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* **IN THE HIGH COURT OF DELHI AT NEW DELHI**

% Reserved on : 30th January, 2024
Pronounced on : 09th February, 2024

+ **C.A.(COMM.IPD-PAT) 16/2022**

MAN TRUCK BUS SE Appellant

Through: Mr. Biju Mattam, Adv.

versus

ASSISTANT CONTROLLER OF PATENTS DESIGNS

..... Respondent

Through: Mr. Harish Vaidyanathan Shankar,
CGSC with Mr. Srish Kumar Mishra,
Mr. Alexander Mathai Paikaday and
Mr. Krishnan V., Advs.

CORAM:

HON'BLE MR. JUSTICE ANISH DAYAL

JUDGMENT

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1. This appeal under section 117A of the Patents Act, 1970 (“**the Act**”) assails impugned order dated 18th March, 2021 passed by the respondent, Assistant Controller of Patents Designs (“**the Controller**”), rejecting the appellant’s patent application No.1241/DEL/2009.

2. Appellant is a company existing under the laws of Germany and is claimed as one of Europe's leading commercial vehicle manufacturers. The appellant, aside from other activities, focused on developing new and advanced eco-friendly technologies, in particular for reduction of carbon emission. The Patent Application was filed on 17th June, 2009 for "*Particle*



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Separator and Method for separating particles out of an Exhaust Stream of an Internal Combustion Engine".

3. On March 7, 2012, the appellant submitted Form 3, *inter alia*, intimating details of grant of patent for same/ substantially same invention in USA, Germany, France, UK, Italy, Netherlands, Sweden and Russia. Details of the said patents in countries outside India are tabulated as under:

Country	Filing Date	Patent Grant Date
U.S.A.	18.06.2009	14.12.2010
Brazil	19.06.2009	30.04.2019
China	19.06.2009	03.07.2013
Germany (EP)	04.04.2009	02.06.2010
France (EP)	04.04.2009	02.06.2010
UK (EP)	04.04.2009	02.06.2010
Italy	04.04.2009	02.06.2010
Netherlands(EP)	04.04.2009	02.06.2010
Russia	19.06.2009	20.10.2011
Sweden (EP)	04.04.2009	02.06.2010

4. On 20th June, 2012 request for examination was filed and on 26th February, 2018 the First Examination Report (“**FER**”) was issued by the Indian Patent Office. On 23rd August, 2018 the appellant filed its response to the FER and pursuant to a notice of hearing, a hearing was scheduled for 19th October, 2020. Requests for adjournment were filed by the appellant on two occasions and finally the hearing took place on 2nd March, 2021. Appellant filed their written submission along with revised claims on 15th March, 2021, and the impugned order was passed on 18th March, 2021.

5. Counsel for the appellant, in support of the appeal, placed the following submissions:

5.1 Despite Form 3 having been filed listing out the patents in favour of the



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appellant in foreign jurisdictions, the same was completely ignored by the Controller in the impugned order. No reference, not even a mention of the same, is present in the impugned order. In this regard reliance is placed on ***Otsuka Pharmaceutical Co. Ltd. v. The Controller of Patents*** in C.A.(COMM.IPD-PAT) 2/2022, decision dated 22nd September, 2022 by Single Judge of this Court, where it is observed on its facts that appellant therein presented details of corresponding applications in other jurisdictions which led to grant of patents. The Single Judge of this Court observed that these ought to have been taken into account by the Controller.

- 5.2 Attention was drawn to the impugned order where reference has been made to prior art documents D1-D4. It was contended that the reference to D1-D4 was made in the FER, though prior art D5 was not mentioned. Despite the same, D5 was relied upon in the impugned order for reaching a conclusion and rejecting the patent application of the appellant.
- 5.3 Reference has also been made to D1-D4 as mentioned in the FER and in the impugned order, contending that the impugned order effectively duplicated aspects of D1-D4 from the FER without any alteration. This, as per the counsel for the appellant, would bear out non application of mind by the Controller.
- 5.4 Attention was drawn to the first part of the impugned order where narration relating to D1-D4 has been duplicated and then in the later portion (specifically paragraph 15 where deductions of the Controller



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are presented), the same narration relating to D1-D4 has been repeated. This, as contended by the appellant's counsel is unacceptable and clearly shows non-application of mind.

5.5 As per the appellant's counsel, reliance by the Controller on D5 in arriving at conclusions is highly flawed and misplaced, as evident from paragraph 15 of the impugned order. D5 was never presented as part of the FER, nor in the notice of hearing, and only came up during the hearing itself. Even though the appellant addressed the issue on their written submissions, omission to include D5 in FER and notice of hearing was a violation of the principles of natural justice *qua* the appellant. Reliance was placed on decision of Single Judge of this Court in ***Perkinelmer Health Sciences Inc & Ors V. Controller Of Patents*** in C.A.(COMM.IPD-PAT) 311/2022 dated 4th January, 2023 where this Court held that the Controller/ Examiner was not permitted to raise new grounds of objection at the time of hearing and, that notwithstanding submissions filed subsequent to the hearing, non-provision of reasonable opportunity to applicant cannot be accepted and is violative of principles of natural justice.

