

## **SMALL AND MEDIUM -SIZED ENTERPRISES AND INTELLECTUAL PROPERTY**

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Theme II:  
IMPROVEMENT THROUGH IPR AT BUSINESS LEVEL; SUPPORT INSTITUTIONS,  
BEST PRACTICE

**Use of Patents and Utility Models for Enhancing the Competitiveness of SMEs**

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This paper will:

- Provide a short presentation of the Danish Invention Centre at the Danish Technological Institute
- Bring an introduction to the subject
- Present some cost/benefit reflections
- Present the most important benefits of IPR from a businessman's point of view
- Discuss the problem of the costs
- Present a number of possible strategies and their pros and cons
- Finally bring a conclusion to the subject

## **Danish Invention Centre - a short description**

This paper represents the viewpoint of the Danish Invention Centre (DIC) at the Danish Technological Institute in Copenhagen.

DIC is a private, not for profit institution set up in 1972 with the aim of promoting the utilisation of inventions from private inventors, universities and companies. DIC offers counselling and active involvement in the technology transfer process. The major part of DIC's budget comes from national schemes.

In DIC we believe that creativity can be learned, and on market conditions we provide training in the various aspects of creativity ranging from creativity in administration, management and negotiation to hard-core creative inventive techniques.

Another source of income is various international projects, which DIC runs either alone or in collaboration with sister organisations mainly in Europe. DIC also assists in setting up infrastructures related to technology transfer and business start-up in developing countries and in countries that reorganise their infrastructure.

Today, DIC holds a staff of 20. DIC provides advisory service to private individuals, scientists and companies in more than 3000 cases per year. During the last 5 years DIC has negotiated and mediated the signing of more than 150 agreements on commercialisation of inventions and research results, mainly patent license contracts.

DIC is based in Denmark, which has 5.5 million inhabitants, 11 universities and approx. 5,000 scientists within natural, technical, agricultural, medical and veterinary science.

The industrial sector is dominated by small enterprises; Denmark has less than 100 companies employing more than 500 people. Some Danish companies are highly specialised and hold a fair share of the world market within very narrow niches (e.g., hearing aids, and insulin).

## **Introduction**

IPR, and in particular patents and utility models, have many implications, e.g. legal, technical, administrative, financial etc.

If you ask the typical Managing Director or the Marketing Manager of an enterprise about his view on IPR he will hardly be interested in the legal or technical aspects of IPR, no matter how interesting they are. He will anticipate that a well functioning system has been provided and that others will take care of solving the legal and administrative problems.

His answer will most probably be an answer to the question: What is it for my business?

This paper will try to explain - from a businessman's point of view - how the strategic use of patents and utility models can improve the competitiveness of even smaller companies.

## Some cost/benefit reflections

Whenever a businessman considers investing his company's money he will make a cost/benefit analysis asking the following questions:

- What will be the benefits for my business on short, medium and long term?
- What will it cost on short, medium and long term?

The answers to these two questions will provide information on the profitability of the venture and on the expected cash flow situation. It will also indicate how the matters should be considered as an element in the company's long term strategy.

## The benefits

Most people know that a holder of a patent has the right to stop others from producing and selling a product covered by the patent. And this is of course the most important issue when a businessman asks: What is in the patent system for my business?

There are numerous examples of how large enterprises have benefited from the patent system in taking out patents in most countries in the world for their breakthrough technologies. One well-known example is Xerox who made a revolution when they introduced their new photocopying technology and dominated the market for more than a decade. In many countries the word "Xerox" is even used instead of "photocopy".

But is it possible even for SMEs who do not develop breakthrough technologies and do not have the same financial strength or IPR competence as a large enterprise to make use of the patent system?

To a large extent the answer is Yes.

If an SME decides to use the patent system this potentially (at least) implies:

- A) Market position improvement on a local market
- B) Market position improvement on the global market
- C) Improving the competence of the enterprise
- D) Opening the door for licensing and internationalisation

This will be discussed below:

### *A) Market position improvement on a local market*

In many cases SMEs develop novel technologies – either in the stepwise improvement of an existing product – or as an outcome of the development of a new product to meet the changing demands of the market. In most cases these new products will address a regional or national market – not a world market.

