Candidate's answer

Statement of facts and arguments by the opponent

This statement accompanies the Notice of Opposition (Form 2300).
Claims 1-5 have an effective date of the filing date of A1 = 25-04-2005.
It can therefore be seen that all of documents A2-A5 were published before this date and are prior art under Art 54(2) EPC for all claims and can also be used for inventive step (Art 56 EPC).

Added subject matter – description

The passage on page 5, paragraph [0017] of the patent extends the content of the application as filed therefore is in contravention of Art 123(2).

A1 is a divisional application of EP'789 which is itself a divisional application of EP'678. According to Art 76(1) EPC, a divisional may only contain subject matter which does not extend beyond the content of the earlier application. Thus, because paragraph [0017] was not in EP'678 it could not form part of the disclosure of EP'789, therefore A1 can also not contain the paragraph.

As such, paragraph [0017] of A1 is in contravention of Art 76(1) EPC and Art 123(2) EPC, as the subject matter extends beyond the application as filed (it should be noted the subject matter of [0017] is not directly and unambiguously derivable from any other part of the A1 description, therefore confirming that it contravenes Art 123(2)).

1. Claim 1 – independent claim

1.1 Lack of novelty (Art 54(2))

Claim 1 lacks novelty in view of A5.

A5 discloses an airbag module suitable for protecting a vehicle occupant in a frontal collision comprising
[note that "product for" must be construed as meaning "product suitable for" → GL F-IV, 4.13 – clearly suitable for purpose – [0001] A5]
comprising,
- a control unit [A1 [0002] "control unit activates the gas generator"; A5 [0004] "safety processing unit… sends pulse connected to electric match to activate latter… activation of electric match ignites a gas generating composition" – thus safety processing unit = control unit]
- a gas generator comprising a housing made of cuzinal [[0003] housing is said to be made of any suitable metal for diecast containers referred to in A2; in accordance with GL-IV,8 and T 153/85, if there is a specific reference in the first prior art document to a second prior art document, the relevant content in the latter (i.e. cuzinal) can be considered to form part of the disclosure of the first document, if the second document was available on the publication date of the first document – A2 was available on the publication date of A5, therefore the

disclosure of A2, in particular [0003] of A2 is incorporated into A5 and the features disclosed].
- a fabric cushion comprising a pressure regulating valve [[0005] “fabric bag 10”; A1 [0010] pressure regulating valve is a device that regulates pressure inside cushion by regulating the flow of gas exiting the fabric cushion – A5 [0006] during impact the ribbon covering the vent hole will be released uncovering the vent hole. Gas is then expelled, thus relieving pressure and making the airbag less hard – thus A5 arrangement regulates flow of gas and produces same effect as in A1 – cushion becomes less hard]

Accordingly, all of the features of claim 1 are disclosed in A5 and therefore claim 1 lacks novelty over A5/

1.2 Lack of inventive step

Notwithstanding the above comments regarding the novelty of claim 1, it is also submitted that even if the claim was considered to be novel (perhaps if the Opposition Division does not agree with the above comments regarding incorporation of the “cuzinal” feature via A2), it would not be inventive, for the following reasons:

A5 is the closest prior art because it relates to airbags for vehicles and in particular to airbags in which different amounts of gas can be used in order to achieve different pressures.

A5 discloses all of the features of claim 1 (as discussed above for novelty) but it the Examining Division does not accept the arguments regarding the incorporation by reference feature, the difference in the subject matter of claim 1 and A5 will be that the gas generator housing is made of cuzinal.

This has the technical effect of maintaining a good structural resistance at high temperatures when compared with stainless steel and aluminium, which reduces the risk of fracture of the housing [[0013] A1].

Accordingly the objective technical problem to be solved would be to provide a housing for a gas generator which has a reduced risk of fracture caused by heat. It is noted in A5 [0009] that the generated gas may reach a very high temperature. Thus the skilled person would have strong motivation to find a housing material which was heat resistant.