5.6 Aside from the inadequate process employed by the Controller, appellant's counsel submitted that even the observation towards the end of paragraph 15 of the impugned order, was without any assessment and analysis and lacked any form of detail which was required from the Controller. The relevant observation is extracted as under:

“This features discloses in document D1-D5 and



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with it is the basic design change in cited documents the normal technical engineer can easily come up to invention. Therefore claims invention can be invented by the normal technical engineer bases on the cited invention.”

- 5.7 Reliance was placed on ***Otsuka Pharmaceutical Co.*** (*supra*) where relying upon decision in ***Agriboard International LLC v. Deputy Controller of Patents and Designs*** C.A. (COMM. IPD-PAT) 4/2022 dated 31st March, 2022, the Single Judge had remanded back the patent application to the respondent for fresh consideration. In ***Agriboard*** (*supra*) remand was done on the ground that that the impugned order was an unreasoned one and that recording of reasons is an essential feature for dispensation of justice.
- 5.8 Prior art documents D1, D3 and D5 had already been considered and rejected by the US Patent Office while granting US Patent No.7850934B2. Despite this fact having been brought on record by the appellant in their part of submissions, it was not dealt with while passing the impugned order.
- 5.9 The Controller, in the impugned order, after narrating the claims arrived at a conclusion that the main features of the patent application were: “(i) *different flow regions which are spatially separated from one another*; (ii) *separation of defined ultrafine particles, primarily by diffusion*; and (iii) *larger and heavier coarse particles are separated by mass moment of inertia*”. These aspects, as per the appellant’s counsel, were completely ignored and not assessed by the Controller. In this



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regard, reliance was placed on ***Agriboard International*** (*supra*) where a Single Judge of this Court held that the Controller has to analyse as to what is the existing knowledge, how the persons skilled in the art would move from existing knowledge to subject invention. If such analysis is not presented, the rejection of the patent application would be contrary to provision of Section 2 (1)(j) of Patents Act, 1970.

6. Mr. Harish Vaidyanathan Shankar, CGSC appearing for the respondent submitted that appellant's application was refused, *firstly*, on the basis of prior art documents D1-D5; *secondly*, as none of these prior art documents was cited in any other jurisdiction where the patent had been granted; *thirdly*, the prior arts were relevant for the purpose of examination by Indian Patent Office and mere registrations in other jurisdictions may not be relevant for the purposes of consideration; *fourthly*, grant of patent in other jurisdiction does not automatically entail that the applicant in India would also be granted, since patent rights are territorial and the patentability criteria is unique to the jurisdiction; *fifthly*, the Controller had rightly relied upon D5 to draw conclusion that a technical person, skilled in the art, would be able to come up with the invention.

Analysis

7. Before deliberating in further detail about the facts of the present case, it may be worthwhile to cull out the principles which have been laid down from decisions cited by the parties, as under:

7.1 In ***Agriboard International*** (*supra*) a decision delivered on 4th April,



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2022, by Single Judge of this Court, the appeal challenged the rejection of the application by the patent office, being refused on account of lack of inventive step under section 2 (1)(ja) of Patents Act, 1970. Objections were taken, relating to novelty, in the FER and reliance was placed on three prior art documents D1, D2 and D3. Response was filed by the appellant, hearing was held, written submissions were filed; however, by the order impugned therein, the patent application was rejected.

- i. The objection taken by the appellant's counsel was that the impugned order was absolutely cryptic and does not have any reasons for refusal of grant. One paragraph of prior art D1 was cited in the impugned order but there was no analysis as to the differences or similarity between the cited prior art and the subject invention of the appellant. It was submitted by the appellant therein that their priority patent application in the US had proceeded for registration and the same prior art D1 had also been considered by the US Patent Office. After analysing the technical aspects of the subject application, the Court concluded as under :

“20. After perusing the documents on record, it is clear that the analysis of lack of inventive step does not take the above aspects into consideration. The order simply extracts the objection from the FER and does not discuss the response given by the Appellant. Thus the impugned order is completely lacking in reasoning. Except simply coming to a conclusion that the



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invention is lacking in inventive step, there is no discussion whatsoever in the impugned order as to the manner in which the Appellant sought to distinguish D1 from the subject invention. Also, there is no reasoning by the Controller as to why the subject invention would be hit by prior art D1. Moreover, the subject patent specification, in the summary, clearly discloses that the extruding ram is actuated and driven by linear actuators; monitoring the density of the compressed structural fiberboard and utilising a programmable logic controller to monitor and adjust the speed at which the compressed structural board is produced to control the density of the compressed structural fiberboard. These elements are not contained in the prior art D1.”

