

GÜSSING

Investment report

D.T3.2.9 PA 9 - Lighting of a footpath at the historical Castle of Güssing

Project index number and acronym	CE452 Dynamic Light
Responsible partner (PP name and number)	Foundation of the formerly sovereign Fürst Philipp Batthyany for the protection of the old castle, PP18
Linked to pilot action (number and title)	PA 9 - Lighting of a footpath at the historical Castle of Güssing
Project website	www.burrguessing.at
Delivery date	June 2018

Description and technical characteristics of the investment

The investment for the castle of Güssing within the project Dynamic Light is upgrading the old footpath from the basilica in the city center to the top of the castle, by using LED technology and dynamic light systems. Partly, existing light points will be replaced by modern and innovative LED lights as well as equipped with a light management system which will match historical requirements.

The new light-concept will foresee a replacement of already existing luminaries at the beginning of the pathway and complement new LED lights at different hotspots of the path. All together, 35 new luminaries - partly RGB controllable and equipped with radar systems - will be installed and lead to not only a seasonable, modern system, but also to a much higher appeal for tourists. A manual and an app will enable an easy adaption of the castle's appearance, making it adaptable to seasons and events.

The projected investment for the dynamic light system will on one hand raise the security level of the footpath and fulfill the public regulatory/standards, and on the other hand increase the attractiveness of the heritage for the touristic matter. The innovative technologies can go hand in hand with requirements of heritage sites and will show new solutions for other heritage sites in the whole region. As a positive side effect, energy savings and efficiency will also be increased.

The castle of Güssing is located directly in the city center of the town. It is one of the most popular touristic hotspots in the wider region and therefore quite important in the area. The castle can be visited almost all year long and opens the doors for museum visitors as well as for the visitors of the famous theaters and concerts on the castle's open-air stage. The castle, which was built on a former volcano, can be seen from kilometers in the distance in the surrounding area.

The topic of the lighting concept is not just a technical challenge but also a social one. The project team as well as the town of Güssing will therefore act quite sensitive and will try to respect doubts from local stakeholders and population as well as from tourists.

Those groups should be integrated into the planning process to avoid conflicts after the implementation of the lighting system.

Apart from the groups mentioned above, the overall concept has to be developed quite sensitive in respect to nature and monument protection. Stakeholders from those sectors will also be involved into the concept design and implementation of the system.

Section 1: LP 01 to 02

Due to the luminaire type, the technical conversion to LED according to the monument protection is not possible.

LP 03 to 05

Conversion to LED (luminaire insert) - Complete replacement of the luminaires due to monument protection not possible

LP 06 to 07

Contrast 2 A/S Head Lights on the „Scheibl“-tower (Scheiblturm), due to more efficient illumination additionally with holographic foil

Section 2: LP 08 to 29

light points with color-adjustable RGB-lamps are installed for a concealed lighting system throughout the main path up to the castle, due to more efficient illumination additionally with holographic foil.

LP 10 is attached to a mast; the other light points are mounted onto the castle wall.

Section 3: LP 30

light point with color-adjustable RGB-lamp

LP 31 to 33

Existing Pollard lights that will be included into the emergency lighting system

LP 34 to 43

Light points that deliver a pure white light are installed to assure a proper illumination of the path to the open-air stage as well as the path to the herb garden on the backside of the castle, the event location and the stairway to the main entrance of the castle, for more efficient illumination with holographic foil.

Investment costs (EUR) including a break-down of main cost items

Section 1	LP 01	-	-
	LP 02	-	-
	LP 03	LED insert	652,50
	LP 04	LED insert	652,50
	LP 05	LED insert	652,50
	LP 06	Cont2 M 12L105 A/S Spot	790,11
		Cont2 M LR holographic foil	159,50
LP 07	Cont2 M 12L105 A/S Spot	790,11	
	Cont2 M LR holographic foil	159,50	
Total		3.856,72	
Section 2	LP 08	Cont2 M 12L70 RGB R/S 24° DMX Spot	1.111,43
		Cont2 M LR holographic foil	159,50
	LP 09	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43
		Cont2 M LR holographic foil	159,50
	LP 10	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43
		Cont2 M LR holographic foil	159,50
		Mast LPH 3M	294,74
		dual console for the mast	164,72
	other	Cont2 M LV shade screen	46,40
		Cont2 M Visor screen	92,80
		Cont2 M Visor screen	92,80
		cable transition box	50,75
	LP 11	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43
		Cont2 M LR holographic foil	159,50
	LP 12	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43
		Cont2 M LR holographic foil	159,50
	LP 13	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43
		Cont2 M LR holographic foil	159,50
LP 14	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43	
	Cont2 M LR holographic foil	159,50	
LP 15	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43	
	Cont2 M LR holographic foil	159,50	
LP 16	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43	
	Cont2 M LR holographic foil	159,50	
LP 17	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43	
	Cont2 M LR holographic foil	159,50	
LP 18	Cont2 M 12L70 RGB R/S 36° DMX Spot	1.111,43	
	Cont2 M LR holographic foil	159,50	

