

Takanori Abe reviews the litigation in Germany over Nichia's patent for a white LED

ABE & Partners

Osaka

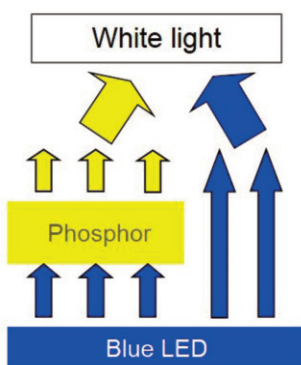


Takanori Abe¹

Note: the author acts for Nichia in connection with this matter

Since it was invented by Thomas Edison in 1879, the incandescent filament lamp had played the leading part in the illumination field for more than a century. However, in the 1990s, Nichia Corporation made a breakthrough by succeeding in the practical use and mass-production of blue light emitting diode (LED) for the first time in the world and achieved a paradigm shift in the illumination field by the practical use and mass production of white LED.

The Nobel Prize in Physics 2014 was awarded "for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources". This case is about the essential patent for the white LED.



The invention

European patent 936 682 covers a light emitting device comprising a light-emitting component. The device comprises a light-emitting semiconductor component and a phosphor which is capable of converting the light emitted by the light-emitting component to light of a different wavelength.

Conventional LEDs had several technical problems: white light of the desired tone had not been obtained; the fluorescent material might deteriorate, leading to colour tone deviation and darkening of the material resulting in lowered efficiency of extracting light.

The '682 patent resolved the technical problems by the light emitting device having the following features: it comprises a gallium nitride based compound semiconductor taking the shape of a blue LED. Located in direct or indirect contact with the diode is the phosphor, which is capable of absorbing a part of the light emitted by the diode and emitting light of a wavelength different from that of the absorbed light.

The main emission peak, the maximum light emission of the diode, is in a relatively short wavelength range from 400 to 530 nm, in the region of visible light. In terms of a fluorescent material, the phosphor comprises an yttrium aluminum garnet activated by the element cerium (Ce), a rare earth metal, which partly absorbs the light emitted by the LED and emits light of a longer wavelength (especially yellow light). The additive mixture of the light emissions in the blue and yellow spectrum results in white light.

German Federal Patent Court (Bundespatentgericht)

Everlight Electronics Co Ltd, a Taiwanese corporation, filed a nullity lawsuit against the '682 patent. On September 24 2014, German Federal Patent Court (FPC) found the patent invalid, reasoning as follows:

(1) Prior public use

The datasheet "White-News (COB-Technologie) 02/1995" by Wustlich GmbH indicates the possible generation of white LED light from a blue gallium nitride chip and the phosphor L175 (yttrium aluminate), and discloses a light emitting device of claim 1 in a novelty destroying manner.

The datasheet was made available to the public when it was transmitted as an enclosure to a letter to Brose GmbH of September 28 1995. Both documents were

received and signed off by the Brose employee Schroeder together with various samples of a light well element fitted with LEDs. These statements by witness Schroeder were corroborated by witness Wustlich, whose testimony is plausible in this respect, and by witnesses Bähr, the Wustlich production manager at the time, and witness Menden who was interested in the LEDs offered by Wustlich.

Upon delivery of the datasheet the patent's technical teaching was made available to an unlimited number of persons. There is no evidence of any confidentiality obligation.

(2) Inventive step

Claim 1 of the patent lacks inventive step by the published Japanese application Hei 5-152609 (D2) combined with the published European patent application 209 942 (D17).

D2 describes a light emitting device which discloses all features of claim 1 with the exception of an explicit definition of the phosphor. In particular, D2 teaches the skilled person to encase a GaN LED chip in a synthetic resin that is provided with a fluorescent phosphor for converting the wavelength of the light emitted by the GaN LED chip.

Thus, D2 supplies the skilled person with the general suggestion of selecting the phosphor in accordance with the intended colour of the LED to be provided, and the suggestion to look for a phosphor suitable to generate white light by way of additive mixing of colours with the blue-violet light of the GaN LED chip.