(emphasis added)

- ii. Reliance was also placed by the Court on the decision of the Supreme Court in **Assistant Commissioner v. Shukla & Bros.** (2010) 4 SCC 785 where it is categorically held that passing a reasoned and speaking order is an integral part of principle of *audi alterem partem*. Relevant paragraph relied on by this Court in **Assistant Commissioner** (*supra*) is as under:

“9. The increasing institution of cases in all Courts in India and its resultant burden upon the Courts has invited attention of all concerned in the justice administration system. Despite heavy quantum of cases in



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Courts, in our view, it would neither be permissible nor possible to state as a principle of law, that while exercising power of judicial review on administrative action and more particularly judgment of courts in appeal before the higher Court, providing of reasons can never be dispensed with. The doctrine of audi alteram partem has three basic essentials. Firstly, a person against whom an order is required to be passed or whose rights are likely to be affected adversely must be granted an opportunity of being heard. Secondly, the concerned authority should provide a fair and transparent procedure and lastly, the authority concerned must apply its mind and dispose of the matter by a reasoned or speaking order. This has been uniformly applied by courts in India and abroad.

(emphasis added)

- iii. It was noted that the reasoning was reiterated by the Supreme Court in ***Manohar v. State of Maharashtra*** (2012) 13 SCC 14 where it was observed that the application of mind and recording of reasoned decision are basic elements of natural justice and scrupulous adherence to these principles would be required while rejecting patent application.
- iv. It was highlighted by this Court that the Controller has to analyse as to what is existing knowledge and how the persons skilled in the art would move from existing knowledge to the subject invention. Without such analysis, rejection would be contrary to



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the provisions of section 2 (1)(j)(a) itself.

7.2 **Otsuka Pharmaceutical Co.** (*supra*) : This appeal had been filed against rejection of the patent application of the appellant on ground of lack of inventive step. FER was issued, objections were raised in the FER on ground of lack of novelty and inventive step, prior arts were cited, response to the FER was filed, after conclusion of hearing written arguments were submitted and then impugned order was passed. Objection was raised by the appellant that impugned order was cryptic and non-reasoned. Reliance was placed on the decision of **F. Hoffman-La Roche Ltd. & Anr. v. Cipla Ltd.**, 2015 SCC OnLine Del 13619 where this Court had held that reliance on hindsight was impermissible while conducting an inquiry into obviousness and legal conclusion must be reached on the basis of facts gleaned from the prior art and should not include knowledge gleaned from patent disclosure. It was concluded that the Patent Officer was required to communicate to the applicant-appellant all outstanding objections at the threshold i.e. in the hearing notice. Reliance was placed on clauses 3(k) and 3 (l) of the notification dated 21st September, 2021 issued by the Controller General of the Patents which are extracted as under:

“k. If upon examination of the response submitted by the Applicant, the Examiner reports that some objections are still outstanding or raises further objection(s), such objections shall be communicated along with the notice of hearing, giving reasonable time to the



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Applicant. It is clarified that there is no need to send a second examination report.”
l. i. At the time of hearing, the Examiner may be present. However, the Examiner shall not communicate with the Applicant and no further objections can be raised at the time of hearing...”

7.3 The Court adverted to the decisions of the IPAB in ***Thompson Reuters Global Resources v. the Controller General of Patents, Designs & Trade Marks & Ors.*** IPAB Case No.OA/38/2011/PT/KOL and ***Resprotect GmbH v. The Controller of Patents & Designs***, IPAB Case No. OA/23/2010/PT/DEL, where it was held that the patent office while dealing with the grant of patent, exercises a *quasi-judicial* power and any objection to prior art must be known before the date of hearing. The appeal was allowed and impugned order was rejected on the account that it was not a speaking order and was unreasoned. It took into account prior art documents D2 and D3 though they did not form a part of the objections referred to in the hearing notice and without giving an opportunity to respond to them. It was further noted that the fact that the patent application of the appellant had been acknowledged in other jurisdictions outside India, leading to grant of patents, was not taken into account by the Controller.

7.4 A more recent order by this Court in ***Perkinelmer Health Sciences*** (*supra*) also relies upon the decision in ***Otsuka Pharmaceutical Co.*** (*supra*) reaffirming that raising new grounds at the time of hearing is impermissible. This Court further noted that even though the appellant had



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submitted written submissions subsequent to the hearing, it did not absolve the Controller of its obligations under the circular to communicate objections prior to the hearing and provide a reasonable opportunity.

7.5 The issue of absence of any discussion and analysis on various elements before arriving at decision to reject the patent application violates principles of natural justice, was also the conclusion of this Court by Single Judge in ***Auckland Uniservices Limited v. Assistant Controller of Patents***, decided on 27th September, 2022 in CA (COMM.IPD-PAT) 8/2022. Reliance was also placed on ***F. Hoffman-La Roche*** (supra) and ***Agriboard International*** (supra). Further it was observed that the prosecution history of the patent applications filed by the applicant therein in other jurisdictions abroad, may also be placed on record and were to be considered.