In this case it may be in the interest of the company to improve its position on the market by excluding competitors from simply copying the technology. That will be possible by taking out a national patent or utility model. National patenting is not very expensive. In most cases the applicant can write the application himself with some assistance from the patent office – or in more complicated cases from a patent agent. And should a competitor start infringing the patent, the patent holder can take him to court in his own country.

### *B) Market position improvement on the global market*

In some cases SMEs develop breakthrough technologies that potentially address the world market.

In such cases international patenting is vital. But unfortunately international patenting is expensive. It both takes a lot of time – sleepless nights of speculations in order to make the right decisions – and a lot of money. Therefore it is important for the SME to enter alliances with organisations, companies or individuals who can provide financial resources and professional advice in international patenting matters.

### *C) Improving the competence of the enterprise*

For many SMEs the patents system is a new and unknown tool. If you buy a new tool, then it takes time and often money to learn how to use it. So you have to invest in it before you can really benefit from it. This is also the case for the patents system.

Every SME has to make investments. In equipment, in staff training, in product development and in developing a competence in its field of business. If the enterprise is active in developing technologies, then it may be worthwhile to invest in gaining competence in IPR matters. And here the best way is learning by doing.

A company that suddenly develops a valuable invention for an international market is in a much better position if it has some experience in how to use the patents system than if it has to enter a totally new world. And the previous experience may well be gained through national patenting of minor product improvements for local markets.

### *D) Opening the door for licensing and internationalisation*

Today technology travels internationally. Know-how and patent licenses have become a common way of accessing global markets, and many of today's advanced companies are looking for partners in those parts of the world where they do not have the strength or the competence to access the market themselves.

In many cases such companies are looking for partners who have a proven competence in IPR matters. They may therefore prefer an active and IPR competent SME to a larger company without that competence.

A contact between two companies which has been established on the basis of a patent or a utility model may lead to very important strategic decisions, e.g. licensing, cross licensing, production sharing and a common marketing effort on selected markets.

*Patents and utility models as marketing tools*

Although all of these benefits are important there is hardly any doubt that the typical business manager will focus on

- A) Market position improvement on a local market
- B) Market position improvement on the global market

His very simplified consideration may lead him to conclude that ***a patent or a utility model is a marketing tool!***

If we agree to this somewhat simplified conclusion, at least we are now speaking a business man's language. He knows what a marketing tool is, and he can evaluate it as such.

Marketing people – even in SMEs – are trained in predicting the sales potential, turnover and generated profit in various market scenarios, and they will be able to estimate the outcome of various “what-if” situations.

Considering the successful use of the patents system is the same as asking:

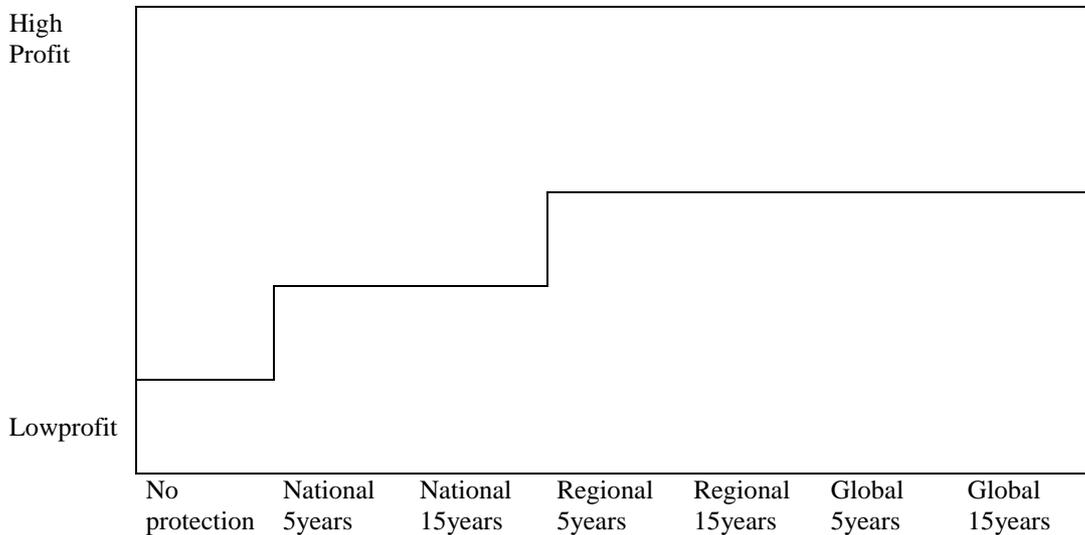
- What if we were the only ones on the market in this country for the next 5 years? (anticipating that the technology under all circumstances has a short market lifetime)
- What if we were the only ones on the market in this country for the next 15 years? (anticipating a strong national patent and a long market lifetime)
- What if we were the only ones on the market in our part of the world for the next 5 years?
- What if we were the only ones on the market in our part of the world for the next 15 years?
- What if we were the only ones on the world market for the next 5 years?
- What if we were the only ones on the world market for the next 15 years?

he answer to these questions will depend a lot on

- The strength of the company (a strong company can more easily market on distant markets)
- The accessibility of distant markets (Information Technology related markets are easier to access than e.g. the market for concrete elements)

In most cases, however, SMEs will not be able to profit from distant markets, so the answers to the questions might be as illustrated below:

Total generated profit  
as a function of various protection scenarios



It appears that the company estimates that it will be able to generate a certain extra profit through a better market position up to a certain level. But the figure also shows that the company expects the profit to be the same whether they are alone on the market in their region or in the whole world. So a patent protection in distant countries will not change the situation (at least if a patent is considered a marketing tool only).

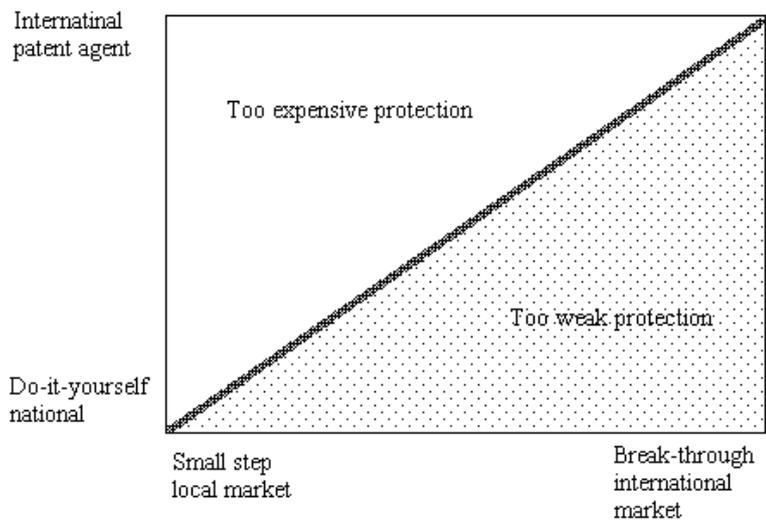
### The costs

The costs of applying for and maintaining a patent or a utility model is the most serious obstacle for an extensive use of the patent system. And the costs are both related to the necessary time involved in the process and to the expenses. The expenses are mainly seen as the obstacle.

The problem is that true information about the expenses is hard to get – in particular in the case of international patenting. But roughly, you get what you pay for. The challenge is to find out exactly what you need, and there is a huge spectrum of options.

In the one end of the spectrum you will find a patent application written by the inventor himself, possibly using free of charge assistance from the patent office or other assisting entity, filed in the national patent office only. This solution will initially only cost the filing fee, which in most countries is very moderate. The “overall lifetime expenses” will be moderate, too, because they will be limited to national annual fees.