	LP 19	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 20	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 21	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 22	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 23	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 24	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 25	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 26	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 27	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 28	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 29	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	Total		28.702,67
Section 3	LP 30	Cont2 M 12L70 RGB R/S 36° DMX Spot Cont2 M LR holographic foil	1.111,43 159,50
	LP 31	J-SV Modul/S5-120W	121,82
	LP 32	J-SV Modul/S5-120W	121,82
	LP 33	J-SV Modul/S5-120W	121,82
	LP 34	Cont2 M 12L105 A/S Spot Cont2 M LR holographic foil	790,11 159,50
	LP 35	Cont2 M 12L105 A/S Spot Cont2 M LR holographic foil	790,11 159,50
	LP 36	Cont2 M 12L105 A/S Spot Cont2 M LR holographic foil	790,11 159,50
	LP 37	Cont2 M 12L105 A/S Spot Cont2 M LR holographic foil	790,11 159,50
	LP 38	Cont2 M 12L105 A/S Spot Cont2 M LR holographic foil	790,11 159,50
	LP 39	Cont2 M 12L105 A/S Spot Cont2 M LR holographic foil	790,11 159,50
	LP 40	Cont2 L 36L105 830 R/S 16° Spot Cont2 LR holographic foil Cont2 M LV shade screen	1.223,08 233,45 46,40

LP 41	Cont2 L 36L105 830 R/S 16° Spot	1.223,08
	Cont2 LR holographic foil	233,45
	Cont2 M LV shade screen	46,40
LP 42	Cont2 L 36L105 830 R/S 16° Spot	1.223,08
	Cont2 LR holographic foil	233,45
	Cont2 M LV shade screen	46,40
LP 43	Cont2 L 36L105 830 R/S 16°	1.223,08
	Cont2 LR holographic foil	233,45
other	DALI-DMX Gateway	556,08
	LM-iZSQ	748,20
	LITECOM CCD	1.515,25
	LITECOM APP Shows	456,75
	LM-CIRA WH	708,33
	LM-4UAS	231,28
	ZGS Commissioning Service	2.494,03
	Total	20.009,29
	Total net amount	52.568,68

Investment location		
NUTS 3	Address (Street, house number, postal code, city, country)	GPS coordinates
AT 113 Südburgenland	Batthyány Straße 10, A 7540 Güssing	47° 3' 33.552" N 16° 19' 28.164" E

Duration and process of investment implementation	
Start date	End date
May 2018	November 2018

Major milestones of investment implementation

May/June 2018

- 1 Litecom CCD central control unit light management
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- 1 DALI-DMX Gateway
- 3 headlight CONT2 M 12L70 RGB R/S 36 ° DMX
- 400 meter cable E-YY-J 5x6 RE
- 100 pcs. armored clamp 32
- 100 meter armored hose Highspeed UV-ST Fränki FFKU-EM-F-UV 25 SW 25430025
- 400 meter armored hose Highspeed UV-ST Fränki FFKU-EM-F-UV 20 SW 25430020
- 500 meter DMX cable Omni Trans 2x0.34 1.100 hm
- 1 LM-BV bus supply 100 for control cabinet
- 1 LM-4UAS universal input 4x for control cabinet (and ff) (see 18 appendix pages bill of delivery)

- 12 meter evilon pipe light grey "M" 25
- 25 IKS clamp 25
- 1 4-pole contactor, 24 A ABB ESB 24
- 1 ground fault circuit interrupter A 40A/4 30mA 1kA 5SM3344-6LA
- 1 LS-switch 6KA, 3POL+N-C16 SIEMEN 5SY6616-7
- 1 circuit breaker C13-16A 1-pole + Mp
- KV 9448 M KV-machine casing Hensel 62065000
- 1 2-pole contactor ESB 20/20 220V Nr. 59267

Work carried out in May / June 2018 according to an employee of the executing company:

- Production of the piping incl. digging work
- Wiring of the headlights incl. Data transmission line (DMX cable) - with clamping work
- Safety measures at the top station of the elevator and mounting of a distributor
- Mounting of various floodlights between "Scheiblturm" and "Adamstor" (in the first part of the pathway - castle entrance)

See attachments:

- Lighting Points map
- Project description lighting concept castle Güssing
- Description THORN Contrast 2 LED
- Technical description THORN Contrast 2 LED
- Bill of delivery

Finished steps within the milestone period

Pathway Part 1: Change of eight 500 watt halogen headlights = 4000 watts (72 cents per hour) (not enough to ensure a safe walk to and from the castle) for the path lighting

Pathway Part 2: The castle was illuminated by six pieces of 600 Watt sodium lamps = 600 watts (65 cents per hour) and provided only poor lighting

Result of the work carried out - castle gate, part 1

- 25 LED CONT 2 M luminaries with 32W - mounted
800 W means costs of 14 cents per hour
That is a savings of 58 cents an hour
The price of purchasing electricity per kWh is calculated at 18 cents.

Result of the work carried out - castle, part 2

- 7 LED CONT 2 L luminaries mounted; Consumption/piece: 119 W;
The cost of 833 W per hour is 15 cents.
The savings are 50 cents per hour.

Ownership and durability of the investment (e.g. maintenance, financing)

The castle of Güssing is owned by the public “Foundation of the formerly sovereign Prince Philipp Batthyány for the protection of the old castle of Güssing” with the shareholder Province of Burgenland. The path between castle and monastery is owned by the Castle Foundation and due to this fact it is also guaranteed that the maintenance can be managed.

References to related pilot action (output fact sheet) and relevant deliverables (e.g. pilot action report, studies) and web-links.

If applicable, additional documentation, pictures or images to be provided as annex

- Report of local meetings between architect, technician, head of foundation of the castle Güssing
- Pilot Action factsheet including some pictures for the general overview
- Information about the relevant building authority of the town of Güssing as well as the official departments from the Province of Burgenland. The necessary approvals are within this report and is relevant for the municipality of Güssing, the county of Burgenland and the Austrian heritage protection department.