A2 is a document which relates to gas generating systems which are of use in passive restraint systems such as airbags [[0001] A2], therefore is a relevant source of information for the skilled person.

A2 teaches that cuzinal maintains an almost constant resistance to breaking even at high temperatures (above 200 °C), and that the resistance of steel and aluminium alloys decrease progressively above 200 °C.

From this the skilled person learns that cuzinal has very good heat resistance and would therefore prevent fracture due to heating. There is no hindrance to

using cuzinal in the arrangement in A5 and the skilled person would see no reason why the heat resistant properties of cuzinal in A5 wold not work in the airbag module of A5.

The skilled person would therefore find it obvious to use cuzinal in the housing of A5 and thereby reach the subject matter of claim 1.

As such, the subject matter of claim 1 lacks inventive step over A5 in combination with A2.

2. Claim 2 – dependent on claim 1

2.1 Lack of inventive step

A3 is the closest prior art because A3 and A5 relate to the same purpose of airbags with pressure regulating valves, but A3 has a valve which has the most features in common with the valve described in claim 2.

A3 discloses an airbag module suitable for protecting a vehicle occupant in a frontal collision [note that "product for" must be construed as meaning "suitable for" → GL F-IV, 4.13] [[0002] "small airbags that are installed… to protect the driver during frontal collision" – therefore clearly suitable for purpose of claim 1] comprising:
- a control unit [A1 [0002] "control unit activates the gas generator"; A3 [0003] "pyrotechnical gas generator activated by a command unit", therefore "command unit" is a control unit]
- a gas generator comprising a housing made of aluminium or die-cast steel [[0003]]; and
-a fabric cushion cushion [[0003] "nylon cushion"/"nylon fabric"] comprising a pressure-regulating valve [A1 [0010] pressure regulating valve is a device that regulates pressure inside cushion by regulating the flow of gas exiting the fabric cushion; A3 [0005] and [0006] "vent hole 4 usually only allows a very limited amount of gas to be vented" … "additional pressure triggers deformation of membrane" … "enlarging diameter of hole allowing more gas to be vented" "increased gas venting creates a temporary pressure drop that makes cushion less hard" – thus A3 arrangement regulates flow of gas and produces same effect as in A1 – cushion becomes less hard]

A3 also discloses an airbag module wherein the valve comprises an elastic membrane [A3 [0005] synthetic rubber (eg silicone) membrane; A1 [0010] "elastic membrane may be elastic strip made of silicone]
at least partially covering a vent hole [see figures 1 and 2 of A3; if opening 5 is regarded as a vent hole then the elastic membrane 3 does cover a significant portion of hole 5, except for area 4]
the membrane being attached to the cushion by means of a rubber based adhesive [[0006] "silicone-based adhesive" is used and [0005] silicone is a synthetic rubber]

The subject matter of claim 2 differs from the disclosure of A3 in that the housing is not made of cuzinal, rather it is made of aluminium or die cast steel.

The technical effect of this difference and the objective technical problem are as described in claim 1.

A2 would be a relevant document for the reasons described above for claim 1.

The teaching of A2 would prompt the skilled person to modify the housing disclosed in A3 to be cuzinal without expectation of any incompatibility in combining the teaching (as discussed above for claim 1).

As such, claim 2 lacks inventive step over A3 in view of A2.

3. Claim 3 – dependent on claim 1

A5 is the closest prior art because although A3 and A5 both concern airbags with pressure regulating valves, A3 actually teaches away from the use of PET polyester fabric as being incompatible with silicone adhesive [makes fabric stiffer and more difficult to fold [0006] A3].

As discussed above, A5 discloses all of the features of claim 1. Regarding the additional features of claim 3, A5 discloses an airbag module wherein the fabric cushion is made of polyester [[0005] – “fabric bag is made of a non-stretchable PET material”; A3 [0006] “polyester fabrics such as PET”]

The subject matter of claim 3 differs from the disclosure of A5 in that there is no suggestion that the polyester should be coated with a polyamide resin.

