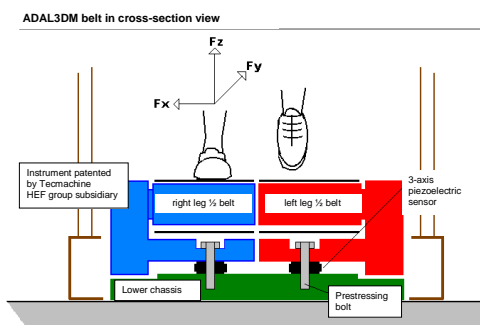
MEDICAL DEVELOPPEMENT
SARL au capital de 100 000€ – SIRET 799 227 152 00011 – NAF 3230Z – N° TVA : FR63 799 227 152
17 ZA du pré de l'orme – 38760 VARCES ALLIERES ET RISSET

Main features:

Belt speed	0 to 10km/h (6.2 miles)
Walking speed	0.1 to 10km/h (0.3 to 6.2 miles)
Motor drives	2 brushless motors with feedback encoders
Main power	3Kw (2*1.5kW)
Supply voltage	200 to 240Vac /16A / 50-60Hz – Single phase with earth grounding
Emergency stop	Pushbutton on control box and front barrier
Progressive stop	on the control box

Adjustable side and front hand rails.

Speed control:

- Manually with push button on the control box,
- From the ADISOFT software (separately on both side if needed)
- From other devices by RS232 connection

Software: ADISOFT2000©

This software's, easy to use, thanks to its base modules (monitoring, acquisition, analysis and report) enables an objective and detailed gait analysis.

Running under Windows® on any PC type computer, enables:

- Measurement and evaluation of tridirectional ground reaction forces for each leg separately
- Vertical, antero posterior, medio lateral force analysis with automatic calculation of its characteristic points
- Analysis of step series (min. and max average, average deviation).
- Calculation of symmetry index (Herzog and Kaufman methods)
- A report can be printed; data can be exported under Excel ®….
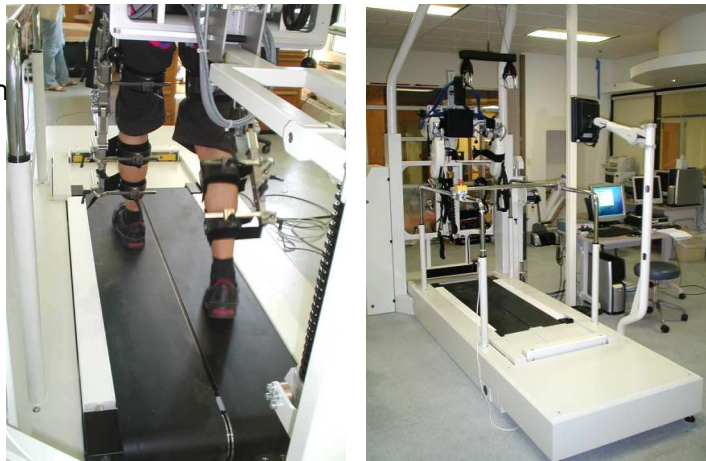- Language French, English, other languages on request.
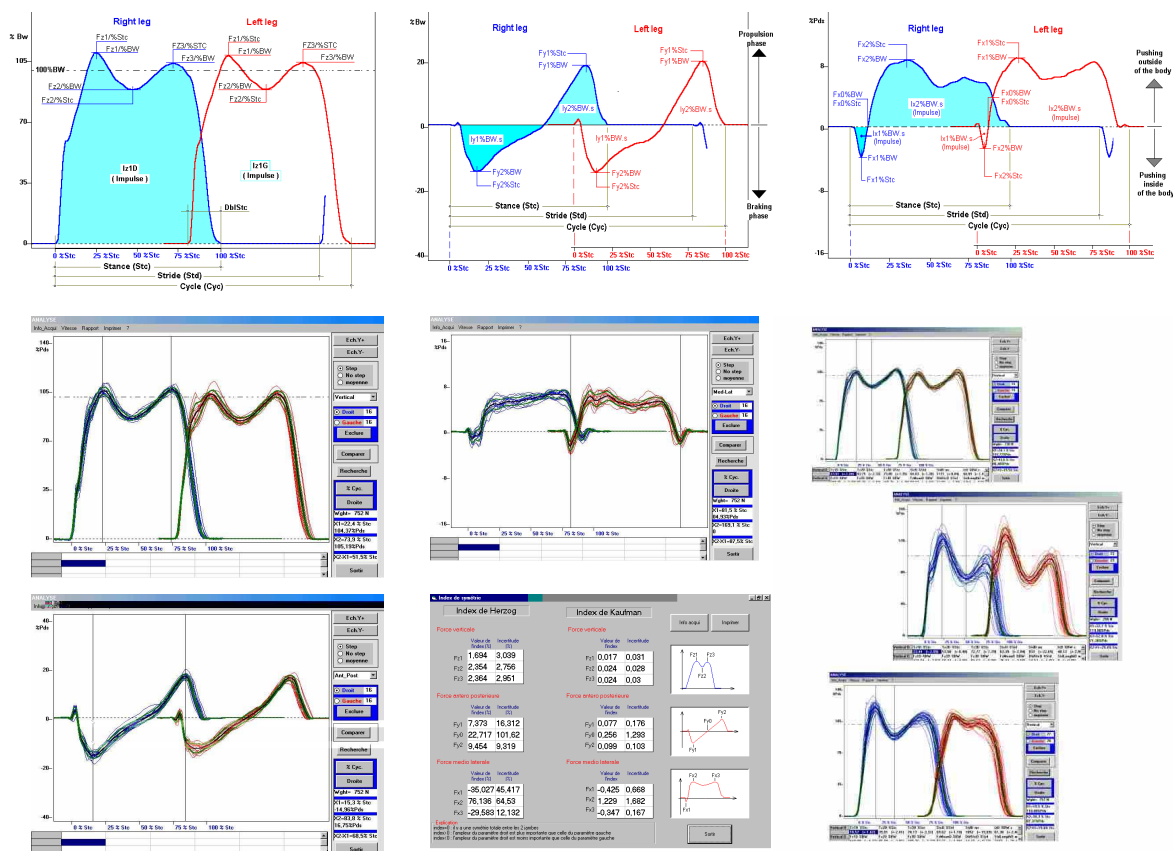
Other possibilities:

Can be installed on the floor or in a pit, in this case the belt and the floor are at the same level.

Installed on the floor,
Belts altitude 290mm
Here installed and synchronized with a LOCOMAT robot.

The Locomat robot is a product of The Switzerland Company HOCOMA
www.hocoma.com

Installed in a pit,
Belts and floor at the same level
Here connected to a motion analysis system VICON.
www.vicon.com

The equipment is delivered with a calibration kit including a strain gauge sensor, a mobile electronic and adapted pieces to introduce known forces in horizontal and vertical axis .