

Title (en)  
EXCAVATION DEVICE

Title (de)  
TIEFBAUGERÄT

Title (fr)  
ENGIN DE GÉNIE CIVIL

Publication  
**EP 3854943 B1 20220608 (DE)**

Application  
**EP 20153275 A 20200123**

Priority  
EP 20153275 A 20200123

Abstract (en)  
[origin: US2021230942A1] A civil engineering device, in particular a pile-driving or drilling device, has at least one positioner, in particular a working carriage for accommodating an implement, connected with a carrier device by relatively movable links within a kinematic chain and connected by joints and/or linear adjusters and with at least six actuators for changing their corresponding position and/or orientation, and with a control and regulation device for controlling them. The control and regulation device has an input module for specifying a positioner target position, and is connected with a computer module that determines at least one displacement path for moving the positioner from its current (starting) position to the target position, and, using inverse kinematics, the locations of the individual actuators required for implementing the path, and sends these locations to the control and regulation device to control the actuators. A method multi-dimensionally, free positions a civil engineering device positioner.

IPC 8 full level  
**E02D 7/16** (2006.01); **E02D 7/18** (2006.01); **E02D 7/22** (2006.01); **E02D 13/04** (2006.01); **E02D 13/06** (2006.01)

CPC (source: EP US)  
**E02D 7/06** (2013.01 - US); **E02D 7/14** (2013.01 - US); **E02D 7/16** (2013.01 - EP); **E02D 7/18** (2013.01 - EP); **E02D 7/22** (2013.01 - EP); **E02D 13/04** (2013.01 - EP); **E02D 13/06** (2013.01 - EP); **E21B 7/022** (2013.01 - US); **E02D 2600/10** (2013.01 - US)

Citation (opposition)  
Opponent : Lorenz Seidler Gossel  
• EP 2672057 A1 20131211 - SANDVIK MINING & CONSTR OY [FI]  
• EP 2378053 A1 20111019 - BAUER MASCHINEN GMBH [DE]  
• EP 1655415 A1 20060510 - BAUER MASCHINEN GMBH [DE]  
• DE 102016004466 A1 20171012 - HYDAC ELECTRONIC GMBH [DE]  
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• EP 3443908 A1 20190220 - SIEMENS HEALTHCARE GMBH [DE]  
• US 8145355 B2 20120327 - DANKO GEORGE [US]  
• US 2017067341 A1 20170309 - BAIDEN GREGORY [CA]  
• KLAUS WÜST: "Grundlagen der Robotik", STUDIENGANG BSC INGENIEUR-INFORMATIK DER TECHNISCHEN HOCHSCHULE MITTELHESSEN, 2014, XP093033408

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EP4382673A1; EP4063567A1

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**EP 20153275 A 20200123**; US 202017113208 A 20201207