The technical effect of this difference is that the coating gives the fabric a better heat resistance when compared with uncoated fabric, but does not compromise the flexibility of the fabric.

Thus, the objective technical problem to be solved is to modify the polyester fabric of the cushion to make it more heat resistant. It is noted in A5 [0009] that the generated gas may reach very high temperatures. Thus, the skilled person would have strong motivation to find a fabric that is heat resistant.

A2 is a relevant document for the same reasons as discussed above for inventive step of claim 1.

A2 teaches that the airbag cushions made of polyester are usually coated with a nylon resin which ensures good heat resistance. A nylon resin is a polyamide resin, as shown in A4 [0003]. From this the skilled person learns that the polyester cushion may be coated with a polyamide resin to make it more heat resistant.

The skilled person would confidently know that there would be no hindrance in combining the teaching of A5 and A2 because [0008] of A2 describes how “nylon coated polyester maintains a high degree of flexibility so that the time for deploying the airbag cushion is not adversely affected”.

The skilled person would therefore find it obvious to use the teaching of A2 to coat the polyester fabric of A5 thus reaching the subject matter of claim 3.

As such, claim 3 lacks inventive step over A5 in view of A2.

*It should be noted that if the Examiner disagrees that claim 1 is novel over A5 due to the cuzinal feature, claim 3 would still lack inventive step over A5 + A2, because while solving the technical problem of increasing the polyester fabric to heat resistance the skilled person would realised that A2 also solves the problem of how to improve the heat resistance of the housing.

As no synergistic effect is provided by the housing being cuzinal and the polyester fabric being coated with a polyamide resin, the problems solved by each can be dealt with as partial problems [GL-VII, 5.2 + 6] and would lead to the result that claim 3 would still lack inventive step over A5 in view of A2.

4. Claim 4 – independent claim

4.1 Lack of inventive step

Claim 4 relates to a gas generator suitable for an airbag module comprising a housing, an igniter and a gas generating composition.

A2 is the closest prior art because it relates to pyrotechnical gas generating systems, in particular to gas generating housings and the powder compositions which can be used in such housings.

A2 discloses a gas generator which is suitable for an airbag module [note that "product for" must be construed as meaning "product suitable for" → GL F-IV, 4.13]
[A2 gas generator clearly suitable for use with airbags – see references to "airbags" in [0001] and [0005]]
comprising
- a housing made of cuzinal having outlets [[0002] "exhaust openings" = outlets]
- an inductively activated ignitor [A1 [00013] – induction via a magnetic field from outside the generator and not electrically connected to the outside; A2 [0004] initiates via "an induced current in the coil" – this will produce a magnetic field and "activated at a distance without being wired to the outside" – same as A1]
comprising zirconium and potassium perchlorate [[0004]] – various gas generating compositions inside the housing.

The subject matter of claim 4 differs from A2 in that although a composition comprising guanidinium nitrate, ammonium perchlorate and either sodium nitrate/potassium sulphate is disclosed generically [[0007] of A2] the specific combinations are not disclosed (a generic disclosure does not take away the novelty of a specific disclosure – GL-VI, 5].

Regarding the two alternative combinations disclosed in claim 4 each in turn:

• Guanidine nitrate and ammonium perchlorate and sodium nitrite
The technical effect of this combination is that the guanidine nitrate and ammonium perchlorate produce larger amounts of gas within same time than other combinations, and the addition of sodium nitrate results in the gas having a lower temperature thus avoiding heating the fabric and burning the occupant [[0014] A1]

The objective technical problem is to provide a composition which is effective (i.e. large gas volume in short time) but also protects the occupant from being burned.

A4 is a document which relates to safety improvements for vehicle restraint systems [[0001]] and concerns gas generating pyrotechnical charges therefore would be a relevant source of information for the skilled person.

