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SAFETY MANAGEMENT IN HEALTHCARE BY MEANS OF LIVE WORKING

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The paper presents the connections between **live working, patient safety** and the valuable **Slovene experience in carrying out live working in healthcare.**

THE CASE STUDY PRESENTED IN UKCL
(University Medical Centre Ljubljana)

It has to be pointed out that the **contribution of live working to the safety management in healthcare** is crucial.

INTRODUCTION

An interesting parallel has been discovered when studying the sources of quality and safety management in healthcare and carrying out of LW in the maintenance of electrical installations.

The efforts of healthcare professionals focused on the increase in patient safety as well as the electrical profession in carrying out LW have a hundred year tradition.

INTRODUCTION

LW has a hundred year tradition in the world [9].
As early as in 1913 the first carrying out of LW was documented in the USA [10], in 1933 in Europe, in Poland [11] and in 1963 in France [9] ...

The quality improvement in healthcare services has developed for the last hundred years too [6].

INTRODUCTION

Accreditation represents an important step in the development of the quality culture in healthcare and patient safety.

At the beginning the accreditation (1917) was focused on the voluntary continuous improvement in quality in the USA, from where the Joint Commission model spread to the English-speaking countries.

INTRODUCTION

In May 2002, the World Health Assembly adopted the resolution WHA55.18 in which it recognised the urgency of possible attention to the improvement in patient



Luxembourg declaration on patient safety was published in 2005!



„Patient Safety – Making it Happen – The European perspective!“

In May 2006, the Council of Europe adopted the Recommendation Rec 2006 of the Committee of Ministers addressed to the Member States on the management of patient safety and prevention of adverse events in healthcare.

INTRODUCTION

The safety of healthcare services are required by standards:

- **Interpretive Guidelines and Surveyor Guidance for Hospitals
DNV Standard, DNV-DS-HC102 – Version 3.1,
International Accreditation Requirements, November 2013**
- **International Accreditation Standards for Healthcare Organisations, AACI -
Version 4.1, American Accreditation Commission International,
October 2014**

The safety of healthcare services are supported by standard:

ISO 9001 Quality management systems

**Accreditation standards (AACI, DNV, ...)
for healthcare institutions clearly impose
requirements for planning and
maintenance of infrastructure
on the management of healthcare institutions.**

The requirements of AACI & DNV standard:

STANDARD 27 (Physical Environment)

27.1 Facilities

1. The healthcare organisation shall **be constructed, arranged, and maintained to ensure the safety of the patient**, and to provide facilities for diagnosis and treatment and for special healthcare organisation services appropriate to the needs of the community.
2. The healthcare organisation **shall maintain adequate facilities and supplies for its services to ensure an acceptable level of safety and quality.**

27.4 Emergency Management Program

3. The Emergency Management Program processes **shall address alternative means to support essential building functions such as electricity**, water, ventilation, fuel, medical gas and vacuum systems, and other identified utilities.

The Standard approach: IEC 60364-7-710

Electrical installations of buildings - Part 7-710:
Requirements for special installations or locations -
Medical locations

The requirements defining:

- the availability of supply,
- the reliability of supply and
- the power supply's infrastructure's resiliency to disturbances!

ACCREDITATION OF HEALTHCARE SLOVENIAN INSTITUTIONS IN THE PERIOD MARCH 2011 – JANUARY 2015

Institution/Standards	AACI*	ACI**	DIAS – DNV***	Total
Hospital	4	3	17	24
Healthcare centre	1		1	2
Specialist out-patient clinic	3	15	0	18

*AACI – International Accreditation Standards for Healthcare Organisations

**ACI – Accreditation Canada International

***DIAS - DNV International Accreditation Standard for Hospitals - Det Norske Veritas



INTRODUCTION



In both fields, (LW & patient safety) the first success was observed in Slovenia in the last decade - activities started in 2006.

24/7 PROCES IN HOSPITAL

Strict requirements for continuous processes as they can be observed in healthcare cannot be found in any other industry, not even in a nuclear power plant where 24/7 processes can be occasionally interrupted due to curative or preventive maintenance.