8. In order to appreciate the facts of this appeal, the following aspects seem relevant:

8.1 The FER dated 26th February, 2018 relied on prior arts D1-D4 to arrive at an observation that claims 1 to 37 lacked inventive step being obvious in view of teaching in cited documents D1-D4 for reasons which are extracted as under:

“D1 discloses the features of the claimed invention and technical advancement. Features with depiction are as, a particle separator is constructed without a filter. An Independent claim is included for equipment oxidizing particles from the exhaust gases of engines. The particles are separated by thermophoresis, and the surfaces of



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the particle separator are cooled. Preferred Features: Particles are separated by thermophoresis onto surfaces colder than the gas stream. They are separated by convection with the aid of structured surfaces and/or as a result of repeated flow reversals. They are separated through diffusion into dead zones for flow, and/or in narrow flow channels. The particles are separated by a combination of all three methods: thermophoresis, convection and diffusion (see abstract line 1-9). A process for the deposition of ultrafine particles from the exhaust gas of internal combustion engines, consisting in particular of carbon or condensed hydrocarbons, in which the NO- containing exhaust gas is oxidized on a platinum- containing oxidation catalyst to form NO and the enriched with NO gas into contact with a catalyst-coated is brought particle separator which can be coated catalytically, characterized in that the particle separator is formed without filters (see claim 1 line 1-7). In order to improve the diffusion deposition, dead zones created in the flow, such as those arising in the lee of baffles. There goes the flow rate to zero to allow a longer residence time for the relatively slow process of diffusion. In addition, the diffusion can be improved by shortening diffusion paths by reducing the cross-section of the flow channels. Thus, cross-sections between 25 microns and 250 microns have proved to be useful. The diffusion is primarily a practical way to separate particles <30 nm. (see description para26 line 5-9). The oxidation catalyst and the particle separator are combined, so that the effective for the formation of NO₂ surface can be lowered by cooling in its temperature. Here, the cooler with a catalytically



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active washcoat is enabled for the NO₂ oxidation to NO₂, coated, so that prevail, for a close to a wall higher equilibrium concentrations of NO₂ and the particles at the same time deposited by thermophoresis on the wall 6. Thus stands at the partikelabscheidenden surface, is required in the NO₂, a particularly high concentration of NO₂ for the combustion of the particles are available (see description para 20 line 4-10).

D2 discloses the features of the claimed invention and technical advancement. Features with depiction are as, a diesel exhaust after-treatment system for the cleanup of regulated and unregulated pollutants from an exhaust of a diesel engine, the system comprising: an oxidation catalyst; an exhaust cooling system for cooling the exhaust; a diesel particulate converter for the agglomeration and separation of particulate matter; and a soot collection chanter for collecting and retaining entrapped soot; an exhaust gas re-circulation system circulating the clean exhaust leaving the particulate collection chamber to a port downstream from an engine air filter (see claim 1 line 1-8). The system can be utilized for the after- treatment of exhaust gases from a variety of internal combustion engines operating at lean conditions and having appreciable amounts of particulate matter such as diesel engines, compressed and liquid natural gas engines. ' The system of the present invention can be designed to collectively destroy/separate/remove all pollutants from the exhaust gases. This includes: particulate matter and nano-size particles, volatile organic compounds, nitrogen oxide, hydrocarbon, carbon monoxide as well as sulfur dioxide. Through combined processing, the exhaust gases released



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in the atmosphere can be stripped of all the stated pollutants at high efficiencies that can render such high polluting engines environmentally very clean (see detailed description of preferred embodiment para 01 line 4-14). An oxidation catalyst is connected to an engine exhaust manifold. The catalyst 10 can be either a diesel oxidation catalyst or active precious metal catalyst (as in gasoline engine applications). Following the catalyst is the exhaust system designed to have maximum possible cooling of the exhaust gases before entering the particulate converter (see detailed description of preferred embodiment para 03 line 3-8).

