

Lineare Verfahrachse für Knickarmroboter

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Inhaltsverzeichnis

- Das Produkt
- Die Berechnung
- Beantwortung von Fragen

Das Produkt

Das Produkt **Trackmotion**

Lineare Verfahrachse für
Pressenautomation,
Plasma-, Laser, Waterjet-
schneidtechnologie usw.

Nutzlast 160 – 3'600 kg

GÜDEL

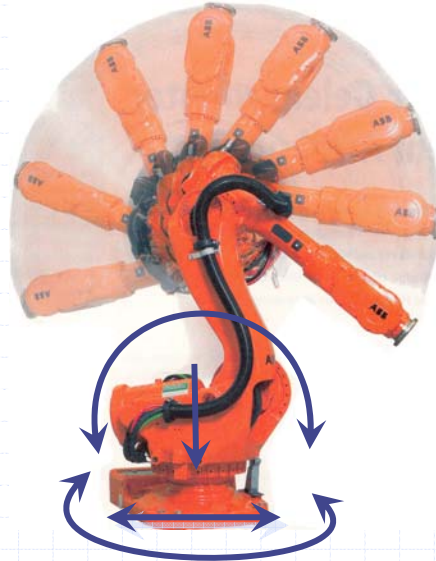


Das Produkt

Der Roboter

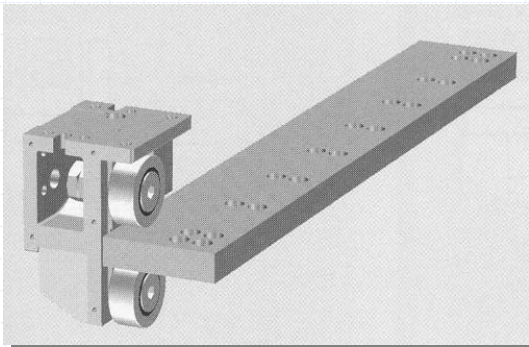
und seine
Belastungen auf
die Lineareinheit