INTRODUCTION LW on LV



LW can be defined as a tool of preventive maintenance of electrical installations!

The fundamental objective of LW is the maintenance of electrical installations and/or equipment without the interruption
in TSO/DSO (public net)
& electricity supply of households
& industry ... & hospital (private installation)



INTRODUCTION LW on LV



The impact of LW on the quality of electricity can be measured by the satisfaction of customers (i.e. UKCL):

- uninterrupted supply of electricity by distributor or
- uninterrupted supply of electricity by work on internal electrical installations.



INTRODUCTION LW on LV



Live working on low voltage (LW on LV) was introduced into the Slovene electric power system in 2006 when the discussions about the benefits of preventive maintenance of electrical installations started.



INTRODUCTION LW on LV



In 2009, live working officially began in the Krško Nuclear Power Plant.

In 2011, it was started in the Slovene electricity distribution and in the University Medical Centre Ljubljana (UKCL) when a very complex re-connection on the main LV panel was required.



CASE STADY of LW on LV in UKCL



LW on LV in UKCL started in 2011
15 work orders were carried out

Some of the projects were technologically very complex and demanded a detailed and accurate preparation of work that could be carried out by external contractors (outsourcing) - electricians with extensive experience and licence for LW on LV under the supervision of electrical workers of UKCL.

From August to October 2011 a **by-pass of supply LV** cables from the old LV panel to a new one was made for lines of lighting and power supplying the main hospital building with electricity.

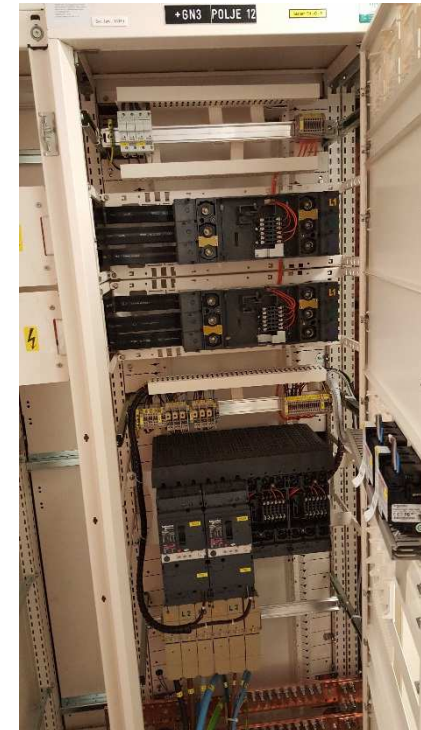


LW was carried out in the afternoons when the load was slightly lower than during the mornings. It has to be underlined that the carrying out LW was especially complex:

- the circuits with so high currents (more than 200 A) were bridged (by-pass) for the first time in Slovenia,
- each step of work had to be described in detail as the contractors were aware of the responsibility for the patients and the staff carrying out LW.

Positive economic effects were minor in this case when compared to **other benefits of LW for the undisturbed healthcare treatment processes in UKCL.**

The construction of a new extended LV branch
The extremely complex project in the Paediatric Clinic
in spring 2014 could not be implemented without
disconnecting electricity for several hours!



The contractors had to connect the equipment to the existing LV panel. A problem arose as there were no free connecting points.

Two methods were available to the contractors:

- disconnection of the whole clinic for some hours, without the possibility of full use of other emergency sources or
- carrying out of LW on LV.

Stopping the work for 6 to 8 hours of the new Paediatric Clinic would be an alternative to LW on LV.

What would this mean from the aspect of quality of healthcare and safety of patients?

Most probably moving of patients to other hospitals in Slovenia would be necessary!?

LW on MV in UKCL CLEANING S/S

UKCL has a long-term contract with the utility Elektro Ljubljana (EL) for maintenance of MV objects, S/S 10/0,4 kV.

In September 2015, after the inspection of the location „S/S Eye Clinic“ and the safety assessment, **the companies agreed to start the first pilot project for cleaning with the LW method on MV.**





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THANK YOU
FOR YOUR ATTENTION

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