

MEĐUNARODNI NAUČNI SKUP  
INTERNATIONAL SCIENTIFIC CONFERENCE

„DANI ARČIBALDA RAJSA“

“ARCHIBALD REISS DAYS”

*Beograd, 3-4. mart 2015.  
Belgrade, 3-4 March 2015*

TEMATSKI ZBORNİK RADOVA  
MEĐUNARODNOG ZNAČAJA

THEMATIC CONFERENCE PROCEEDINGS  
OF INTERNATIONAL SIGNIFICANCE

TOM III  
VOLUME III

KRIMINALISTIČKO-POLICIJSKA AKADEMIJA  
Beograd, 2015  
ACADEMY OF CRIMINALISTIC AND POLICE STUDIES  
Belgrade, 2015

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ACADEMY OF CRIMINALISTIC AND POLICE STUDIES  
Belgrade, 196 Cara Dušana Street (Zemun)

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*Impression*  
200 copies

*Print*  
Official Gazette, Belgrade

THE CONFERENCE AND THE PUBLISHING OF PROCEEDINGS  
WERE SUPPORTED BY THE MINISTRY OF EDUCATION AND SCIENCE  
OF THE REPUBLIC OF SERBIA

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ISBN 978-86-7020-321-1  
ISBN 978-86-7020-190-3

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200 primeraka

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MINISTARSTVO PROSVETE, NAUKE I TEHNOLOŠKOG RAZVOJA REPUBLIKE SRBIJE

© 2015 Kriminalističko-policijska akademija, Beograd

ISBN 978-86-7020-321-1  
ISBN 978-86-7020-190-3

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## CRIMINAL ANALYSIS OF ELECTRICITY THEFT AND ITS SOCIAL CONSEQUENCES<sup>1</sup>

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*Valjevo Police Department*

**Abstract:** Electricity theft by individuals and legal entities (corporations) is becoming more frequent phenomenon, because of inefficient public system and unclearly defined legal system, in which electricity is protected object. Electricity in our country is produced and transmitted to the end users by public state-owned corporations. The system for controlling electricity sale and delivery is extremely inefficient. Laws and bylaws which regulate this area are outdated and, as such, give plenty of opportunity to the end users and to employees in the public corporations, involved in this process, to make different kinds of abuse and criminal acts. These criminal activities are difficult to prove in court proceedings, and the financial damage for the state is substantial. In the last few years, Electricity Distribution Company of Serbia has started installing, the so-called, 'smart' electricity meter, and particularly on large, typically commercial, consumers. The meters are protected with verification mark, performed by authorized control bodies, and the electricity distribution company mark. Consumption of electricity and registered events, such as opening the cover of the meter which is sealed with an appropriate mark, are read by computers. Although electricity theft is estimated in millions of RSD each year, for every commercial user in particular, proving this criminal act, in a legal court process, is very difficult, practically impossible.

The paper presents the ways this criminal act of electricity theft is performed, by the commercial users - large consumers, on the territory of the police department of Valjevo. Additionally, the paper also deals with the treatment of public prosecutors and police during the clarification of criminal acts and success in proving them in the juridical processes. The author especially puts an emphasis on a legal and sublegal act, which regulate this area in the criminal justice matter.

**Keywords:** electricity theft, fraud, legal subjects, police force, public prosecution, criminal proceedings.

### INTRODUCTION

Serbia produces near 31 billion kWh yearly, but at the same time, loses up to 19.5% from the whole amount of produced electric energy.<sup>3</sup> In regular business activities, The Public Corporation for Electric Power of Serbia (in the text below EPS) has made significant technical and non-technical losses of electrical energy. Technical losses appear in transmission, distribution and transformation of electricity. Non-technical losses represent the amount of electricity consumed by consumers that EPS is not able to identify and charge.<sup>4</sup>

The mentioned non-technical losses include: consumption of electricity by illegally connected consumers; manipulation in the electricity meter enclosure; measuring errors in meter itself, mostly because different kinds of abuse (inhibitions, various bridging, 'management' balances).<sup>5</sup>

The EPS management total losses are estimated at around 100 million Euros of which more than 60 million Euros have been caused by theft.<sup>6</sup>

<sup>1</sup> This paper is the result of the research on project: "Crime in Serbia and instruments of state response", which is financed and carried out by the Academy of Criminalistic and Police Studies, Belgrade - the cycle of scientific projects 2015-2019.

