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EUROPEAN QUALIFYING EXAMINATION 2024

Paper D2

This paper comprises:

Part II: Legal Opinion

Questions 1-4 (45 marks)

[001] Today is 5 March 2024. Our company Xeracno, based in Switzerland, is engaged in the business of spider silk, a material used to manufacture high-tech textile fabrics. Mr Wool is the director of the R&D department and in charge of IP matters there. Smart SA is a patent law firm representing us before the EPO.

[002] Harvesting spider silk on farms is beset with considerable difficulties in view of the spiders' innate cannibalistic instinct: when raised under standard conditions, farmed spiders kill and eat each other, and very little silk can be harvested. Disclosed more than 20 years ago, a first workaround for the problem of spider cannibalism was to raise spiders in a controlled atmosphere containing acetylene. However, acetylene is a highly inflammable gas, and its use on spider farms is so dangerous that it has been forbidden.

[003] An improved solution to the above-mentioned problem of cannibalism was more recently provided by our competitor Prosilk. On 16 January 2019, Prosilk filed European patent application EP-P1 without claiming any priority. In the description of EP-P1, it is explained that the cannibalistic instinct of spiders of the species *Aranea aurata* (hereinafter AA) is inhibited by CO_2 and that acetylene and CO_2 are completely different gases, e.g. in that CO_2 is not inflammable and there are no safety restrictions on its use on spider farms. However, a high concentration of CO_2 also has a negative effect on the spiders' overall silk production in that the farm's harvest yield increases up to a maximum and then decreases as a function of the concentration of CO_2. This is exemplified in the description of EP-P1, which discloses an example of the claimed method where the maximum harvest yield is achieved at 6% CO_2, and a comparative example, in which the concentration of CO_2 is at 16%, where the resulting harvest yield is significantly lower than at any CO_2 concentration within the claimed range. EP-P1 claims a method for harvesting spider silk, said method comprising raising spiders of the species AA in an atmosphere containing 3% to 9% CO_2.

[004] Prosilk conducted more research and found that the above-mentioned effects of CO_2 on spiders are not specific to AA, but are similar for all spider species. On 14 January 2020 Prosilk filed another European patent application, namely EP-P2, claiming priority from EP-P1. The description of EP-P2 contains EP-P1 in its entirety and further teaches that the method of EP-P1 can be used with any other spider species and over a broader range of CO_2 concentrations. The description of EP-P2 discloses a method for harvesting spider silk, said method comprising raising spiders in an atmosphere containing from 3% to 13% CO_2. EP-P2 has a single claim directed to:

- a method for harvesting spider silk, said method comprising raising spiders in an atmosphere containing from 3% to 13% CO_2.

[005] Prosilk's research later identified the species *Aranea fortis* (hereinafter AF), whose harvest yield reaches a maximum at 19% CO_2, thereby enabling methods with much higher CO_2 concentrations and therefore better repression of cannibalism. On 15 May 2020 Prosilk filed a further European patent application, namely EP-P3, claiming priority from EP-P2. The description of EP-P3 contains EP-P2 in its entirety and additionally discloses a method for harvesting spider silk comprising raising spiders in an atmosphere containing from 3% to 26% CO_2. It further includes an exemplary embodiment of the species AF with its maximum harvest yield at 19% CO_2. EP-P3 has a single claim directed to:

- a method for harvesting spider silk, said method comprising raising spiders in an atmosphere containing from 3% to 26% CO_2.

[006] EP-P1 was withdrawn after publication. EP-P2 was granted without any amendment and the mention of the grant was published on 2 August 2023; since then renewal fees have been paid in Germany and in Switzerland only. EP-P3 is pending.

[007] After EP-P1 and EP-P2 were published, we conducted some additional research with spiders. We found that spiders of the AA species surprisingly show a further improved silk production when raised in an atmosphere containing from 3% to 26% CO_2 and from 1% to 2% of nitrogen protoxide (N_2O). N_2O is a gas with no safety restrictions. On 15 February 2021, Smart SA therefore filed a European patent application, namely EP-AA+, in the name of Xeracno, which discloses and claims:

- in claim 1, a method for harvesting spider silk, said method comprising raising spiders AA in an atmosphere containing from 3% to 26% CO_2, and from 1% to 2% N_2O;

- in claim 2, dependent on claim 1, said method wherein the CO_2 concentration is 16%.

[008] In parallel, we identified another method for harvesting spiders' silk that surprisingly increases the spiders' lifespan. This method comprises feeding spiders with tiger mosquitos. On 14 April 2021, Smart SA filed a PCT patent application in English, namely PCT-TM+, in the name of Xeracno at the EPO as receiving office. It discloses and claims:

- in claim 1, a method for harvesting spider silk, said method comprising feeding spiders with tiger mosquitos;

- in independent claim 2, the spider silk obtained by the method of claim 1.

[009] In accordance with our instructions of September 2023, Smart SA took the steps required for a valid national phase entry in the United States of America only. A notification of loss of rights was sent to us on 14 December 2023 in relation to the missed deadline for entry into the Euro-PCT regional phase. On 4 March 2024, Mr Wool realised that his internal instructions of 19 December 2023 to forward the notification of loss of rights to Smart SA and to instruct them to additionally enter the Euro-PCT regional phase had not been carried out, despite all due care having been taken.

[010] Also on 4 March 2024, i.e. yesterday, Mr Wool called Smart SA to enquire about the situation. In addition, he wanted to know why this notification had been sent to Xeracno in the first place since Smart SA had received all the communications during the international phase. He also asked Smart SA to get in touch with the EPO as soon as possible because Xeracno would definitely want to enter the European phase with PCT-TM+.

[011] EP-AA+ is still pending. Since 2022, we have been harvesting spider silk by raising AA spiders in an atmosphere containing CO_2 at an optimum concentration of 16% and 1% N_2O on our main farm in Spiez, Switzerland.

[012] Since September 2023, Prosilk has been harvesting spider silk on several farms in Europe, including a main farm in Germany, by raising spiders of the species AF in an atmosphere containing 19% CO_2.

[013] We are now harvesting spider silk on our new farm in Colorado (USA), where AA spiders are raised in an atmosphere containing CO_2 at a concentration of 8% and are fed with tiger mosquitos. We are also planning to use the same harvesting method at a farm in Turkey in the near future, in order to better serve eastern and southern European countries.

[014] Meanwhile, one of our employees has been approached by Prosilk to join them and launch a new farm in Bosnia-Herzegovina, where spider silk will be harvested by raising spiders of the species AF in an atmosphere containing 19% CO_2, and feeding them with tiger mosquitos.

1. Outline the patent situation as it currently stands for the claims of the following:
   (a) EP-P2
   (b) EP-P3
   (c) EP-AA+
   (d) PCT-TM+

2. What can Xeracno do to improve its patent portfolio in order to prevent Prosilk from harvesting spider silk in Germany and Bosnia-Herzegovina and selling silk in Europe?

3. In view of patent EP-P2, can Prosilk prevent Xeracno from freely
   (a) harvesting spider silk in Spiez, Switzerland?
   (b) harvesting spider silk in Turkey?
   (c) harvesting spider silk in Colorado (USA)?
   (d) importing the spider silk harvested in Turkey or Colorado into Switzerland and selling it there?

4. In view of pending patent application EP-P3, can Xeracno expect Prosilk to prevent them from freely
   (a) harvesting spider silk in Spiez, Switzerland?
   (b) harvesting spider silk in Turkey?
   (c) harvesting spider silk in Colorado (USA)?
   (d) importing the spider silk harvested in Turkey or Colorado into Switzerland and selling it there?