D3 discloses the features of the claimed invention and technical advancement. Features with depiction are as, The NO₂ oxidant gas used to combust particulate on the filter may be catalytically generated in a variety of ways. However, this is preferably accomplished by initially passing the diesel exhaust gas through a catalytic converter position upstream of the filter. The exhaust gas usually includes a significant amount of NO, O₂, CO, CO₂, H₂O and SO₂ as well as unburnt hydrocarbons and carbonaceous particulate. The important component, however, is the NO which, according to the invention, is converted to the NO₂ oxidant necessary to combust particulate on the filter. Preferably, the amount of NO₂ in the gas as it is fed to the filter will be in the range 100-2000 ppm although it will be appreciated that the NO₂ content can be widely varied within and outside this range. The essential point is that there is enough NO₂ in the gas fed to the filter to effectively combust the deposited carbon soots and like particulates (see detailed



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description of invention para01 line 1-8). the diesel exhaust gas is passed through a low pressure drop monolith catalyst (e.g., a ceramic honeycomb) coated with platinum (Pt) or other platinum group metal (PGM) whereby NO in the exhaust gas is catalytically converted to NO₂ by reaction with oxygen (see detailed description of invention para02 line 1-3). diesel exhaust enters the system through the inlet, is processed in to catalytically generate NO₂ from NO therein, the resulting gas with the enriched NO₂ content being then fed through filter after which it is discharged at. In filter, soot or like carbonaceous particulate is combusted at a temperature generally in the order of 250.-400° C., or even higher if desired, to convert carbon deposits to volatile CO and/or CO₂. The filter also effectively serves to trap any H₂SO₄ or sulfate generated in the system (see detailed description of invention para12 line 1-5). D4 discloses the features of the claimed invention and technical advancement. Features with depiction are as, a process for reducing the concentration of nitrogen oxides in an exhaust gas containing nitrogen oxides, comprising the steps of: adjusting the =I ratio of NO to NO₂ in the exhaust gas such that the exhaust gas contains approximately equal molar amounts of NO and NO₂, mixing the exhaust gas having the adjusted mol ratio of NO to NO₂ with an ammonia-containing gas, in which the mol ratio of ammonia to the total of NO and NO₂ in the exhaust gas is about 0.8 to 2:1, and contacting the resultant mixture with a metallic oxide catalyst at a temperature in the range of 100*-550° C., thereby to reduce nitrogen oxides into nitrogen gas and water, said metallic oxide catalyst containing



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titanium oxide as its first constituent and an oxide of at least one element selected from the group consisting of iron, copper, nickel, cobalt, molybdenum, tungsten, vanadium, chromium and cerium as its active component (see claim 1 line 1-14). the catalysts which are employed for reducing NO_x in the presence of ammonia, there have been known oxides of platinum group metals, vanadium, iron, copper, molybdenum, tungsten, chromium etc. or mixed oxides thereof. These metallic oxide catalysts are usually used in the form in which they are carried by a support such as alumina and silica alumina. As the reducing catalysts for use in this invention, however, ones are the most appropriate which contain titanium oxides as their principal constituents and in which is added an oxide of at least one metal selected from the group consisting of iron, copper, nickel, cobalt, molybdenum, tungsten, vanadium, chromium and cerium. The reason therefore is that these catalysts, the principal constituents of which are titanium oxides, are especially suitable in case where the exhaust gas to be treated contains sulfur oxides (SO₂, SO₃, etc.). The catalysts whose principal constituents are titanium oxides are not poisoned or vitiated by the sulfur oxides, and their activities for the reaction are ordinarily higher than the alumina support catalysts (see detailed description of invention para 12 line 1-10). In view of the above documents D1-04, the present invention lacks inventive step according to section 2(1)(ja) of The Patents Act, 1970 and a person skilled in the art will be motivated by the above cited documents to conclude the invention. ”

8.2 The response to the same was filed on 23rd August, 2018 specifically



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responding to the prior art objections of D1-D4. It was essentially stated that both the corresponding European and US Patents have been granted with claims of substantially same scope as those filed in India after having considered D1, D3 and D4. It was claimed that appellant's invention provided for novel and inventive combination of separation using diffusion and a mass movement of inertia in different flow regions of the device. It was this combination of separation methods which resulted in a more efficient separator able to separate a wider range of particles sizes than previous examples. It was claimed that none of the cited documents disclose such a combination, nor would such a combination be obvious to a skilled reader. It would be useful to extract the relevant part of the response to the FER:

“The claimed invention provides for a novel and inventive combination of separation using diffusion and mass moment of inertia different flow regions of the device. This combination of separation methods results in a more efficient separator, able to separate a wider range of particle sizes/types than previous examples. None of the cited documents discloses such a combination, nor would such a combination be obvious to a skilled reader.

A skilled reader would appreciate that particle separation by diffusion involves particle transport on the basis of concentration differences. In order to improve diffusion separation, dead zones are produced in the flow in which the flow velocity is minimised - for example through the use of blind holes. Here, the flow velocity decreases towards zero, so that the retention time is increased and



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diffusion can be maximised.

In contrast, separation by mass moment of inertia is accomplished through accelerating and then deflecting flow. The higher gas velocity causes particles with greater mass to retain the initial motion vector more than those with a lower mass. Accordingly, a skilled reader would consider separation by diffusion and inertia to be largely independent and not suitable for being combined, thus they would not consider combining such methods without there being explicit teaching to do so. No such teaching is provided in any of the cited documents.