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<sup>3</sup> "Procena Elektroprivrede Srbije"- the study done for the Serbian Government by Deloitte&Touche in the autumn of 2001

<sup>4</sup> Banović, B.; Lajić, O.; Milošević, M.; "Krađa električne energije, kao pojavni oblik krivičnog dela krađe", *Bezbednost* 1-2/2008, p. 130

<sup>5</sup> Ibid: str. 132

<sup>6</sup> Energetika.rs.com ,08.04.2010

## CRIMINAL AND SOCIAL ASPECT OF THE PHENOMENON OF THEFT OF ELECTRICITY

Electricity theft is one of the most common criminal offenses committed on the territory of our state.<sup>7</sup> In this paper the term “electricity theft” refers to a basic criminal act of theft and also to all criminal acts from the field of offenses against property, if they are aimed at obtaining electricity illegally. That will be done regardless the fact that the Criminal Law of the Republic of Serbia<sup>8</sup>, in the part of offenses against property, defines several legal clauses, which in a specific way define various forms of theft of other moveable properties, or obtaining illegal material benefit, depending on the values and ways of execution, number of offenders, use of force, threat, bringing and maintaining others in fallacy, etc.<sup>9</sup> The part of the Criminal Law dealing with moveable property defines it as any energy produced or collected to provide light, heat or movement, a telephone impulse, as well as computer data or computer program. If the measuring instrument – electricity meter has been modified in a way to lower the meter reading, the question is whether that is a criminal act of theft or of fraud. Before removing the cover of the meter for making modifications inside it (criminal act “The destruction and damage of public devices”), the damage has to be done to the verification and / or distribution mark or seal (criminal act “Removing or violation of the official seal or mark”). Therefore, we can conclude that a criminal act of fraud is committed together with several other criminal offenses. Without going into the details of the criminal law and criminal procedural aspects of every criminal act of illegally obtaining electricity, the author uses the term electricity theft in the paper.

But if we consider the most modern ‘smart’ digital multifunctional meters- meters are equipped with computer systems, and that the theft of electricity is done with modifications inside the meter, in order to make the meter processor measure lower electricity consumption, these acts can be referred to as the criminal offenses with elements of cyber crime.

The criminal offenses of cyber crime, with the exception of the crimes charged in the group against the security of computer data, in terms of the Law of the competence and organization of the state authorities to fight against cyber crime, include: • offenses against intellectual property, assets, economy business and legal transactions in which computers, computer networks, computer data are objects or instruments of execution, as well as their products in a material or electronic form if more than 2,000 copies (with copy-rights) are involved or if the material damage exceeds 1,000,000 RSD; • offenses against freedom and rights of citizens, sexual freedom, public order and the Constitution of the Republic of Serbia in which cases, due to the method of execution or instruments used for execution, we can conclude that those are acts of cyber crime.<sup>10</sup>