Lastfälle:
Normalbetrieb
Notstopp



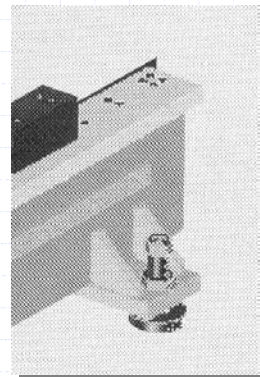
Das Produkt

Die heiklen Bauteile

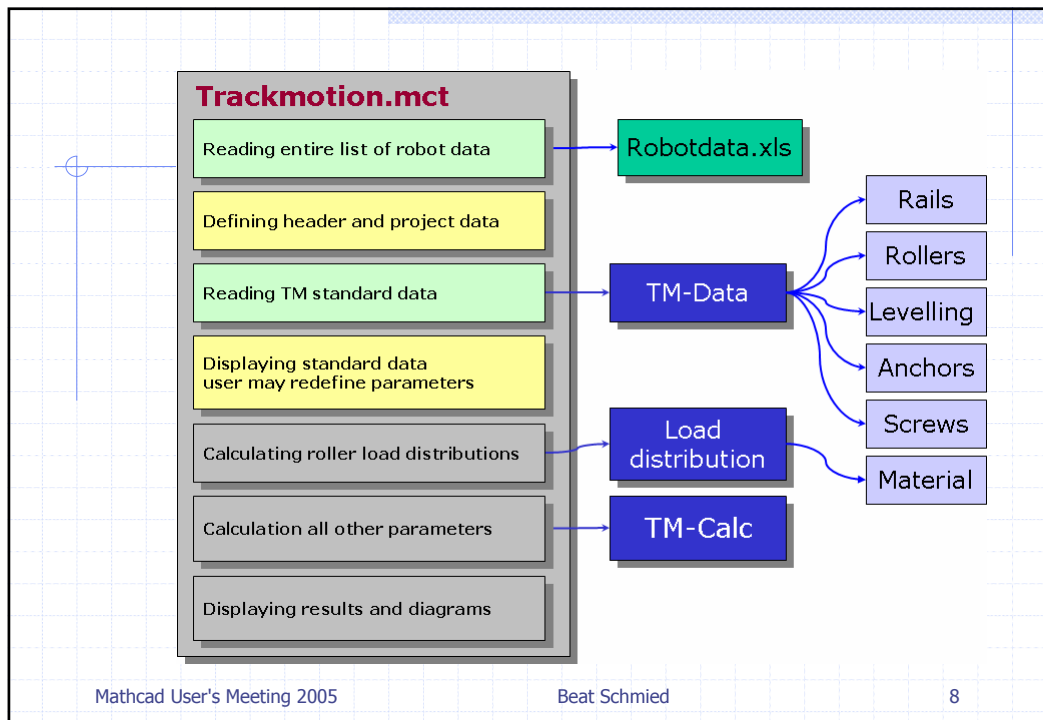


Rollen und Schienenbefestigung

Verankerung



Die Berechnung



Die Berechnung Vorgaben

Trackmotion Calculations

Customer: **Muster AG**
 Project: **Demo**
 User: **B. Schmied**

GÜDEL
TM

Selections and project related data

Module type TM-40 TM-52 TM-72 TM-90	Mounting of Trackmotion Floor Wall Ceiling	Concrete quality C20/25 C25/30 C30/37 C40/50
Robot supplier None or user defined ABB KUKA Fanuc Stäubli	Robot type IRB 6400R/2.8-150 IRB 6400R/2.8-200 IRB 6400R/3.0-100 IRB 6400S/2.9-120 IRB 6600-175/2.55 IRB 6600-225/2.55 IRB 6600-175/2.80 IRB 6650-125/3.20 IRB 6650-200/2.75 IRB 7600-150/3.50 IRB 7600-340/2.80	

General parameters

Service coefficient for frequent operation conditions $f_{b1} = 1.1$
 Service coefficient for emergency loadcase (not applied on robot loads) $f_{b2} = 1.2$
 Max. linear acceleration at emergency stop $a_{y_max} = 2.0 \text{ m/s}^2$
 Required life time of rollers [m] $L_{m_min} = 10^7 \text{ m}$

Die Berechnung individuelle Eingaben

For changing standard values doubleclick on triangle

Basic definitions

Following parameters only have to be set, if the standard components are not applicable Blank input means that the standard component according to the database is used.

Roller type (example "RB40")
 Rail type (example "S2070")
 Rail screw type (example "M10")
 Leveling element type (example "M36x2")
 Anchor type (example "M20")

Roller_0 := ""
 Rail_0 := ""
 Screw_0 := ""
 Level_0 := ""
 Anchor_0 := ""

Reference to external data files and definition of all relevant parameters

Reference: C:\Aufträge\Mathcad Usermeeting\TM-Data.mcd(R)

Comment to defined service coefficients $Com_fb = \text{"Defined service coefficient are o.k."}$

Input data based on the selections

All data with gray back color are standard values taken from the database. You may change them by defining the variables according to the Mathcad rule. All data with yellow back color have to be defined by the user, they are not part of the database.

Trackmotion

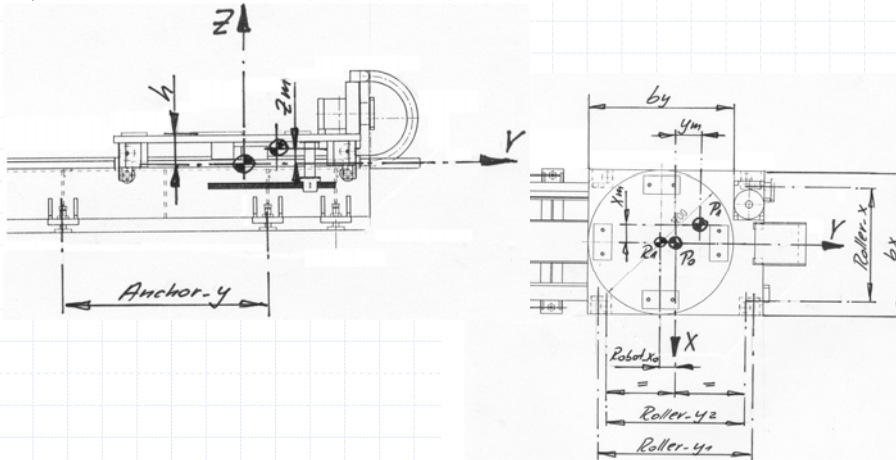
Carriage
 Carriage mass $TM_m = 670 \text{ kg}$
 Center of gravity
 X $TM_xm = 0 \text{ mm}$
 Y $TM_ym = 0 \text{ mm}$
 Z $TM_zm = 90 \text{ mm}$

