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5 UNITED STATES PATENT AND TRADEMARK OFFICE

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8 BEFORE THE BOARD OF PATENT APPEALS  
9 AND INTERFERENCES

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12 *Ex parte* MICHAEL J. MILLER  
13 and GUOQING ZHANG

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16 Appeal 2008-3714  
17 Application 11/077,314  
18 Technology Center 3700

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21 Decided: August 29, 2008

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24 *Before* WILLIAM F. PATE, III, MURRIEL E. CRAWFORD and DANIEL  
25 S. SONG, *Administrative Patent Judges*.

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27 SONG, *Administrative Patent Judge*.

28  
29 DECISION ON APPEAL

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31 STATEMENT OF THE CASE

32 The Appellants appeal under 35 U.S.C. § 134 (2002) from a Final  
33 Rejection of claims 2-7, 11-16 and 18. Claims 1, 8-10 and 17 have been  
34 previously canceled. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

1           The Appellants claim a motor vehicle including a NOx adsorber  
2 catalyst and a method for regenerating the same in which a processor  
3 includes a delay function that conditions actual initiation of regeneration  
4 upon successive iterations of an algorithm that indicates concurrence of  
5 specific conditions.

6           Independent claim 2 reads as follows:

7           2.     A method for enabling and initiating regeneration of a  
8 NOx adsorber catalyst that has adsorbed NOx in exhaust gas  
9 passing through an exhaust system of an internal combustion  
10 engine that propels a motor vehicle to release adsorbed NOx by  
11 catalytic-aided chemical conversion of the NOx into other gases  
12 that entrain with flow passing out of the exhaust system, the  
13 method comprising:

14                 processing, in an engine control system processor, while  
15 the engine is operating to propel the vehicle, data indicative of  
16 NOx adsorption efficiency of the NOx adsorber catalyst, data  
17 indicative of temperature of exhaust gas passing through the  
18 NOx adsorber catalyst, data indicative of speed of the motor  
19 vehicle, and data indicative of engine torque according to an  
20 algorithm that will enable regeneration to be initiated upon  
21 concurrence of the data indicative of NOx adsorption efficiency  
22 indicating an efficiency less than a defined efficiency, of the  
23 data indicative of temperature of exhaust gas passing through  
24 the NOx adsorber catalyst indicating a temperature suitable for  
25 initiating regeneration, of the data indicative of speed of the  
26 motor vehicle indicating vehicle speed suitable for initiating  
27 regeneration, and of the data indicative of engine torque  
28 indicating engine torque suitable for initiating regeneration;

29                 upon such concurrence, enabling regeneration of the  
30 NOx adsorber catalyst to be initiated; and

31                 after regeneration has been enabled, initiating  
32 regeneration by increasing the amount of carbon monoxide in  
33 the exhaust gas passing through the NOx adsorber catalyst;





1 sustained by mere conclusory statements; instead, there must be some  
2 articulated reasoning with some rational underpinning to support the legal  
3 conclusion of obviousness”). However, “the analysis need not seek out  
4 precise teachings directed to the specific subject matter of the challenged  
5 claim, for a court can take account of the inferences and creative steps that a  
6 person of ordinary skill in the art would employ.” *Id.* at 1741.

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## ANALYSIS

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### Claims 2, 5, 7, 11, 14, 16 and 18

10 The Appellants argue the various rejected claims separately in the  
11 Appeal Brief. Thus, we address these arguments separately *infra*.

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### Claim 2

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The Examiner rejected independent claim 2 as unpatentable over the combination of Farmer, Szymkowicz, Shirakawa and Kolmanovsky (Ans. 3-6). The Examiner concedes that Farmer fails to specifically describe the recited limitation “the processor repeatedly iterates the algorithm and includes a delay function that conditions actual initiation of regeneration upon successive iterations of the algorithm disclosing such concurrence” that is recited in claim 2 (Ans. 4-5). However, the Examiner finds that Kolmanovsky describes the recited limitation and articulates that it would have been obvious to one of ordinary skill in the art to have utilized the teaching of Kolmanovsky in the method and vehicle of Farmer because the use thereof would have been routinely practiced by those of ordinary skill in the art to save fuel during regeneration (Ans. 6 and 10).

1           The Appellants contend that the Examiner's reasoning is flawed, *inter*  
2 *alia*, because the algorithm described in Kolmanovsky does not require a  
3 delay function that conditions actual regeneration upon successive iterations  
4 of the algorithm disclosing concurrence of the data conditions (App. Br. 15-  
5 17; Reply Br. 2 and 3). We agree with the Appellants that the Examiner  
6 erred.

7           We initially agree with the Examiner's finding that Kolmanovsky  
8 describes repeated iteration of the described algorithm (Col. 2, ll. 39-42 and  
9 ll. 62-64). We further agree with the Examiner's finding that the described  
10 algorithm of Kolmanovsky includes a delay function because if the  
11 probability of a transition to high speed, high load engine operating  
12 condition exceeds a probability threshold, the initiation of regeneration is  
13 delayed (Col. 2, ll. 58-62; Fig. 2, blocks 56 and 58). However, we disagree  
14 with the Examiner's finding that the described delay function of  
15 Kolmanovsky *conditions* regeneration upon *successive iterations* of the  
16 algorithm disclosing concurrence as recited in claim 2.