Both individuals and legal entities can be prosecuted and convicted of electricity theft. In fact, legal proceedings can be conducted against an individual on the basis of reasonable doubt that he has committed a criminal act of electricity theft according to the Criminal Proceedings Law<sup>11</sup> and for offenses defined in the Criminal Law. For legal entities “Zakon o odgovornosti pravnih lica za krivična dela”<sup>12</sup>(Law on liability of legal persons for offenses) defines conditions of responsibility of legal entities for criminal offenses, criminal sanctions that may be imposed on legal entities and rules of procedure for deciding on the liability of legal entities, imposing criminal sanctions, decisions on rehabilitation, termination of security measures or legal consequences of the conviction and execution of court decisions.<sup>13</sup> Passing the Law on liability of legal persons for offenses (Zakon o odgovornosti pravnih lica za krivična dela) in 2008, the National Assembly of Serbia adopted the viewpoint expressed in our legal theory of the necessity of introducing the responsibility of legal entities for criminal offenses in the criminal legal system of Serbia. Additionally, the view presented in legal theory that the establishment of such responsibility can be and should be, primarily for criminal and political reasons accepted. Thirdly, this solution is necessary to comply with legal standards contained in the numerous relevant international documents, as well as to ensure consistency of the existing criminal legislation in the Member States of the European Union, which already regulates the issue of liability of legal entities for criminal offenses. The legislator, therefore, accepted the indisputable fact that the liability of legal entities for offenses unstopably leads to the European legislation and its legal standards and also international documents to majority of countries around the world.<sup>14</sup> That is why the text of the Law on liability of legal entities for offenses is harmonized with positive experiences in the implementation of the

7 In 2014., out of the 102 715 recorded criminal acts in the Republic of Serbia, 51 320 were thefts and major thefts, which makes 50% of the overall number. Source: Zvanična statistika MUP-a R. Srbije.

8 Krivičnom zakoniku RS “Sl. glasnik RS”, no.85/2005, 88/2005, 10772005, 72/2009, 111/2009 и 121/2012

9 Krivični zakonik, art. 203., 204., 208., 210, etc.

10 Bodrožić, I; Krivična dela sa elementima visokotehnološkog kriminala, Bezbednost, no. 3/2013, Beograd, p.144

11 Zakonik o krivičnom postupku, Sl. glasnik RS, no. 72/2011, 101/2011, 121/2012, 32/2013, 45/2013 and 55/2014

12 Zakon o odgovornosti pravnih lica za krivična dela, Sl. glasnik RS, no.97/2008

13 Since the law regulating the responsibility of legal entities for criminal acts (Zakon o odgovornosti pravnih lica za krivična dela) came to power, there has not been a single court case based on this law in the Valjevo court.

14 Vrhovšek, M.; Pravno lice kao izvršilac krivičnog dela prema Zakonu o odgovornosti pravnih lica za krivična dela, NBP, KPA, 2010, p.41-42



Law on Economic Offences. Generally accepted opinion is that the Law has shown good results in reducing economic offenses, during its fifty years of application. Offenses of legal entities threaten the economic and financial system of the country.

The countries of former Yugoslavia, usually relate the liability of legal entities to the behaviour of the responsible person, which means that only a criminal offense committed by a responsible person can be treated for the liability of a legal person. If any other employee, who is not the responsible person, commits a criminal offense, the legal entity cannot be accused of this crime. Furthermore, it is important that the offense has been committed in the name, for the account or benefit of that legal entity, or that committing it the person violates some of the duties of a legal entity, or using this, legal entity has realized or should have realized unlawful material benefit for itself or other entity.<sup>15</sup>

However, even though the law has been in force for more than six years in the Republic of Serbia, the police department of Valjevo has not filed any criminal charges in the district of its responsibility, nor has there been any legal procedures or convictions for the criminal acts under that law, we can conclude that the law is not applied.<sup>16</sup>

As with other offenses against property in the area, the main reason for the electricity theft is gaining illegal material profit. The method of committing the criminal act has changed over time, from the consumption of electricity without measuring at all, illegal connection to someone else's electricity meter, directly connecting to someone else's electricity meter, placing magnets on electricity meter that interfere with its operation, to the illegal modifications of the meter so it measures lower consumption of electricity. However, companies for electricity distribution put a lot of effort to get technically improved meters for measuring, which at the same time make offenders of these crimes try to find new, modern ways of electricity theft. A huge problem with electricity is that its owner is the state over public companies, which in the name of state distribute electricity to the end user and representatives of these public companies, which most frequently show almost no interest in the theft (they act in a manner "It is not me who is damaged, the state is"). In many cases, the employees of public companies 'in their spare time', for a certain amount of money, help the end user in electricity theft, in a way that is difficult to detect. Those employees are usually professionals in this area (electricians, fitters, etc.), whose regular job is that the end user – the buyer of electricity is connected to the electricity system and to make the measuring equipment work correctly. In this way, they become accomplices in committing the crime, and also make it difficult for the police and other competent authorities to detect, solve and prove the commission of a crime in the court.