The skilled person seeking suitable phosphors will also look into the field of mercury vapour lamps as known to him/her. A low pressure mercury vapour discharge lamp in the shape of a compact low-energy lamp is publicly known by D17.

D17 teaches the skilled person that with a phosphor based on a cerium-doped yttrium aluminum garnet, light in the UV, violet and blue range can be efficiently converted to yellow light. These advantages encourage the skilled person, proceeding on the basis of D2, to also contemplate D17 and to use the garnet

fluorescent material described therein for the same purpose – colour conversion and mixing – also in the LED disclosed in D2.

The phosphors used in fluorescent lamps have been researched thoroughly for the properties relevant for light conversion and lighting technology and are well known to the skilled person; thus, by simple experiments and comparison with the documented properties of the phosphors, he/she can find among them the most suitable phosphors.

Nichia appealed to the German Federal Court of Justice (Bundesgerichtshof, FCJ). Our firm supported Nichia.

German Federal Court of Justice (Bundesgerichtshof)

On August 16 2016, FCJ (Presiding Judge Meier-Beck) agreed with Nichia's argument mostly, and amended the FPC's judgment, reasoning as follows:

(1) Prior public use

There are specific indications which give rise to doubt as to the facts having been correctly established; these concern the content of the datasheet on which the FPC strongly relied, as well as the evaluation of the credibility of the testimony of witness Wustlich and his credibility as a witness.

As is shown by the testimony of witness Otto who worked for Osram at the time, which the FPC found credible, witness Wustlich cannot possibly have received the L175 datasheet on February 9 1995 as it was created by a newly hired Osram employee and was not available until the beginning of 1996. The FPC further doubted that witness Wustlich in February 1995 had a source for blue gallium nitride chips.

However, this is irreconcilable with the fact that the FPC nevertheless finds it credible when witness Wustlich states that he received the L175 phosphor from Osram in February 1995 and thereafter experimented with it. Witness Wustlich expressly stated that he received the L175 product together with the datasheet and signed for the goods on the datasheet. Moreover, the experiments cannot have

involved gallium nitride chips if no such chips were available to Wustlich.

The FPC failed to consider that the Schroeder testimony is based on the mere assumption that the "White-News (COB-Technologie) 02/1995" datasheet actually dates from February 1995.

Witness Wustlich explained that business relations had been in place between him and Everlight for a long time, in particular a consultancy agreement² until 2015. However the FPC did not address these statements in the judgment.

It cannot be ruled out that witness Wustlich received blue gallium nitride chips from Cree, that the witness could have written the note acknowledging receipt of the L175 datasheet on the datasheet later, confusing the datasheet actually received in February 1995 with that of a later delivery.

(2) Inventive step

The skilled person proceeding on the basis of D2 had no motivation to consider the phosphor disclosed in D17 and the US patent specification 3 699 478 (D3).

D2 offers no explicit motivation to that effect. D2 does not inform the reader that such a phosphor exists in the first place, or the direction in which it should reasonably be searched.

These considerations will not encourage the skilled person to use the phosphor of D17 or D3 without an inventive step. The mere fact that a compound and its properties are well known is not sufficient to render its use not inventive in an area related to the original field of application. The important aspect is whether the prior art provided the skilled person with a suggestion to take steps described therein and apply them to a compound or, as in the present case, a device of the prior art.

It may be important whether these measures involved a reasonable expectation of success in solving the given technical problem. It cannot be presumed that for reason of the known properties of the phosphors for fluorescent lamps, the skilled person "by simple experiments"

or "comparison with the documented properties of the phosphors" could find out that a particular compound out of this group was suitable.

The documented properties of the phosphors could offer no or at best limited information about the fulfilment of the LED specific requirements, and the experiments had to cover the long-term characteristics of the LED phosphor combinations and thus may have been simple but definitely not uncomplicated. There was a plurality of potentially suitable organic as well as inorganic luminescent materials. No suggestions to exclude organic phosphors, which would have narrowed down the selection of suitable phosphors from the beginning, were found.

