

# REDUCTION OF CONCEPTION/CREATION RISK FACTORS OF INTELLECTUAL PROPERTY IN INDUSTRIAL ENGINEERING

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**Abstract:** *This paper represents a study on the influence factors of the product design process, within industrial companies. There have been identified the main factors that influence the occurrence of conception/creation risks of intellectual property and it has been shown by some formula, that these factors have a high negative impact on the product design process and a case study has been taken into account on the analysis of design/creative risk and forgery of a technical project.*

**Key words:** *risk, influence, factors, creation, intellectual property.*

## 1. Introduction

In industrial engineering, design processes are those creation processes performed by the design engineers, which are characterized by creation of sketches/plans, projects, depending on customer's requirements, which in the end, are transformed into products.

The design process can be achieved in several ways, such as:

- graphic or text description;
- drawings/sketches/plans;
- virtual or real 3D-models.

In QMS processes some conception/creation risks of intellectual property that may influence design processes have been identified. These risks are [1]:

- a) risk of failure to protect inventions in design/research/development;
- b) risk of failure to protect utility models in design/research/development;

c) risk of failure to protect industrial drawings/models in design/research/development;

d) risk of failure to protect topographies of integrated circuits in design/research/development;

e) risk of counterfeiting;

f) risk of piracy etc.

These conception/creation risks of intellectual property identified in design processes within QMS are influenced by various factors. We have identified two categories of factors relevant to our study, namely:

**A.** *Factors influencing the product design process.*

**B.** *Factors influencing the occurrence of conception/creation risks of intellectual property, identified within the product design process.*

The design process is influenced primarily by the factors of A category, but

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factors of B category may have a negative impact on larger industrial companies. These two categories of factors [2], are represented in parallel, in Table 1.

Table 1

*The two categories of factors that influence the product design process*

PRODUCT DESIGN PROCESSES WITHIN QMS	INTELLECTUAL PROPERTY OF THE INDUSTRIAL COMPANIES
<b>A. FACTORS INFLUENCING THE PRODUCT DESIGN PROCESS</b>	<b>B. FACTORS INFLUENCING THE RISKS OF CONCEPTION/CREATION OF IP, IDENTIFIED IN THE PRODUCT DESIGN PROCESS [1]</b>
<p><b>Depending on project management:</b></p> <ol style="list-style-type: none"> <li>1. The ability of the design engineer to solve the problem;</li> <li>2. The time available for the design of the product;</li> <li>3. Access of the design engineer to the equipment necessary for the product design.</li> </ol> <p><b>Depending on the manufacture management:</b></p> <ol style="list-style-type: none"> <li>1. Product cost;</li> <li>2. Access to materials;</li> <li>3. Access to the equipment and the tools provided.</li> </ol>	<ol style="list-style-type: none"> <li>1. Violation (piracy) of copyright [5] by the company against the market competitor or by the representatives or persons of the competing market against the company;</li> <li>2. Counterfeiting the brand/corporate brand or product/service [6];</li> <li>3. Counterfeiting patented inventions [7];</li> <li>4. Counterfeiting industrial design;</li> <li>5. Counterfeiting utility models [8];</li> <li>6. Counterfeiting drawings - models [4];</li> <li>7. Failure to supervise the market;</li> <li>8. Assignment contracts, license wrongly negotiated;</li> <li>9. Contracts with employees wrongly negotiated;</li> <li>10. Acts of unfair competition of the company against the market competitor or of the market competitor against the company [3].</li> </ol>

## 2. Objectives

The main objectives of our study are: analysis of factors influencing the product design process within SMC and analysis of a case study on the design/creation risks and forgery of a technical project.

## 3. Material and Methods

### 3.1. Analysis of Factors Influencing the Product Design Process within QMS

We will start with the first category of factors, namely:

#### *A. Factors influencing the product design process*

For this category of factors we will make the following notations:

*Ab* - the ability of the Design Engineer to solve the problem;

*Tpp* - the time available for product design;

*Ae* - access of the design engineer to the equipment necessary for product design;

*C* - cost of the product;

*Am* - access to materials;

*Aeu* - access to equipment and machinery;

*Ppr* - product design process.