Since electricity theft is wide spread, the state budget has less money to invest in improving the technical system of Electric Power Company. Legal entities - companies which commit the theft have lower costs and can offer their products at much lower price than other manufacturers. The social consequence of inadequate suppression of this kind of theft is that it happens more frequently than before, more consumers are involved in this crime and the number of undetected thefts is rapidly increasing. Some experts estimate that in the Electric Power Industry of Serbia only a fifth of electricity theft is discovered by the competent authorities, and just a small percentage of discovered go to the court, and only a few of offenders are sentenced.

There are more and more newspaper headlines warning the public of this phenomenon: "Believe it or not: Serbs can steal electricity in 52 Ways"<sup>17</sup>, "In Serbia electricity theft is estimated at the amount of 80 million Euros"<sup>18</sup>, etc.

The text below presents some new forms of electricity theft committed by large consumers, usually commercial ones (legal entities). The following passages are concerned with the particularities that have been discovered on the territory under the jurisdiction of the police department of Valjevo in the last two years, where the damage to the state are millions in cash amounts at a year level by a single perpetrator.

## CHARACTERISTIC METHODS OF ELECTRICITY THEFT IN 2014 ON THE TERRITORY OF VALJEVO POLICE DEPARTMENT

In order to give you more information about modern ways of electricity theft, we should consider some prior knowledge in the field of energy first.

Supplying the end users - consumers with electricity is regulated by the Zakon o energetici<sup>19</sup> and the Government of RS has passed the Uredbu o uslovima isporuke i snabdevanja električnom energijom<sup>20</sup> which regulate this area. Although nowadays the end-users can choose from which entity to buy electricity,

15 Kolaric, D.; Korupcija i odgovornost pravnih lica za krivična dela, NBR, KPA, 2006, p. 110

16 Source: Javno tužilaštvo Valjevo.

17 Vesti online.com,25.01.2014

18 Beta B92, 03.05.2014

19 Zakon o energetici, Sl. glasnik RS, no.57/2011, 80/2011- ispr. 93/2012 и 124/2012

20 Uredbu o uslovima isporuke i snabdevanja električnom energijom, Sl. glasnik RS, no.63/2013

the largest number of them continues to be supplied by the Elektrosrbija D.O.O. which is a public company established by the Republic of Serbia and perform activities of general interest. On the territory of Valjevo, the distribution to end users is done by the Electricity Distribution Company of Valjevo, which is an organizational unit – the branch of Electroserbia D.O.O. Kraljevo.

New forms of criminal activity and electricity theft were observed on the territory of Valjevo Police Department during 2014. The thefts were discovered by professionals employed in the Electricity Distribution Company in Valjevo (ED Valjevo, in the text below). It is interesting that the theft was in progress continuously for 2-3 years and the value of illegal benefit for consumers of electricity is several millions of RSD, because large consumers were involved.

To illustrate the problems in solving the cases of electricity theft, we will analyze five of these cases committed by legal entities, which are still under investigation and have not yet received the court epilogue.<sup>21</sup> In all the cases, digital, multifunctional meters for commercial use were used for measuring electricity (neither had residential meter installed) and some of them were 'smart' meters. The specificity of 'smart' meters is that they can be read remotely and can register some 'fraudulent acts' done on the meter. The meters are delivered from the manufacturer with two state verification marks (seals) on the top cover of the meter. Any damage on the state verification marks/seals is unauthorized and removing the seal is legally regulated and only allowed to be done by the Directorate of Measures and Precious Metals and some other bodies (usually the manufacturers) who are authorized for the verification of the meters. The state verification marks/seals contain a number which presents the year when the calibration expires (has to be done again) and the number which presents what body has done the verification. Some of these meters register every opening of the upper and lower cover of the meter (the date and time of every opening) and some do not. It depends on the type of the meter. The lower cover of the measuring meter is protected with one or two marks/seals of the Electricity Distribution Company. Marks in a form of label in a plastic case or lead seals can be found on the both covers of the meter.