In the other end of the spectrum, however, you will find extensive international patenting based on patent applications formulated by international experts who easily charge 200-300 US\$ per hour. The basic patent application may be 1/2 cm. thick and count more than 70 patent claims – and with translation costs, filing fees and normally a huge correspondence with foreign patent offices in foreign languages, costs may behave – raising. The below figure provides a rough and simplified illustration of the relevant patent activities (and hence the costs) as a function of the potential of the invention. A combination of the figure illustrating the overall profit potential with this figure which illustrates the overall costs will give an idea as to what sort of patent activities and costs can be justified.



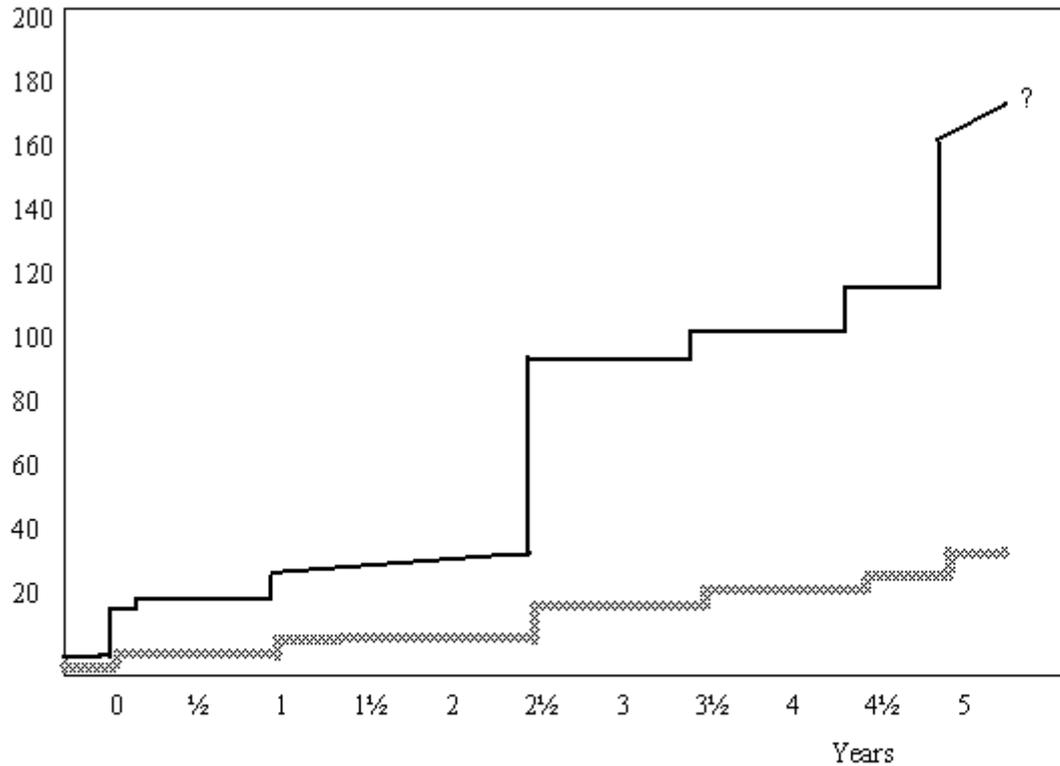
*Some cash-flow considerations*

The above considerations only deal with the total profit generated and the total cost over the lifetime of the patent. But what if all the costs have to be paid at an early stage and the profit only will materialise after many years? That is a situation which will be feared by most managers, because that means that they have to take up loans, which in most cases are either very expensive or simply impossible.

Therefore it is very important to know at what time the different expenditure items have to be paid.

Taking the most serious case, an international patenting, the following diagram can illustrate two typical cases:

\*1000US\$



Patent costs over time

A relatively inexpensive case    .....

A relatively expensive case        \_\_\_\_\_

It is worth noticing the very high step after 2½ years. It is caused by the costs of the patent entering the national phase in a number of countries. If the PCT system had not been used, then this expenditure had to be paid already after one year. The postponing of this expenditure has a dramatic effect for SMEs who have limited cash-flow reserves.