For the management planning related to the product design process, to be carried out successfully, we propose the following formula:

$$Ppr(MP) = f(Ab + Tpp + Ae + C + Am + Aeu), \quad (1)$$

where:

$Ppr(MP)$  - product design process depending on the influence factors of the project management;

Depending on manufacture management, for the product design process to be carried out successfully, we propose the following formula:

$$Ppr(MF) = f(C + Am + Aeu), \quad (2)$$

where:

$Ppr(MF)$  - product design process depending on influence factors within the manufacture management.

It results that:

$$Ppr = f(MP) + f(MF). \quad (3)$$

**B. Factors influencing the occurrence of conception/creation risks of intellectual property, identified within product design process**

For this category of factors will make the following notations:

$Ida$  - violation (piracy) of copyright;

$Cm$  - counterfeiting trademarks;

$Cib$  - counterfeiting patented inventions;

$Cdi$  - counterfeiting industrial design;

$Cmu$  - counterfeiting utility models;

$Cdm$  - counterfeiting drawings-models;

$Np$  - failure to supervise the market;

$CC/LNG$  - contracts of assignment/license wrongly negotiated;

$Ca$  - contracts with employees wrongly negotiated;

$Acn$  - acts of unfair competition;

$RccPI$  - risk of conception/creation of IP;

$Prcc$  - likelihood of occurrence of IP conception/creation risks.

Since we refer to factors that influence the conception/creation risks of intellectual property within product design process, it results that these factors have a negative influence on the design process so that:

$$RccPI = f(Ida + Cm + Cib + Cdi + Cmu + Cdm + M + Np + Cc/LNG + Ca + Acn). \quad (4)$$

But according to [1]:

$$RccPI = Prcc * Crcc, \quad (5)$$

where:

$RccPI$  - risks of conception/creation of IP;

$Prcc$  - occurrence probability of conception/creation risks;

$Crcc$  - consequences of intellectual property, conception/creation risks.

From a mathematical point of view, the probability that the intellectual property infringement risk becomes reality is of 50%. It is, in fact, the injured party's decision to start or not a recovery process of rights [1]:

$$Prcc(to\_come\_true) = 0.5. \quad (6)$$

It results that:

$$Ppr = f(Ppr) - f(RccPI) = 0.5, \quad (7)$$

where:

$F(RccPI)$  - influence factors of IP conception/creation risks;

$F(Ppr)$  - factors of product design process.

In order to show the negative impact of factors influencing the occurrence of conception/creation risk of intellectual property, identified in the product design process, we will analyse a case study on

the design/creation risks and forgery of a technical project.

In order to preserve data confidentiality, we decided to call the plaintiff company as S.C. ALFA S.R.L. and the defendant as Popescu Ion technician-architect, holder of I.S. Project and a family of project beneficiaries.

#### 4. Case Study on the Risks of Conception/Creation of Intellectual Property

This case study is based on IP rights infringement, involving the "*appropriation without right of authorship of a work, provided and punished by article 141 of Law No. 8/1996*" [5].

According to the criminal investigation authorities, the objectives of this case are:

1. To determine whether the project no. x, designer SC ALFA SRL, respectively the project no. y, independent designer Ion Popescu, are identical;

2. To determine the identity of projects in terms of general concept;

3. To determine the possibility of elaborating projects no. x and no. y according to the magazine "Architecture";

4. To determine whether the project no. x is based on the project presented in the magazine;

5. In the event that the project no. x, which belongs to S.C. ALFA S.R.L. is based on the project presented in the magazine, to ascertain whether the designer, may be the copyright holder;

6. To determine whether the project no. y belonging to designer Popescu Ion, is based on the project presented in the magazine;

7. To determine if the facade pictures are the same according to the magazine presented by the beneficiary.

In order to be comparable, we have shown in Figure 1, the project no. x, and in Figure 2 project no. y.

According to the hypotheses presented, as well as the two projects, original and copy, there will be analysed all objectives and will be drawn the final conclusions.