- Case number one: In January 2014, a fire was reported in the meter enclosure of a commercial user-A, in Valjevo. During the fire, the electricity meter was significantly damaged. The fire was reported to ED Valjevo by one of its employees who was already on-site, not officially sent by ED Valjevo (he was not even employed in the Department of measurement in ED). That person was on-site only because he was in personal relations with the commercial user-A. After the fire was put down, that person connected the user-A to the electric distribution network without metering the consumed electricity (every action he performed was not legal). The Department of measurement of ED analyzed the electricity consumption of the user-A after receiving the report on the incident, and found out that in the period from 01.12. 2012 until the destruction of the meter (in fire), the electricity consumption was significantly lower compared to the previous period. Additionally, it was found that after installing a new meter, the consumption of electricity was the same as it used to be back to the period before 01.12. 2012. Because of these suspicious circumstances, the damaged meter was sent to its manufacturer to be analyzed, at the end of January 2014. The manufacturer noted unusual damages not seen in the previous practice. The damages on the meter were not caused by increased voltage or current. The meter was exposed to an external open flame, which caused its damage. Someone wanted to burn (completely damage) the meter to hide the following unauthorized modification- adding new resistors, in parallel, to existing ones in the secondary circuit of current transformer, in the meter, so it registers less consumed electricity. In this case there is a serious doubt that the fire was set to hide the committed crime (the modification in the meter and damaging of the state verification mark). The manufacturer concluded that in the period from 10.10. 2012 until the fire, about 40% of consumed electricity was not measured (because of the performed unauthorized modifications). It was found that before the unauthorized modifications maximum measured current values, monthly, were 6 or 7 amps and after modifications, 3 to 4 amps.

All the documents related to the case were officially sent to the Public Prosecutor's Office, by ED Valjevo, in March 2014. The prosecutor, who is in charge of the case, did not send a request for any further information and actions to the Police Department of Valjevo, yet. A year from the event, the police were not been officially notified of the event, and no legal measures and actions were taken in solving this case (crime).

- Case number two: In June 2014, the Department of measurement ED Valjevo, read and analyzed electric characteristics from the 'smart' meter installed to measure the consumed electricity of a commercial user-B in Valjevo. The 'smart' meter for commercial use was produced in 2011 and was calibrated to 2023. It had a switching module (enables the function of consumption management) and GPRS module (for remote communication) so it could be read or switched off remotely. During the remote reading of electric characteristics from the meter it was noticed that current in one phase was zero and so was the power in that phase (that means there was no measuring of the consumption of electricity in that phase). The following step was to read the data from the 'fraud event log' registry of the meter,

21 Source: Documents of ED Valjevo.

where all events that could indicate potential abuse are recorded. It was found out that in March 2014, both the upper and lower covers of the meter were opened. Therefore, it was suspected that the damage to the both verification marks/seal of the authorized body and mark/seal of the ED Valjevo were made. In July, the expertise of verification marks/seals was requested from the only authorized body for metrological supervision, the Directorate of measures and precious metals. The authorized representatives of the Directorate of measures went to the commercial user-B's object in Valjevo, performed the requested supervision of the meter verification marks and made an official report that no damage to the verification marks was done.