When the above figure of a specific case is studied and compared with the projected generated profit as a function of the protection, then the best patent strategy in that specific case can be chosen.

## Formulating an overall patent strategy

The above considerations are based on the conception of the patent as a marketing tool. But people tend to judge the patent system from various angles – leading to the most different overall strategies. The table shown below will illustrate some of these strategies

Overall strategy	Example of patentee	Remarks
Every patentable invention will be patented, both nationally and internationally	Contract research organisations 10 years ago Some large companies	The reason for this strategy may be either a lack of marketing competence – dictated by the wish of pretending high-tech competence, regardless of the price
Every patentable invention will be patented. Only those who show a potential for creating a substantial profit will be followed up internationally	Many technology based large and medium sized companies	Filing a patent application for every patentable invention can be seen as a sort of insurance. When serious costs occur, then a cost-benefit analysis will decide the future steps
Patent applications will be filed in selected cases, and only if there is a documentation for the profitability. If forecasts prove to be too optimistic, then the application will be withdrawn before it is made public (15 months)	Many technology based SMEs	Probably the most cost-efficient way of using the patent system. But there is a danger of losing a patent right if predictions were too negative.
No patents are filed, but the patent literature is being carefully studied in order to prevent from infringing existing rights. Occasionally prophylactic publication takes place in order to prevent others from protecting.	Some companies, both large and small, often within electronics	The argument is often that in some branches technology develops so fast, that it is outdated before a patent is issued. It is a cheap but dangerous strategy
No patents are filed, and the patent literature is not being used	Many SMEs	A strategy based on ignorance. Many good possibilities remain unexplored, and the company is in danger of being put out of business by patent active competitors

## Conclusion

Patents and utility models can be very powerful tools for enhancing the competitiveness of SMEs, but they must be used in a very careful way. Every company, even SMEs, should consider carefully how they will use – or perhaps not use – IPR.

Many SMEs have clear ideas or strategies regarding financing, marketing and product development. These issues are considered top management matters. Unfortunately, however, many SMEs do not have an IPR strategy and the whole issue is not considered relevant for top management decision. At best it is left to the development department at a low budget and low attention. At worst it is totally neglected.

This is aptly shown in numerous cases which show that a carefully considered IPR strategy can dramatically improve the competitiveness of even very small companies. Two examples are shown in the annexes.

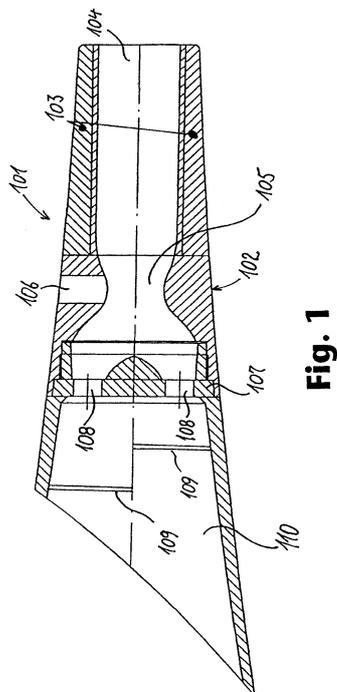
The IPR strategy of an enterprise can be based on many philosophies, as illustrated above. In my view the soundest philosophy is closely related to the business manager's – perhaps simplified – view that a patent or a utility model is a marketing tool.

It would be a good starting point for formulating an intellectual property development strategy if SME managers would appreciate patents, utility models and other IPRs as marketing instruments. The more detailed details may then follow during the later steps.

## Annex 1

Example of a successful patent protection of a product based on a simple technology. The abstract informs us about the invention:

A pourer (101) for simultaneously pouring a liquid from a container and mixing air into the liquid. The pourer comprises an elongated annular body (102) which defines an outer surface having a part (103) which is adapted to be fitted into an opening of the container. The annular body defines a longitudinally extending through-going channel (104) and has an air intake opening (106) extending transversely to the channel and penetrating the body, so as to allow air to be sucked into the channel when liquid is flowing from the container through the channel. The channel defines a contraction (105) near the air intake opening, so as to generate a low pressure in the area of the contraction when liquid is flowing through the channel and thereby assist in sucking air into the channel through the air intake opening. A screen (107) with perforations (108) may be provided inside the channel (104).