Plate surface above mid of rails $TM_r = 180 \text{ mm}$
 Plate surface above ground $TM_hl = 600 \text{ mm}$
 Max. available space longitudinal for robot mounting $TM_by = 1200 \text{ mm}$
 Max. available space lateral for robot mounting $TM_bx = 1200 \text{ mm}$

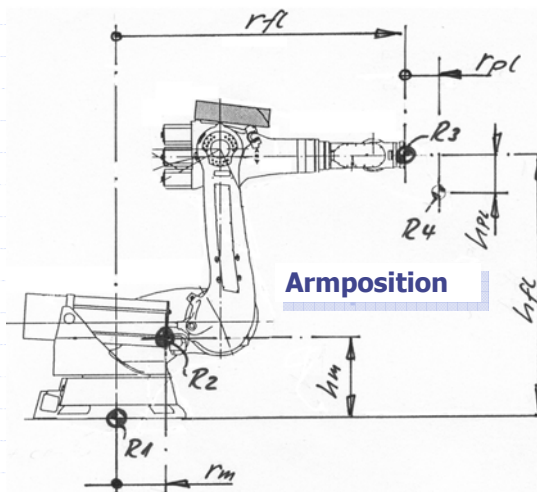
$TM_m = 80 \text{ kg}$

- 1) Öffnen der „Aera“ zur Umdefinition
- 2) Umdefinition der Standardkomponenten
- 3) Bezug zu den hinterlegten DB-Parametern
- 4) DB-Werte
- 5) Parameteränderung

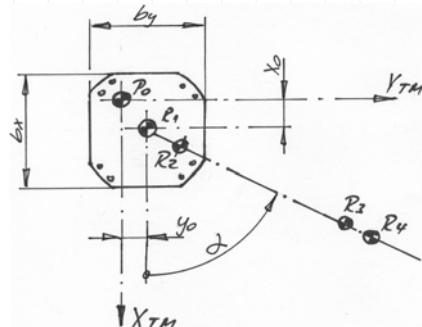
Die Berechnung Koordinatenfestlegungen



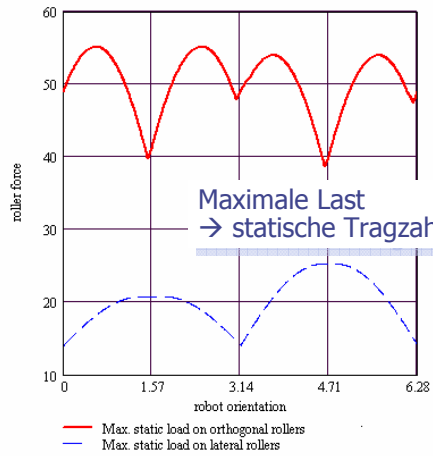
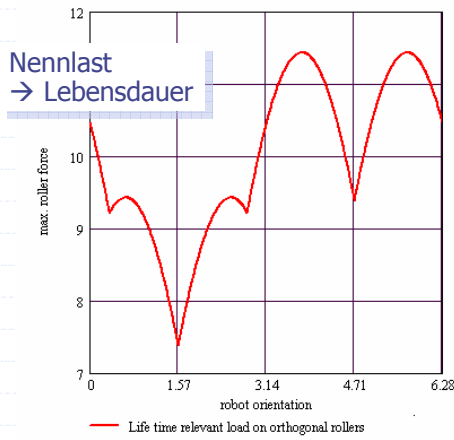
Die Berechnung Lastannahmen



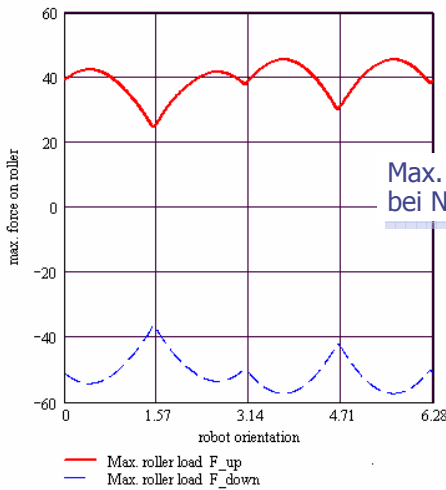
Orientierung



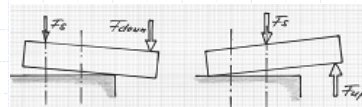
Die Berechnung Rollenergebnisse



Die Berechnung Schienenbefestigung



Max. Rollenkraft
bei Notstopp



Die Berechnung

Abschätzung der Lastverteilung

FE-Methode mit Balkenelementen in Mathcad integriert.