As regards inventive step, it will kindly be appreciated by the Examiner that D1 discloses a separator in which the exhaust stream is guided along a structured surface so that the particles can be separated off from the exhaust stream by thermophoresis, convection or diffusion. In this separator the separation of the particles by diffusion deteriorates with increasing particle diameter, so that here larger particles are hardly separated, or separated only very poorly.

D1 fails to provide a separator with a flow region for separating larger particles using their mass moment of inertia (in addition to a different region which separates particles using diffusion).

D2 discloses an after-treatment system for the capturing and removal and/or destruction of diesel engine exhaust pollutants. D2 fails to disclose or hint at the use of different flow regions for the separate separation of particles by diffusion and use of inertia. Nowhere in D2 is it suggested that separation may be implemented through the use of separate flow regions and that a combination of diffusion and inertia may be used in the respective



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different flow regions.

In paragraph [000130], 02 recites three modes of particle capturing mechanisms as being inertial impaction, interception, and diffusion; however D2 does not disclose the use of these mechanisms in a separator in combination in different, flow regions. D2 goes on (in paragraph [000133]) to state that in the embodiments of 02 diffusion is the primary mode and the other two modes are "simply set aside due to their small effect". Accordingly, this document in fact teaches away from the claimed solution.

D3 discloses a separator in which carbon particles are separated on a filter and then oxidised by NO₂. D3 thus uses a filter to separate large particles and does not disclose the use of a separate flow region in which separation can occur due to the mass moment of inertia of particles. In summary, this document fails to disclose the combination of the two methods of separation present in the claimed invention.

D4 discloses a process for reducing the concentration of nitrogen oxides in an exhaust gas containing nitrogen oxides in which the concentrations of NO and NO₂ in nitrogen oxides contained in the exhaust gas are adjusted to substantially equal molar concentrations, whereupon the exhaust gas is held in contact with a metallic oxide catalyst together with ammonia. The adjustment of the concentrations of NO and NO₂ in the nitrogen oxides is done by the oxidation of NO with ozone, the catalytic oxidation of NO with air or oxygen, the addition of nitric acid, the addition of NO or NO₂, etc. D4 fails to disclose the use of mass moment of inertia to separate particles and, accordingly, fails to disclose the claimed



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combination of separation methods in different flow regions.

As such, a skilled person, given the cited documents would be unable to arrive at the claimed invention and thus the claimed invention is novel and has an inventive step.

Accordingly, reconsideration and waiver of this objection is respectfully requested.

(emphasis added)

Essentially, the appellant was claiming that the prior art documents did not disclose use of the combination of methods of separation using diffusion and mass movement of inertia.

8.3 Hearing notice dated 5th October, 2020 repeated the objections in relation to the prior art documents D1-D4, without change in any aspect of it. Notably, there was no mention of prior art document D5 at that stage. During the hearing, apparently the issue of prior art document D5 came up as is evident from the written submissions filed by the appellant post the hearing. To meet objections under prior art documents D1-D4 are extracted as under:

“Now, we address each of the cited documents. D1 (EP1072765) discloses a separator in which the exhaust stream is guided along a structured surface so that the particles can be separated off from the exhaust stream by thermophoresis, convection or diffusion. In this separator, the separation of the particles by diffusion deteriorates with increasing particle diameter, so that here larger particles are hardly separated, or separated only very poorly.

D1 fails to provide a separator with a flow region for separating larger particles using their mass moment of inertia (in addition to a different region which separates particles using diffusion). Furthermore, this document provides no teaching



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that would lead a person skilled in the art to consider to include such a flow region.

D2 (EP1546515) discloses an after-treatment system for the capturing and removal and/or destruction of diesel engine exhaust pollutants. D2 fails to disclose or hint at the use of different flow regions for the separate separation of particles by diffusion and use of inertia. Nowhere in D2 is it taught, disclosed or suggested that separation may be implemented through the use of separate flow regions and that a combination of diffusion and inertia may be used in the respective different flow regions.

In paragraph [000130], D2 recites three modes of particle capturing mechanisms as being inertial impaction, interception, and diffusion; however D2 does not disclose the use of these mechanisms in a separator in combination with different flow regions. 02 goes on (in paragraph [000133]) to state that in the embodiments of 02 diffusion is the primary mode and the other two modes are "simply set aside due to their small effect".

Thus, 02 in fact explicitly discounts separation by inertia (see paragraph [0133]) as having little effect. As such, a person skilled in the art would not modify D1 to facilitate inertial separation in light of the teaching of 02, as there is no motivation to do so.

Accordingly, D2 in fact teaches away from the claimed solution.

D3 (US5281245) relates to the processing of flue gas. This is very different to exhaust gas from an internal combustion engine. D3 also fails to provide flow regions that differ with regard to the flow conditions and are formed for separate separation of particles by diffusion and using their



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mass moment of inertia. D3 therefore relates to a different technical problem in a different technical field.