However, the employees of the Department of measurement ED Valjevo, when installing a 'smart' electricity meter on 28.12.2012, made a photo documentation of the meter and all its marks/seals verifications sent to the ED Valjevo. They compared the looks of marks/seals when the meter was installed (photos made on 28.12.2012) with the looks of marks/seals in July 2014. The mark/seal on the cover of the meter of the ED Valjevo was not in the same position and wires were coming out to the 'front part' of the seal (when the meter was installed) and in July 2014 they were found coming out to the 'back side'. The length of the wire passing through the seal was even not the same. In order to determine what really happened to the meter, after the metrological supervision by the Directorate of measures was done, the meter was sent to the manufacturer (and the new one was installed). The manufacturer did the detailed examination of the meter and sent an official report to the ED Valjevo. In its report the manufacturer claimed that both the verification marks/seals were forged and modification was done within the meter to stop measuring of consumed electricity in one phase.

In October 2014, the employees of the Department of measurement ED Valjevo read and analyzed electric characteristic from the new meter installed to a commercial user-B, and again found out that current in one phase was zero, and noticed a decrease in electricity consumption. Afterwards they read the data from the 'fraud event log' registry of the meter and found that only 20 days after installing the meter, someone opened the upper and lower covers of the meter. A new photo documentation of the meter was done and compared with the photo documentation done during the installation of the meter. Again the appearance and position of seals were not the same as at the time of installing the meter.

The commercial user-B was disconnected from the electric distribution network and all the documents related to the case were sent to the Public Prosecutor's Office. The police were not included in the investigation in order to help solving and proving apparently committed criminal offenses.

What is very important to note in the case of the commercial user-B is that we have two completely deferent opinions about the verification marks/seals in the meter. The Directorate of measurements and precious metals did not find that marks/seals were damaged or forged, but the manufacturer found out the opposite-that the marks/seals were forged! The manufacturer in its report gave a detailed explanation proving the marks were forged. The Directorate of measurement in its report claimed the opposite, that marks were original and undamaged, without giving any explanation or proof. The Directorate of measurements and precious metals is the only authorized institution in the state for supervision of the verification of marks/seals in electricity meters, controlling the correctness of the same, according to the Zakon o metrologiji<sup>22</sup> and Uredbe o nacinu vršenja metrološkog nadzora<sup>23</sup>. The Directorate for measurements was founded to protect the general interests of the state and of all citizens and it must not allow any intentional or unintentional mistakes or lack of professionalism of its employees.

- Case number three: In September 2014, the Department of measurement of ED Valjevo read and analyzed electric characteristic from the 'smart' meter installed to measure the consumed electricity of a commercial user-C in Mionica. The meter had GPRS module for communication so it could be read remotely. During the remote reading of electric characteristics from the meter it was noticed that current in two phases was zero and so was the power (that means there was no measuring of the consumption of electricity in those two phases). The 'smart' electricity meter was installed at the user-C in January 2012, and photo documentation was made. The meter was produced in 2011 and calibrated to 2023. After the employees of the Department of measurement noticed current in two phases is zero, they went on-site to check the meter. They noticed that the plastic verification mark/seal was in a different shape than the one when the meter was installed (because they had photo documentation). What they found on the meter was the 'strawberry-shaped' plastic verification mark while the photo documentation in which they could see the meter was installed with a 'square-shaped' plastic verification mark. They also checked the class of accuracy of the meter and found out that the meter measured only 20% of the consumed electricity. Since they suspected illegal modification on the meter was done, the meter was sent to the manufacturer. Soon, the ED Valjevo received a report from the manufacturer that seals on the meter were forgeries. The manufacturer also claimed that, at the time when that particular meter was produced, they did not have and did not use the mark/seal in a 'strawberry-shape' at all. At the time, they used a prismatic 'square-shaped' verification mark/seal,

<sup>22</sup> Zakon o metrologiji, Sl. glasnik RS, br.30/2010

<sup>23</sup> Uredbe o nacinu vršenja metrološkog nadzora, Sl. glasnik RS, br.88/2010

while the 'strawberry' ones have been in use since 2013. It was also noted in the report that meter did not register consumed electricity in two phases.

