

## LIGHTNING SITUATION IN ROMANIA

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### 1. INTRODUCTION

Romania, a country that has only recently entered the European Union, represents some important lightning safety problems. These problems are encountered more in Romania than in other EU countries because of Romania's traditions and history.

The problems are present in two main areas: Rural and Urban Areas. In each area there are different lightning issues. In Urban Areas, Telecommunication Companies are faced with thousands of dollars damages after a lightning storm, and in Rural Areas shepherds and farmers are exposed to a high level of risk to be struck by lightning.

Telecommunication Companies face these problems because of high altitude conductive wires. Cities' infrastructure and high costs are the reasons of why most of the firms are not implementing the underground wires solution.

On the other hand, in Rural Areas tradition and history have left their mark. Shepherding is a traditional occupation in Romania and farming was always a job for the masses. The two mass-occupations' practitioners in Romania usually work in open field areas. These Areas should be avoided when a lightning storm appears.

As personal accomplishment I have developed lightning-awareness instructive programs for the purpose of diminishing the number of people who get struck by a

lightning. These programs are: [www.fulgerul.ix.ro](http://www.fulgerul.ix.ro) a lightning informative web-site with information written in Romanian, "School by school lightning instructions" and mass-media lightning information.

### 2. URBAN AREAS

In Urban Areas lightning does not have any direct impact on people. The cases when urban-dwellers have lightning-associated injuries inflicted on them are extremely rare. These cases occur in the suburbs, where there are low, few-storied, blocks with little protection or no protection against lightning. Most of the cities have high blocks that are protected with lightning rods. These high blocks play an important role in protecting the people within the city from being struck by lightning.

Telecommunication companies encounter big problems when a thunderstorm is passing through the city. The cities' infrastructure presents a very difficult environment for the installation of the underground wires. Also, the underground wires' high cost forces companies to search and pursue other solutions. Although these issues are presented, there are big companies like Romtelecom SA that have made all the necessary changes over the last ten years.

There are companies whose telecommunication conductive wires run, for example, from a pole to the highest point on an apartment house or from an apartment house to another one for the purpose of connecting two different networks. These wires pass close to the lightning rods and the probability of one being hit by a lightning is very big. Some small and inexperienced companies place sensible equipment near lightning rods. By the time the lightning rod is struck, because of the electromagnetic induction, the equipment will be strongly

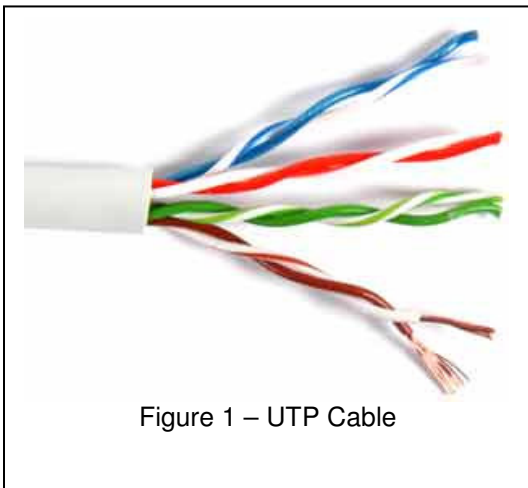


Figure 1 – UTP Cable

affected. Sometimes the damages are irreparable.

Internet Companies are most affected by lightning. The reason is that they often use copper wires known as UTP (Unshielded Twisted Pair) (Figure 1) wires. The use of that kind of wires is enforced by their low price. Many internet companies have specific instructions in their contracts for users to unplug any electrical device connected with the UTP wire in case of a lightning storm, but in many situations that does not happen, and we encounter personal damages too.

In 2007 the second-largest Internet Company in Constanta I-Link with 2342 clients had damages of thousands of dollars. Boncescu Costin-Cristian, the primary manager said that in summer-2007 the Company had irreparable damages inflicted to 150 network devices after a severe thunderstorm. The cost of reconstructing the fallen networks reached \$12000. In addition he said that more than 50 people faced damages to their computers. The largest Internet Company in Constanta RDS Constanta is in the same situation with the damages of around \$20000. These numbers were extracted after a single thunderstorm. If the city encounters several thunderstorms in a row, the telecommunication companies will face huge damages. Depending on how many users a company has and what type of equipment it uses, there are various amounts of money spent on recovering from these damages.

### 3. RURAL AREAS

Shepherds, who work in open field areas, often do not know that their life is at stake when a thunderstorm approaches their work place. Unfortunately, most of them do not have a high level of education and this is one of the reasons why they are not aware of the risks of staying at work.

The probability of a shepherd being hit by a lightning is much greater than that of a townsman. This happens because most of townsmen are well-educated, aware of

lightning threats and surrounded by high buildings. On the other hand, shepherds, most of them with no knowledge about lightning threats, work all day long in open field areas (Figure 2).

One shepherd from Tulcea County said that the first thing that he does when in the middle of a thunderstorm is to hide under a tree. Moreover, he also stated that most of the time he is away from home and a tree is his best rain-shelter. These facts can be considered proves that shepherds are not educated regarding the lightning safety issues. Some shepherds live in unsafe shelters. Those unsafe shelters are sometimes made entirely of wood and are not equipped with any lightning-protection equipment.