17           The iterations of the algorithm of Kolmanovsky are made when the  
18 probability threshold is exceeded as shown in Block 58 (YES), which results  
19 in increasing the probability threshold as shown in Block 66 (Col. 2, ll. 58-  
20 62). In instances where the probability threshold is not exceeded in Block  
21 58 (NO), regeneration is initiated in Block 60, without any further  
22 successive iteration of the algorithm of Kolmanovsky. Furthermore, in any  
23 given subsequent iteration of the algorithm (in instances where the  
24 probability threshold was previously exceeded), if the probability of  
25 transition does not exceed the threshold, regeneration is initiated as shown in

1 Blocks 58 and 60, without any further successive iteration (Col. 2, ll. 52-54).  
2 Hence, while Kolmanovsky conditions the initiation of regeneration, it does  
3 not *condition* the initiation of regeneration *upon successive iterations* of the  
4 described algorithm disclosing concurrence of conditions.

5 Thus, while the Examiner articulated a reason for combining  
6 Kolmanovsky with the other prior art references relied upon, the suggested  
7 combination fails to describe “a delay function that conditions actual  
8 initiation of regeneration upon successive iterations of the algorithm  
9 disclosing such concurrence” as recited in claim 2. Moreover, the Examiner  
10 does not articulate any reason with a rational basis as to why one of ordinary  
11 skill in the art would further modify the algorithm of Kolmanovsky to cure  
12 this deficiency.

13 Therefore, we agree with the Appellants that the Examiner erred in  
14 finding claim 2 unpatentable over the combination of Farmer, Szymkowicz,  
15 Shirakawa and Kolmanovsky. No further arguments are presented with  
16 respect to dependent claims 5 and 7, the Appellants stating that these claims  
17 stand or fall with claim 2 from which they depend (App. Br. 17). For the  
18 reasons discussed *supra*, we conclude that the Examiner erred in rejecting  
19 these dependent claims as well.

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21 Claim 11

22 With respect to independent claim 11, the Appellants submit  
23 substantially the same arguments as that of independent claim 2 (App. Br.  
24 18-19). The Appellants contend that while claim 11 does not use the word  
25 “conditioning” recited in claim 2, “one reading the Claim will understand

1 that the phrase ‘operates to delay actual initiation of regeneration until  
2 successive iterations of the algorithm disclose such concurrence’ reflects  
3 conditioning and distinguishes over the rejection because, as explained  
4 earlier, the Kolmanovsky et al. algorithm will not iterate a second time in the  
5 circumstance referred to above” (Reply Br. 3).

6 For the reasons discussed *supra* relative to the Examiner’s rejection of  
7 independent claim 2, we conclude that the Appellants have shown that the  
8 Examiner erred in rejecting claim 11. No further arguments are presented  
9 with respect to dependent claims 14, 16 and 18, the Appellants stating that  
10 these claims stand or fall with claim 11 from which they depend (App. Br.  
11 19). In view of the above, we also conclude that the Examiner erred in  
12 rejecting these dependent claims as well.

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14 Claims 3, 4, 12 and 13

15 No specific arguments are presented with respect to dependent claims  
16 3, 4, 12 and 13, the Appellants stating that these claims stand or fall with  
17 respective independent claims 2 or 11 from which they ultimately depend  
18 (App. Br. 19). For the reasons set forth *supra* relative to independent claims  
19 2 and 11, we conclude that the Examiner erred in rejecting these dependent  
20 claims.

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22 Claims 6 and 15

23 No specific arguments are presented with respect to dependent claims  
24 6 and 15, the Appellants stating that these claims stand or fall with  
25 respective independent claims 2 or 11 from which they depend (App. Br.

1 20). For the reasons set forth *supra* relative to independent claims 2 and 11,  
2 we conclude that the Examiner erred in rejecting these dependent claims as  
3 well.

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### CONCLUSIONS

6 1. The Appellants have shown that the Examiner erred in rejecting  
7 claims 2, 5, 7, 11, 14, 16 and 18 as unpatentable over Farmer, Szymkowicz,  
8 Shirakawa and Kolmanovsky.

9 2. The Appellants have shown that the Examiner erred in rejecting  
10 claims 3, 4, 12 and 13 as unpatentable over Farmer, Szymkowicz,  
11 Shirakawa, Kolmanovsky and Kato.

12 3. The Appellants have shown that the Examiner erred in rejecting  
13 claims 6 and 15 as unpatentable over Farmer, Szymkowicz, Shirakawa,  
14 Kolmanovsky and Wakamoto.

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### ORDER

17 The Examiner's rejections of claims 2-7, 11-16 and 18 are  
18 REVERSED.

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REVERSED

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Appeal 2008-3714  
Application 11/077,314

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