D4 (RU55636U1) relates to a vortex gas-liquid separator and is not for separating particles out of an exhaust stream of an internal combustion engine. It does not provide a flow region for separating ultrafine particles primarily by diffusion, in combination with a region for separating heavier particles using mass moment of inertia. As with D3, D4 relates to a different technical problem in a different technical field.”

(emphasis added)

8.4 Prior art document D5 was discussed and it was submitted that the appellant protested against the new document being cited by the Controller during the hearing and at a later stage in the proceedings. It was submitted in this regard as under:

“As regards document D5 (US5865864), we respectfully protest against this new document being cited by the Learned Controller during the hearing and at such a late stage of proceedings. As D5 was cited at the hearing itself, the applicant could not completely review D5 in the hearing itself and refute the disclosures in D5 as being relevant against the present invention.

Nonetheless, with regard to D5, it is respectfully submitted that this document fails to disclose different flow regions for separate and different separation of particles. D5 also fails to disclose the specific use of diffusion and mass moment of inertia to separate particles. Finally, D5 fails to disclose different flow regions formed by different sizes of free flow cross-sections. As such, D5 fails



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to overcome the deficiencies of documents D1 and D2.”

(emphasis added)

8.5 Accordingly, it was submitted by the appellant as under :

“None of D1, D2 or D5 discloses different flow regions for different separation mechanisms which have different free flow cross-sections, as set out in amended claim 1.

In summary, none of D1 to D5 discloses a separator for use in an exhaust stream with flow regions which differ with regard to the flow conditions for separate separation of defined ultrafine particles primarily by diffusion and in contrast defined larger or heavier coarse particles owing to their mass moment of inertia.

Furthermore, it is respectfully submitted that a person skilled in the art would be unable to arrive at the claimed invention given any combination of the cited prior art documents. Not one of the documents discloses the claim feature outlined in the previous paragraph. Furthermore, no motivation is provided which would lead the person skilled in the art to undertake the modifications required to arrive at the claimed invention.

Further to the distinguishing features described above, none of D1 - D5 discloses (emphasis added): “flow regions (5, 6), which are spatially separated from one another, are formed for substantially separate separation of defined ultrafine particles (3) primarily by diffusion and in contrast defined larger and/or heavier coarse particles (4) owing to their mass moment of inertia.” It would not be obvious to a person skilled in the art to incorporate this feature, given any



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combination of documents D1 - D5.

The independent claims now require the different flow regions to be formed by different sizes of free flow cross-sections. None of D1 - D5 discloses this feature. Furthermore, it would not be obvious to a person skilled in the art to incorporate this feature, given any combination of documents D1 - D5.

The revised claims of the present invention are therefore inventive over documents D1 to D5, taken alone or in combination.

Accordingly, reconsideration and waiver of this objection is respectfully requested.

Based on the amendments effected to the claims and the arguments summarized herein, it is believed that this application is in order for grant of a patent.”

8.6 Accordingly, the revised claim no.1 was presented as under :

“We Claim:

1. A particle separator for separating particles out of an exhaust stream of an internal combustion engine, it being possible for an exhaust stream (2, 7) to flow through the particle separator (1), wherein flow regions (5, 6) which differ with regard to the flow conditions are formed in the particle separator (1), and wherein the flow regions (5, 6) are configured such that particles (3, 4) of different defined size or different, defined mass are adapted to be separated out of the exhaust stream (2, 7) in the different flow regions (5, 6), characterised in that different flow regions (5, 6), which are spatially separated from one another, are formed for separate separation of defined ultrafine particles (3) primarily by diffusion and in contrast defined larger or heavier coarse



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particles (4) owing to their mass moment of inertia, wherein the different flow regions (5, 6) are formed by different sizes of free flow cross-sections.”

9. A perusal of the impugned order would show that there is no additional analysis which is given with respect to response of the appellant to prior art documents D1-D4. Although in the impugned order the Controller did articulate three aspects and features of the claimed invention, there was no discussion or analysis whatsoever in relation to prior art D1-D4, particularly in respect of the responses given by appellant in reply to the FER.

10. The relevant paragraph in the impugned order in which the Patent Officer has articulated the essential features of the claimed invention is extracted as under:

“12. I now turn my attention to the claimed subject matter. The instant claimed subject matter describes A particle separator for separating particles out of an exhaust stream of an internal combustion engine, it being possible for an exhaust stream to flow, through the particle separator, wherein flow regions which differ with regard to the flow conditions are formed in the particle separator, and wherein the flow regions are configured, such that particles of different, defined size or different, defined mass are adapted to be separated out of the exhaust stream in the different flow regions, Characterised in that different flow regions, which are spatially separated from one another, are formed for separate separation of defined ultrafine particles primarily by diffusion and in contrast defined larger or heavier coarse



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particles owing to their mass moment of inertia, wherein the different flow regions are formed by different sizes of free flow cross-sections.