The skilled person contemplating a particular phosphor from a different area of application for the LED had to consider a number of parameters. The skilled person could not expect to easily find a phosphor which fulfilled the various requirements for use with a LED equally optimally.

Practical tips

The court of appeal must base its hearing and decision on the facts established by the court of first instance, unless specific indications give rise to doubts as to the court having correctly or completely established the facts relevant for its decision and therefore mandate a new fact finding process (Section 117 PatG in conjunction with Section 529(1) No 1 ZPO). This case is such an exceptional case.

Moreover, as the witness Wustlich had died after the testimony at the FPC and could not be reexamined, the FCJ relied on the hearing record of the witness at the FPC and made its determinations on the alleged prior public use. There are three technical judges and two legal judges at the FPC. However, not only the technical judges but also the legal judges were not accustomed to the fact-finding process which led to the erroneous fact finding.

Presiding Judge Meier-Beck stated as follows when he provided the preliminary opinion³ at the beginning of the hearing and cautioned arbitrary selection and evaluation of the witness testimony: "Al-

though witness Wustlich had testified various untruthful things, the FPC found only the part of his testimony as credible and made conclusion with many other testimonies.” The 10th Civil Division of the FCJ is specialised in the patent cases, but corrected the erroneous fact finding appropriately.

Presiding Judge Meier-Beck has established the standard of motivation when assessing the inventive step, stating when he provided the preliminary opinion at the beginning of the hearing: “Whether we can affirm that skilled person will use D2 LED and D17 phosphor and that skilled person can find an appropriate phosphor by simple experiments is today’s issue which we have used most of our time in our preparation. The critical issue is whether there were sufficient reasoning and motivation.”

The difference between the FPC and the FCJ seems to derive from the difference in how to view motivation. “Reasonable expectation of success” seems to be the similar concept of that in the context of obvious to try under the US case law. It could be evaluated that FCJ excluded

hindsight when assessing the inventive step of the invention which combines different technologies of LED and phosphor⁴.

Statistics shows the FPC invalidates the patents completely in 49% of cases, invalidates the patent partially in 33%, and maintains the validity of the patent in 18%. The FCJ is more patent friendly. The patentees should not give up appealing to the FCJ when the FPC invalidates their patent as there is a good chance to overturn the FPC judgment as in this case⁵. The plaintiff in the nullity action should be aware of the risk that the FCJ may overturn the FPC invalidity decision.

Takanori Abe is a partner of Abe & Partners in Osaka

¹ I thank Mr. Katsuyuki Akutagawa, Chief Legal and IP Officer, Board Director, Nichia Corporation and Mr. Hironori Takagi, Deputy Executive General Manager, Legal & IP Division, Nichia Corporation, for the permission to publish this article.

² Witness Mr. Wustlich had received 2

million Euro from Everlight for his effort to attempt to invalidate Nichia’s patents.

³ In the German patent case, it is common for the court to provide the preliminary opinion in the beginning of the hearing. It is to provide the last chance to the losing party (Judge Grabinsky, FCJ, at *International Symposium on Patent Litigation in Europe and Japan 2012*). Thus, the tendency is that the attorney for potential losing party will present more than the attorney for potential winning party to try to change the judges’ view. It is rare that the court change their preliminary opinion. The preliminary opinion is relatively clear in the Dusseldorf District Court and Dusseldorf Appeal Court. Judge Crummenerl of Dusseldorf District Court and Judge Kuhnen of Dusseldorf Appeal Court provided a clear preliminary opinion whereas Presiding Judge Meier-Beck of FCJ tends not provide a very clear preliminary opinion which party should win. However, some FCJ lawyer can read Presiding Judge Meier-Beck’s mind by his subtle expression.

⁴ See Junji Miyahara, *White Light Innovation*, 234 (2005).

⁵ In another case our firm supported Nichia, the FCJ overturned the FPC judgment.