(54) **Method for optimizing a continuous complex system using a set of vertices and dynamic hierarchical constraints**

(57)   A method optimizes a system. Performances of design parameters of an objective function modeling the system are represented in a multidimensional search space. A set of vertices are positioned in the search space. Each vertex has an associated one of the performances. The vertices in the set are sorted in a worst to best performance order. Each vertex in the ordered set is moved to a next position if the performance at the next position is better than a current performance of the vertex. The sorting and moving are repeated in a cycle until a termination condition is reached.
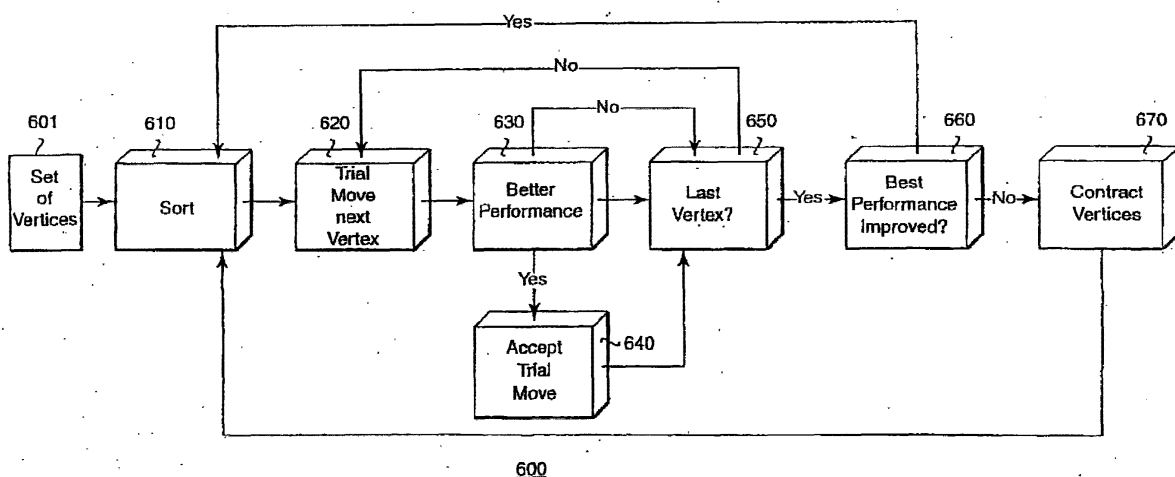
FIG. 6

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Application Number

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	MORGAN E ET AL: "OPTIMIZATION USING THE SUPER-MODIFIED SIMPLEX METHOD" CHEMOMETRICS AND INTELLIGEMT LABORATORY SYSTEMS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 8, no. 2, 1990, pages 97-107, XP001025742 ISSN: 0169-7439 * page 98, column 2, line 1 - page 100, column 2, line 27 * * figures 1,5,7-9 *	1-11	G05B13/02
Y	DU H ET AL: "Implementation of the multidirectional search algorithm on an automated chemistry workstation. A parallel yet adaptive approach for reaction optimization" CHEMOMETRICS AND INTELLIGEMT LABORATORY SYSTEMS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 48, no. 2, 2 August 1999 (1999-08-02), pages 235-256, XP004171923 ISSN: 0169-7439 * abstract * * page 236, column 1, line 28 - column 2, line 8 * * page 237, column 2, line 6 - line 29 * * figures 2-5 * -/--	1-11	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G05B G06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	28 June 2002	Pöllmann, H

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	YUGUANG HUANG ET AL: "An improved simplex method for function minimization" SYSTEMS, MAN AND CYBERNETICS, 1996., IEEE INTERNATIONAL CONFERENCE ON BEIJING, CHINA 14-17 OCT. 1996, NEW YORK, NY, USA, IEEE, US, 14 October 1996 (1996-10-14), pages 1702-1705, XP010206741 ISBN: 0-7803-3280-6 * the whole document *	1-26	
D,A	NELDER J A ET AL: "A SIMPLEX METHOD FOR FUNCTION MINIMIZATION" THE COMPUTER JOURNAL, XX, XX, vol. 7, 1 April 1964 (1964-04-01), pages 308-313, XP000574342 * the whole document *	1-26	
A	KVASNICKA V ET AL: "A hybrid of simplex method and simulated annealing" CHEMOMETRICS AND INTELLIGENT LABORATORY SYSTEMS, ELSEVIER SCIENCE PUBLISHERS B.V. AMSTERDAM, NL, vol. 39, no. 2, 1 December 1997 (1997-12-01), pages 161-173, XP004108619 ISSN: 0169-7439 * the whole document *	1-26	TECHNICAL FIELDS SEARCHED (Int.Cl.7)

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	28 June 2002	Pöllmann, H

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<tr><td colspan="2">European Patent Office</td><td>EUROPEAN SEARCH REPORT</td><td>Application Number
EP 01 11 4945</td></tr>
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A	SMITH S: "The simplex method and evolutionary algorithms" EVOLUTIONARY COMPUTATION PROCEEDINGS, 1998. IEEE WORLD CONGRESS ON COMPUTATIONAL INTELLIGENCE., THE 1998 IEEE INTERNATIONAL CONFERENCE ON ANCHORAGE, AK, USA 4-9 MAY 1998, NEW YORK, NY, USA,IEEE, US, 4 May 1998 (1998-05-04), pages 799-804, XP010288852 ISBN: 0-7803-4869-9 * the whole document *	1-26	
A	BARTON R R ET AL: "Modifications of the Nelder-Mead simplex method for stochastic simulation response optimization" SIMULATION CONFERENCE, 1991. PROCEEDINGS., WINTER PHOENIX, AZ, USA 8-11 DEC. 1991, NEW YORK, NY, USA,IEEE, US, 8 December 1991 (1991-12-08), pages 945-953, XP010052816 ISBN: 0-7803-0181-1 * the whole document *	1-26	**TECHNICAL FIELDS SEARCHED** (Int.Cl.7)

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