Newspapers say that a lot of Romanian shepherds have died because of the lightning storms. The best-known lightning incident in Rural Area happened in summer 2001 in Neamt County, where there were seventy sheep and four people killed, according to TCM Breaking News. There are no official statistics about lightning's victims in Romania, but based on the fact that a sole thunderstorm in a small region took four lives, we can imagine how many lives lightning can take over one year in the whole country.



Figure 2 – Shepherd in open field area

Farmers are also in danger because they are spending most of the time in open field areas. There are a lot of people who work as farmers. In 1991 the land reform brought

land to 5.5 million farmers and in 1998 nearly 20 percent of the workforce was engaged in agriculture. As of today, these numbers did not change much, and chances are a growing number of people can be struck by lightning.

Many farmers do not know the dangers of lightning and try to find shelter under a tree in case of rain. According to Radio Free Europe / Radio Liberty (RFE/RL) "In the northeastern region of Maramures three farm laborers were killed by lightning, while in the northeastern province of Bacau lightning killed one man. Four others died in separate incidents." One article published in the International section of IOL website describes exactly the situation in Romania. "Bucharest, Romania - Lightning that hit parts of Romania during summer storms killed four people over the weekend, police and media reported Sunday. A family of three died on Friday as they were hit by lightning while cutting hay in the north-west town of Zagra, officer Sorin Cozma Moldovan said. A relative found the bodies of Victor Bumbu, 39, his wife, Ludovica, 36, and their only daughter Maria, 14, on Sunday under a tree in the field. On Saturday, lightning killed a shepherd in the town of Seica Mare, 270km north-west of Bucharest, the state news agency Rompres said. The 38-year-old man was found on Sunday under an oak tree, near the herd of sheep, the news agency said." If we analyze the problem according to these news reports, both the farmer's family and the shepherd were killed under a tree.

#### **4. PERSONAL ACHIEVEMENT**

In 2006 the only web-site in Romanian language with lightning information was developed: [www.fulgerul.lx.ro](http://www.fulgerul.lx.ro).

It contains links like:

- The History of Lightning
- How the lightning is formed
- Lightning rods
- Last discoveries about lightning
- Ball lightning
- Lightning Club
- Lightning in Romania

Under the first link visitors of the web-site can find a description of how lightning was seen starting from the middle ages until our days. They can also find about the most known scientists who contributed to understanding of the lightning phenomenon. Under the second link: "How the lightning is formed" visitors of the web-site can understand the whole process of lightning by starting to understand the simplest things like electrical charges. "Lightning rods" link provides a full description of lightning rod, from its purpose to its structure. "Last discoveries about lightning" provides the last known description about new lightning structures. "Ball lightning" is a link where you can find different stories about ball lightning appearances. "Club" is a description of the National Lightning Club created for all the people who are passionate about this phenomenon. "Lightning in Romania" is a link that contains news from the Romanian Media about the lightning phenomenon and also some pictures of lightning caught in Romania. This web-site is educative, because it provides useful information for those who want to know more about lightning.

All people can be made aware about the threats of lightning by surfing this web-site.

As of today, the web-site has reached Google, MSN, and Yahoo search-engines. If one types in the word "lightning" ("fulgerul" in Romanian) the top-most web-site that will appear in the searching area will be [www.fulgerul.lx.ro](http://www.fulgerul.lx.ro). According to [www.traffic.ro](http://www.traffic.ro) this web-site has had 2189 viewers and is [www.google.com](http://www.google.com)'s best referred web-site. The number of web-site's visitors keeps increasing year by year:

- July 2006 - February 2007 – 589 visitors
- July 2007 - February 2008 – 1125 visitors

The second program that was created is "School by school lightning instructions". This program's purpose is to explain to primary and secondary school students the threats of a lightning, what one should do if a lightning storm starts and what are the safest shelters. This program comes with

images, games and questions about lightning. To understand the importance of this program, the articles of how people died because of wrong choices regarding safe/unsafe shelters are showed to the class.

After the International Lightning Detection Conference held in 2006 I have sent lightning safety information via local and national press:

- 15.05.2006 Local Radio: Neptun FM free discussion about lightning and lightning threats;
- 18.07.2005 National Newspaper: Adevarul "Radu Marin wants to discover more about lightning";
- 08.08.2006 local Newspaper: Cuget Liber : "Radu Marin officially opens the first national lightning research club";
- 10.07.2007 National Television B1TV -> "6! Vine Presa"-> live phone call discussion about lightning.

In most of these press releases my purpose was to talk about the lightning-associated threats, what the safest shelters are, and how people can avoid being struck by lightning.

## 5. CONCLUSIONS

In Romania there are lightning issues in Urban Areas and Rural Areas as well. In Urban Areas lightning produces thousands of dollars damages to telecommunication companies and in Rural Areas many shepherds and open-field workers fall victims of lightning. The most common mistake that shepherds and open-field workers do is to hide under a tree when a severe lightning storm appears. The educational programs that I have developed to inform Romanian population about lightning threat are: [www.fulgerul.ix.ro](http://www.fulgerul.ix.ro), "School by school lightning instructions" and mass-media lightning information.

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## 7. REFERENCES

The web-site [www.trafic.ro](http://www.trafic.ro)

Quotes taken from:

- [http://www.int.iol.co.za/?set\\_id=1&click\\_id=3&art\\_id=qw1090763820527B265](http://www.int.iol.co.za/?set_id=1&click_id=3&art_id=qw1090763820527B265)
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