In this case the time when the modifications inside the meter were done could not be determined, because the processor of the particular meter did not register the opening of the covers of the meter. This case shows us how important is that 'smart' meters have the option of registering opening of the covers so we can determine the exact time when the theft occurred and how long it lasted. A 'smart' meter helps us estimate the value of unmeasured but consumed electricity.

All the documents related to the case of the commercial user-C were sent to the Public Prosecutor's Office. The police have not been officially informed of the case yet.

Case number four: At the end of October 2014, the employees of the Department of measurement ED Valjevo read and analyzed electric characteristic from the 'smart' meter installed to measure the consumed electricity of a commercial user-D in a village near Valjevo. The 'smart' electricity meter for commercial use was produced in 2010. The meter was calibrated to 2024 and the verification lead seals had number 24 engraved (photo no.1). The meter was installed at the user-D in July 2013, and the photo documentation was made. It had GPRS module for communication so it could be read remotely. During remote reading of electric characteristics from the meter it was noticed that current in one phase was zero and so was the power in that phase (that means there was no measuring of consumption of electricity in that phase). The following step was to read events the meter registered and saved in its memory. The meter registered opening of its upper cover (cover protected from the opening by the verification seals) on June 23<sup>rd</sup> 2014. From July 1<sup>st</sup> 2014 onwards maximum monthly current value in one of the phases was zero (that means there was no measuring of consumption of electricity in that phase). After the employees of the Department of measurement remotely read entire electrical characteristics they went on-site to check the meter. The verification lead seals found on the meter had the number 25 engraved (photo no.2) instead of number 24 (the meter was installed calibrated until 2024) proving that lead seals were forgeries, the originals were replaced. Even the wires which passed through the seals were not the same length (comparison was done with photos taken when the meter was installed) and the position of the seals in relation to the wires was not the same (the position of the seal, length of wires and location where wires 'go in' and 'go out' from the seal cannot be changed once the seal is squashed with pliers). Checking of class of accuracy of the meter was done. The meter did not measure about a third of consumed electricity

The commercial user-D was disconnected from the distribution electric network. The police have not yet been informed about this case, although there is a reasonable suspicion that a criminal offense of electricity theft with removing verification seals was committed.



Photo 1 *Magnified part of the photo of the meter made on 25.07.2013.  
Lead seal has number 24 engraved.*

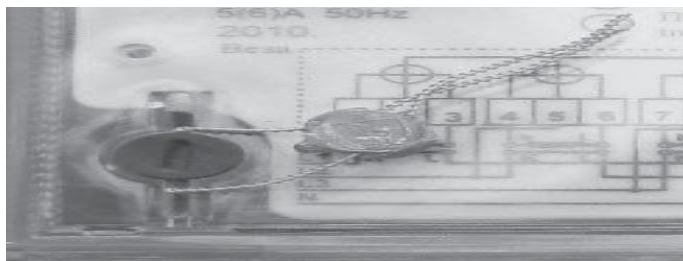


Photo 2 *Magnified part of photo of the same meter made on 24.10.2014.  
Lead seal has number 25 engraved.*



- Case number five: In late October 2014, the Department of measurement of ED Valjevo suspected there was an electricity theft going on at a commercial user-E in Valjevo. When on-site checking class of accuracy with measuring instrument “Zera MT 30” was performed, it was found out the meter registered about 10% less electricity than actually consumed. The employee of ED Valjevo who installed the meter did not make photo documentation. The on-site check proved that all marks/seals including lead seal of ED Valjevo and both verification marks-lead and plastic were partially damaged. The commercial user-E was disconnected from the distribution electric network. The Directorate for measuring and precious metals were informed of the event and requested to do the supervision of the verification marks. Supervision was done and the Directorate for measuring made a report claiming that both seals were original and undamaged. ED Valjevo appealed to the report and asked the Directorate to perform the supervision again. The procedure is still on-going.

The public prosecutor's office was not informed and the police were given the authority to carry out an investigation. The investigation report was made.