A4 teaches that a pyrotechnical charge composed of guanidine nitrate, ammonium perchlorate and sodium nitrate is advantageous because it produces large quantities of gas per unit of reactant within the first milliseconds of reaction, and that the sodium nitrate acts as a coolant therefore will not heat the seat cover [[0008] A4]

Thus, the skilled person learns that this particular composition is highly effective in terms of generating gas, but also produces a cooler gas therefore protects the occupant from being burned.

Although the composition in A4 is presented as a “pyrotechnical charge” and it is not clear how it is ignited, it would clearly be suitable for use with the gas generator of A2 which uses induced current to light the composition, because each component is explicitly found in [0007] of A2, therefore the skilled person would have no reason to suppose that the specific combination of A4 would not also work, therefore would find it obvious to combine the teaching of A2 and A4.

Thus, claim 4 wherein the gas generating composition comprising guanidine nitrate, ammonium perchlorate and sodium nitrate is obvious in light of the teaching of A2 in view of A4.

• Guanidine nitrate and ammonium perchlorate and potassium sulphate
The technical effect of this combination is that large amounts of gas are produced, and the formation of flames during the gas generating reaction is prevented [[0015] A1], which prevents the fabric of the cushion catching fire.

Thus, the objective technical problem is to provide a composition which is effective (ie large gas volume in short amount of time) and which does not cause the fabric to catch on fire.

A4 is a relevant document for the same reasons as described above.

A4 teaches that a pyrotechnical charge composed of guanidine nitrate, ammonium perchlorate and potassium sulphate produces large volumes of gas but does not create a flame [0009].

Thus the skilled person learns that this particular composition is highly effective in terms of generating gas, but also does not produce a flame, reducing the risk of the fabric catching on fire.

The skilled person would therefore find it obvious to combine the teaching of A2 with A4 (with no practical difficulties/hindrance as described above) to reach the teaching of claim 4, wherein potassium sulphate is used.

As such, claim 4 wherein the gas generating composition comprises guanidine nitrate, ammonium perchlorate and potassium sulphate also lacks inventive step over A2 in view of A4.

5. Claim 5 – dependent on claim 4

5.1 Added subject matter

Claim 5 extends the subject matter beyond the scope of the application as filed (although present – it does not form part of the disclosure) for the reasons described above in the “added matter – description” section.

Thus, claim 5 is in contravention of Art 123(2)/Art 100(c).

5.2 Lack of inventive step

Claim 5 lacks inventive step in view of A2 + A4.

A2 is the closest prior art for the reasons described above for claim 4.

A2 disclosure is also described above for claim 4.

The subject matter of claim 5 differs from A2 by the specific combination of the gas generating composition (two alternatives – sodium nitrate/potassium sulphate) and in that it is not disclosed that the weight ratio of guanidine nitrate:ammonium perchlorate is 3:1.

The technical effect of the different specific gas generating compositions are discussed above for claim 4. The technical effect of the 3:1 ratio is that it produces the cleanest combustion and creates the smallest amount of toxic residual gas [[0017] of A1]

No synergistic effects are provided by the two distinguishing features, therefore partial attacks may be used (GL G-VII, 5.2 + 6).

The problem to be solved by the specific compositions is discussed above for claim 4.

The problem to be solved by the ratio of 3:1 is to provide a gas composition which is environmentally friendly and minimises the production of toxic gas.

While using A4 to solve the objective technical problem (specific compositions) the skilled person wold realise that A4 also discloses:
a composition comprising a weight ratio of guanidine nitrate to ammonium perchlorate of 3:1 [[0010] composition of 72% by weight guanidine nitrate and 24% by weight ammonium perchlorate which = 3:1] which is said to produce the most gas per unit of composition used, thus is environmentally friendly.

Thus, the subject matter of claim 5 is not inventive over A2 in combination with A4.

Conclusion

It is requested that EP3456789B1 is revoked in its entirety. In the event that the Opposition Division considers maintaining the patent, in any form, oral proceeding are requested.