#### 5. Results Obtained Following the Analysis of the Case Study

As regards the first objective, the two projects presented in Figure 1, Figure 2 respectively, are not identical, are quasi-identical, enough to observe the borrowing.

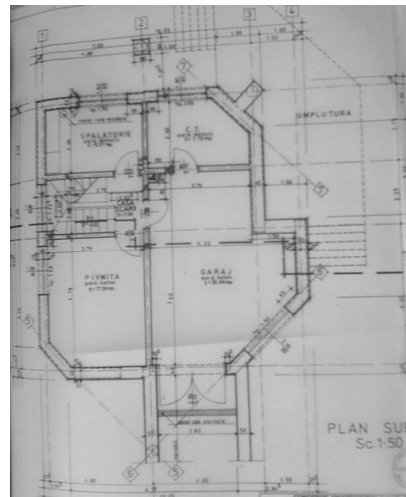


Fig. 1. The original project "Architecture" [1]

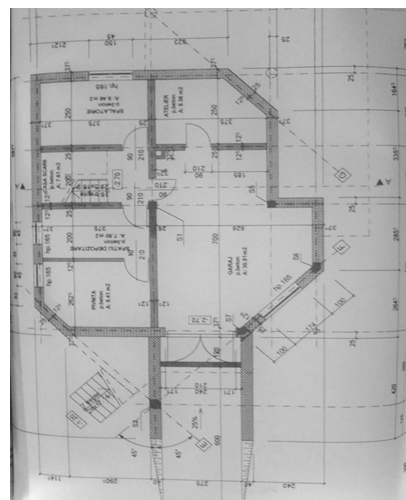


Fig. 2. Copy, author Popescu Ion [1]

According to objective 2, in terms of the general concept that refers to size, function and location of the parts of the project, the analysis found that the two projects are almost identical, with small changes: in project no. x there are additional walls, windows or partitions, otherwise enclosure functionality is the same.

Following the analysis of the objectives 3 and 7, it results that there is no possibility to achieve in practice, the development of two projects only after the presentation of a magazine by the beneficiary, without dimensions, with different functionalities and designers who have never collaborated.

According to Figure 3 and Figure 4, it results that there is no identity between the facade pictures and dimensionless plans, even if project no. x is inspired by the project of the magazine "Architecture". Inspiration, however, clearly does not have the character of borrowing, meaning counterfeiting [6].

As regards objective 4, we would like to mention that the client's wish was to have a work as the one presented in the magazine "Architecture".

Although he wanted this, we cannot say that the project is based on the magazine, the architect being fully responsible for the project assumed.

As regards objective 5, as I have answered above, project no. x of the architect is not based on the project of the magazine. The architect has a copyright [5], over his project but he has no right to exploit it as architectural project because it has no signature right. This right belongs to S.C. ALFA S.R.L by the signature of the architect with signature right, which bears the entire responsibility of the project.

As regards objective 6, Mr. Popescu Ion signs as designer, but the architect who assumed the project is fully responsible.

The answer is: the project no. y, belonging to designer Popescu Ion, is not based on magazine's project.



Fig. 3. *Overview of the first house* [1]



Fig. 4. *Overview of the second house* [1]

From our point of view, Mr. Popescu Ion does not bear responsibility for the project because his training does not allow him.

The project of the beneficiaries, for which the architect with signature right who assumed the project is responsible, is almost identical to the magazine's project.

## 6. Conclusions

Acquisition of ownership on drawings of the project does not confer the right to exploit the project.

"Determination of counterfeit is done by similarities and not by differences" [6] and the projects overlap dimensionally and structurally, both in the basement and the ground floor or in the attic. Lateral facade has differences only in the roof (the project of the magazine having two small windows on the roof, instead of

dormer window), the remaining elements being the same.

Another aspect would be that the legislation provides [9]: "Architects can sign during training internship, plans and own projects, which do not involve the issuance of a building permit".

So the right of signature is linked to the project approval and assumption of responsibility. This right of signature is not related to copyright.

As a general conclusion, regardless of the desires of the beneficiary, we believe that the position of the project responsible person with signature right must be the legal one of denying, in any way, copying projects of other colleagues.

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