Thus main features I deduce are:

- 1. different flow regions which are spatially separated from one another;*
- 2. separation of defined ultrafine particles, primarily by diffusion;*
- 3. larger and/or heavier coarse particles are separated by mass moment of inertia;”*

(emphasis added)

11. Thereafter, analysis relating to prior art documents D1-D4 is merely repeated, as was contained in the original FER, without any addition or supplementation whatsoever. Despite the objections taken with respect to prior art documents D1-D4 in the FER to which the appellant had responded (through the reply as also in the written submission), there was no fresh or revised analysis by the Controller, based upon the appellant's response in respect of D1-D4.

12. A perusal of the impugned order bears out that the paragraphs with respect to documents D1-D4 have simply been repeated and copied. Aside from that document D5 was not made part of the notice of hearing and came up during the hearing itself to which the appellant placed a protest (but without prejudice responded to the same in written submissions). The Controller did advert to prior art document D5 in the following manner:

“The D5 solves these problems associated with prior art honeycomb catalysts/filters so that catalytic conversion is approximately uniform for all flow regions of the honeycomb catalyst/filter (see col. 2 Ins. 50-59) by



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providing a honeycomb catalyst/filter wherein there is a first group of channels having a higher flow resistance and a second group of channels having a lower flow resistance (see col. 2 Ins.60-67). In particular, note that figures 3 and 6 in the D5 illustrate the honeycomb wherein certain cross-facial regions of the honeycomb catalyst/filter have relatively smaller openings and the other cross-facial regions of the honeycomb have relatively larger openings, so that this D5 honeycomb can also be said to have different flow regions wherein each flow region is configured to allow particles of essentially different sizes or masses to be separated out in the different regions (which is required by the Applicants' independent claims)."

13. A conclusion was therefore reached in the following manner by the Controller, that it would be obvious to a person skilled in the art to have modified teaching of D1-D4 by ensuring that different flow regions to allow particles of different size and or mass to be separated out of the exhaust gas. Conclusion drawn in the impugned order is as under:

"This features discloses in document D1-D5 and with it is the basic design change in cited documents the normal technical engineer can easily come up to invention. Therefore claims invention can be invented by the normal technical engineer bases on the cited invention.

By utilizing the features of the cited documents D1-D5, it would have been obvious to one with ordinary skill in the art that he may easily add some normal features to these cited documents D1-D5 and can easily go for the features of the present



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invention. In view of the above, the claims claimed are obvious to a person skilled in the art. ”

14. In the opinion of this Court the impugned order faltered on the following aspects: *Firstly*, it does not provide any further analysis or discussion relating to documents D1-D4, in particular as to how the teaching of D1-D4 would make the subject invention obvious, and no analysis was offered; *secondly*, the objection relating to prior art D5 which seems to form the basis and fulcrum of the conclusion of the Controller in the impugned order, was never asserted or raised in the notice of hearing or any time prior to the same. Therefore, it would fall foul of the principles enunciated in ***Otsuka Pharmaceutical Co.*** (*supra*), ***Agriboard International*** (*supra*) and ***Perkinelmer Health Sciences*** (*supra*) as extracted above. These decisions had clearly reiterated that the Controller’s order cannot be unreasoned, and if it provides reasons on any account, it cannot circumvent communicating the objection of prior art in the notice of hearing. No such opportunity having been given would put the appellant to a serious disadvantage at the stage of hearing. This has been highlighted and underscored by the appellant in its written submissions filed before the Patent Office as well as its submissions before this Court.

15. Therefore, without going into the merits of the issues arising out of prior art documents D1-D5, in the opinion of this Court, the omission by the Patent Office in not including the objection under document D5 in notice of hearing, as well as the complete lack of analysis in respect of objections under documents D1-D4 of appellant’s response, vitiate the impugned order.



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Accordingly, the impugned order is set aside and the matter is remanded back to the respondent for fresh consideration.

16. Respondent shall issue fresh notice of hearing raising all objections within a period of 4 weeks from today, in accordance with law. A hearing shall thereafter, be conducted within a period of 3 months from the date that notice of hearing is issued.

17. It is made clear that the Controller shall decide the matter on merits in accordance with law, uninfluenced by any observations in the present judgment. Decision shall be taken as expeditiously as possible, and not later than 6 months from today.

18. Aside from other submissions which the appellant may present in response to the fresh notice of hearing, facts relating to the appellant's corresponding patent applications in respect of the same invention, in other jurisdictions outside India, may also be taken note of by the Controller. Needless to say that the Controller is not bound by the same and would have to decide within the parameters of Indian Law.

19. The appeal stands disposed of with above observations and directions.

20. Pending applications, if any, are disposed of as infructuous.

21. Judgment be uploaded forthwith on the website of this Court.

(ANISH DAYAL)
JUDGE

FEBRUARY 09, 2024/sm/ig