M. LAUDA

Europäisches Patentamt
European Patent Office
Office européen des brevets

Notice of opposition to a European patent

I. Patent opposed

Patent No.	EP 3 456 789 B1
Application No.	08 915 813
Date of mention of the grant in the European Patent Bulletin (Art. 97(3), Art. 99(1) EPC)	09-06-2012
Title of the invention	AIRBAG

II. Proprietor of the patent

first named in the patent specification	COOPER INDUSTRIES
Opponent's or representative's reference (max. 15 keystrokes)	XX

III. Opponent

Name	TOLEMAN IND.
Address	40026 IMOLA ITALY
State of residence or of principal place of business	ITALY
Nationality	ITALY
Telephone/Fax	
Multiple opponents (see additional sheet)	☐

IV. Authorisation

1. Representative (name only one representative or name of association of representatives to whom notification is to be made)	M LAUDA
Address of place of business	53520 MEUSPATH GERMANY
Telephone/Fax	
Additional representative(s) on additional sheet/see authorisation	☐

Opponent's reference XX

2. Name(s) of employee(s) of the opponent authorised to act in these opposition proceedings under Art. 133(3) EPC

Authorisation(s) to 1./2.

not considered necessary ☒

has/have been registered under No. ☐

is/are enclosed ☐

V. Opposition is filed against

• the patent as a whole ☒

• claim(s) No(s). ☐

VI. Grounds for opposition:

Opposition is based on the following grounds:

(a) the subject-matter of the European patent opposed is not patentable (Art. 100(a) EPC) because:

• it is not new (Art. 52(1); Art. 54 EPC) ☒

• it does not involve an inventive step (Art. 52(1); Art. 56 EPC) ☒

• patentability is excluded on other grounds, i.e. Article ☐ Art.

(b) the patent opposed does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Art. 100(b) EPC; see Art. 83 EPC). ☐

(c) the subject-matter of the patent opposed extends beyond the content of the application/of the earlier application as filed (Art. 100(c) EPC, see Art. 123(2) EPC). ☒

VII. Facts (Rule 76(2)(c) EPC) presented in support of the opposition are submitted herewith on a separate sheet (annex 1) ☒

VIII. Other requests:

Oral proceedings are requested in the event that the Opposition Division considers not revoking the patent in its entirety.

Opponent's reference XX

IX. Evidence presented

Evidence is enclosed ☐

will be filed at a later date ☐

A. Publications:

1

Particular relevance (page, column, line, fig.):

2

Particular relevance (page, column, line, fig.):

3

Particular relevance (page, column, line, fig.):

4

Particular relevance (page, column, line, fig.):

5

Particular relevance (page, column, line, fig.):

6

Particular relevance (page, column, line, fig.):

Continued on additional sheet ☐

B. Other evidence

Continued on additional sheet ☐

Opponent's reference XX

X. Payment of the opposition fee is made

- as indicated in the enclosed voucher for payment of fees and costs (EPO Form 1010) ☐
- via EPO Online Services ☐

XI. List of documents

Enclosure No.

0 Form for notice of opposition ☒

1 Facts (see VII.) ☒

2 Copies of documents presented as evidence (see IX.)

a Publications ☐

b Other documents ☐

3 Signed authorisation(s) (see IV.) ☐

4 Voucher for payment of fees and costs (see X.) ☐

5 Additional sheet(s) ☐ Number of sheets ☐

6 Other ☐

Please specify here:

XII. Signature of opponent or representative

Place

Date

Signature

Name (block capitals)

In case of legal persons, signatory's position within company

Opponent's reference XX

EXAMINATION COMMITTEE II

Candidate No.

Paper C 2013 - Marking Sheet

Category	Maximum possible	Marks awarded	
		Marker	Marker
Use of information	43	37	39
Argumentation	57	43	44
Total	100	80	83

Examination Committee II agrees on 82 marks and recommends the following grade to the Examination Board:

[X] PASS (50-100)

[ ] COMPENSABLE FAIL (45-49)

[ ] FAIL (0-44)

27 June 2013

Chairman of Examination Committee II