**Fig. 1**



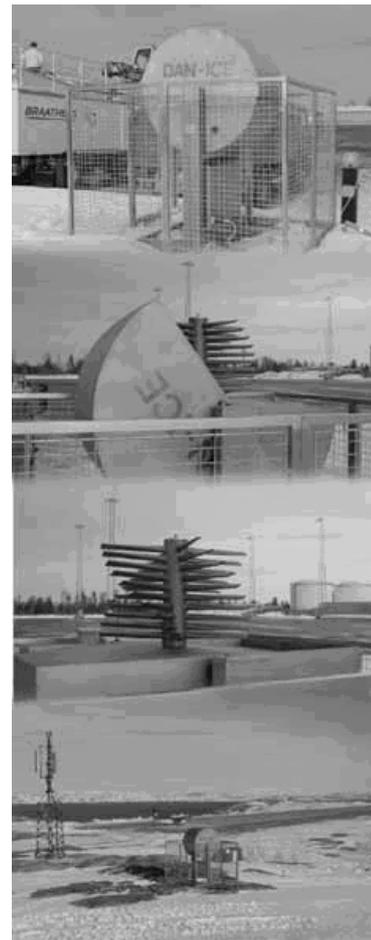
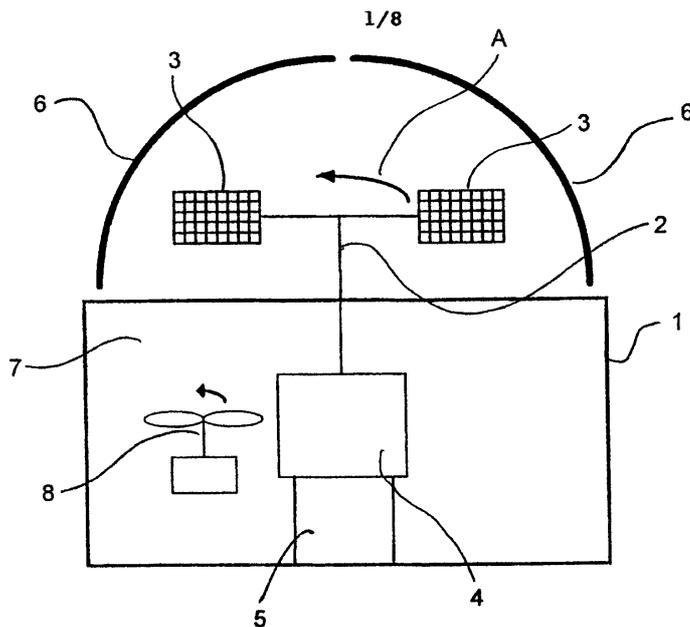
The product which can be seen on <http://uk.livingfunction.com/> was invented by a plumber. With the assistance of DIC it was licensed to an SME. A comprehensive patent protection helped the company protect its market, and it now makes a million \$-worldwide business.

## Annex 2

Example of a medium-complex technology. An ice detector for airports invented by an air pilot became, with the assistance of DIC, the basis for a successful business start-up, and the young company's first product was brought to the international market protected by a comprehensive patent.

The abstract informs us about the invention:

An apparatus and a method for local measurement of an icing factor for atmospheric air containing supercooled water, and wherein the apparatus comprises at least one surface element made of a material suitable for ice in atmospheric air to freeze on, and said surface element having a predetermined surface area, and wherein the apparatus further comprises means that are configured for moving the surface element through the atmospheric air at a predetermined rate and for a predetermined period of time, and wherein means are also provided that are configured for measuring the thickness or mass of the ice frozen fast onto the surface element after the predetermined time interval during which the surface element is moved through the atmospheric air.



More details available on [www.dan-ice.dk](http://www.dan-ice.dk)

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