If we analyze these cases, which all involve suspected criminal offense of electricity theft, we can bring out next conclusions:

- 1) There are laws that regulate the field of energy supply and metrological supervision, however, imperfection of legal regulation of this area leaves many opportunities for abuse. That way the public company for supplying end-users with electricity is directly damaged, and the state indirectly;
- 2) There are doubts in the quality of work of the Directorate for measuring and precious metals as the only institution authorized for metrological supervision and for expertise of electricity meters.
- 3) The public company did not immediately inform the criminal prosecution authorities on suspected criminal offences performed on electricity meters. They pressed criminal charges to the public prosecutor's office after all internal checking was done. That is why no investigation of crime scene was done, nor taken urgent operational-tactical and investigative actions to complete clarification of the offence.
- 4) The Department of measurement ED Valjevo, although not obliged, makes the photo documentation of the look of the meter with its verification and distribution marks/seals, so they can compare the current situation to the situation when the meter was installed and easily notice if there was an abuse on the meter.
- 5) At the request of ED Valjevo, the manufacturers of electricity meters performed a detail analysis of unauthorized modifications done inside the meter and even the inspection of marks/seals correctness with every fact explained in detail with a multiplicity of facts in its report.
- 6) No case has received court epilogue, yet.
- 7) When we see how much the electricity meters with possibility of remote reading and with modern computer systems that detect every opening of a cover and modifications on the meter are misused, we can only assume how much the older models of meters, in which an ordinary magnet is enough to stop the measuring of consumed electric energy are misused.

## CONCLUSION

In the future, it is necessary to improve the system of power supplying with changing existing law regulations and providing, a safer way of measuring consumed electricity. The possibility of abuse in this area must be kept to a minimum. We believe that all measuring meters should relocate, as soon as possible, to the public areas and that all legal entities, in general all large consumers of electricity, should have 'smart' digital, multifunction meters with remote reading of power consumption. The practice of some employees of ED Valjevo, which is not mandatory, is taking pictures before and after each installation of electricity meters making photographic documentation. That practice has shown to be very helpful in proving the abuse done by removing and damaging the state verification mark and/or distribution mark-seals from the meters, in order to modify them. Our proposal is that making photo documentation of a meter and other measuring equipment should be the obligation of the EPS.

In cases with a suspicion of committing an offense the police and the public prosecutor must be informed immediately, in order to take all necessary measures predicted by “Zakonik o krivicnom postupku”, to clarify the crime and to identify the offender. In clarifying the crimes committed by the modification of 'smart' electricity meters, which have modern computer systems, should include public prosecutor's office and the police who are fighting against and trying to stop cyber crime.

It is necessary to introduce a new criminal offense in a legal system, which would refer to the criminal responsibility for electricity theft for an individual or legal entity having financial benefit from that criminal

activity. Thus, a consumer (person or entity) who has been given the use of a meter for measuring the consumed electricity should be criminally responsible if the modifications are done to the meter (stop metering on one or more phases), regardless of whether that consumer has personally done the repairs or engaged someone else to it. Therefore, it would not be necessary to prove and establish the identity of the person who performed the modifications on the electricity meter. The perpetrator of the unauthorized modifications would be responsible for committing an offense according to the current legislation, for example for taking off the official seal or mark and destruction or damage to public devices.

In the current legislative system it is very difficult, and in most cases impossible, to completely clear up the offense of electricity theft, and even harder to prove it in court, because it is necessary to collect evidence of all the circumstances: the time and place of execution, determine the value of the illegally confiscated goods (electricity in this case) and who the direct perpetrator of a crime is. The perpetrator of the theft is not only the person who has the benefit of that crime, but also a person who performs modifications on the meter. Hence, mainly electricity theft is committed in complicity of two or more persons, one who has skills for crime execution (electrician, etc.) and the other one who has the benefit of a reduced measuring of consumed electrical energy.

And finally, it is necessary to bring in the Law about responsibility of legal entities for criminal offenses they committed, that can be easily executed.

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