

HPI(T) “Plus” lamps

Metal halide lamps

compatible with HPL and SON gear

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HPI lamps

Nomenclature

HPI	High Pressure Iodides
Plus	Compatible both on HPL and SON gear
BU	Base up
S	Internal starter
P	Protected (Teflon coating)
T	Tubular

Product introduction 1999

- Introduction of the new Philips HPI(T) “Plus” range of lamps.
- All HPI BU(-S)(-P) and HPI T (250 W & 400 W) lamps are both mercury and SON gear compatible.

HPI -T (tubular) types starting October 1999

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Product range

HPI Plus BU(S)-P ovoid lamps

	HPI Plus			
	BU	BUS	BU-P	BUS-P
250W	●			
400W	●	●	●	●
Luminaire	Closed		Open	
Gear	HPL or SON			

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Specifications

HPI Plus BU(S)(-P) ovoid lamps

HPI Plus		250 W BU		400 W BU(S)(-P)	
Gear		HPL/HPI	SON	HPL/HPI	SON
Lamp power	W	256	302	400	454
Luminous flux	lm	19 000	25 500	35 000	42 500
Luminous efficacy	lm/W	74	84	88	94
Correlated colour temp	K	4300	3800	4300	3800

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Product range

HPI(T) Plus T tubular lamps

	HPI
	T
250 W	●
400 W	●
Luminaire	Closed
Gear	HPL or SON

New!

Specifications

HPI(T) Plus (tubular) lamps

HPI-T Plus		250 W T		400 W T	
Gear		HPL/HPI	SON	HPL/HPI	SON
Lamp power	W	245	295	390	445
Luminous flux	lm	19 000	23 000	35 000	38 000
Luminous efficacy	lm/W	78	78	90	85
Correlated colour temp	K	4600	4000	4300	3900

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Features / benefits

HPI(T) Plus on SON gear

Features	Benefits
Higher luminous flux	Lower investment costs
Compatible on HPL/SON gear	Always works
Lower colour temperature	Attractive for retail
Can replace SON lamps	Upgrade from yellow to white light
Replacement of competitor metal halide lamps	No compatibility problems
Same gear tray	Minimizes gear stock / costs

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Industrial installation example

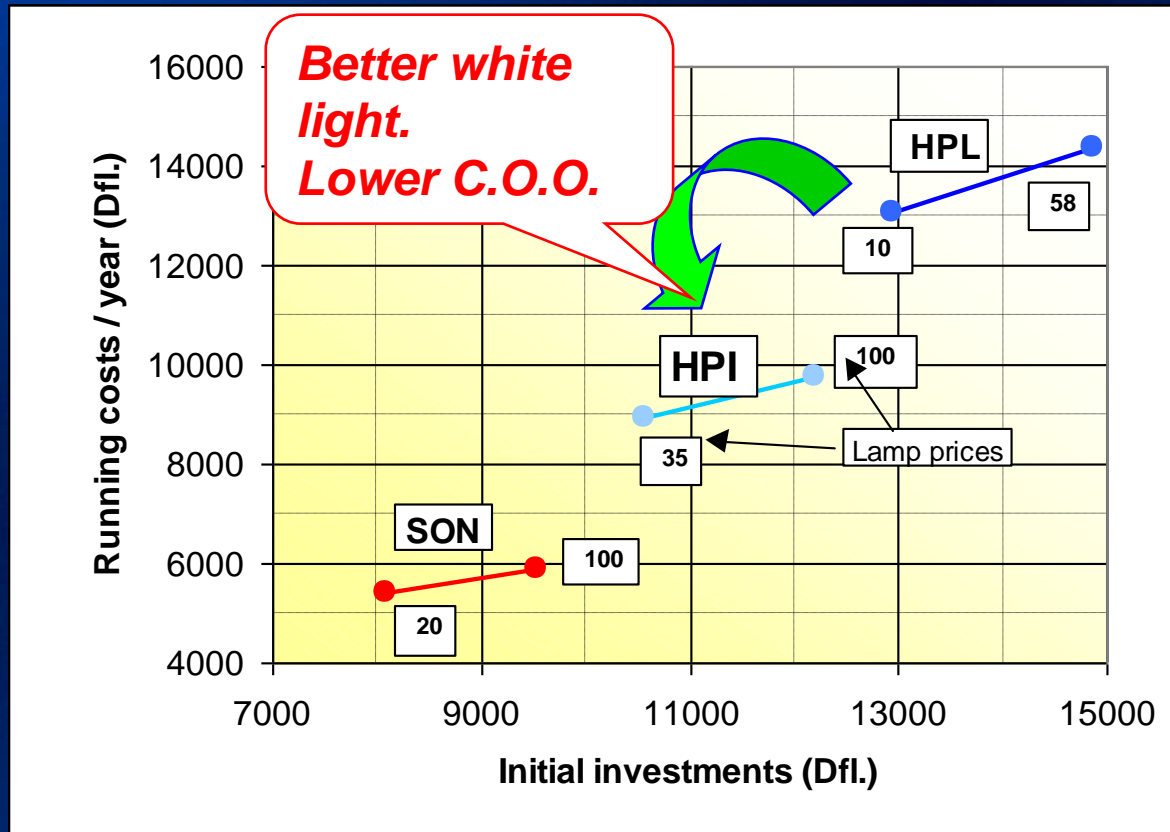
HPI(T) Plus on SON gear & the C.O.O.

- Three solutions for the same lighting level.
- Industrial hall dimensions: 30 x 30 x 8 m.
- Lamp price level from net to retail price.
- Considered: 0.15 NLG / kWh, system power, installation and maintenance costs, group replacement.

Lamp (400W)	Gear	Lum.output	Luminaire	No. of luminaires
HPI-BU Plus	BSN+SN58	42,500	Closed	20
SON	BSN+SN58	48,000	Closed	18
HPL-N	BHL	22,000	Open	40

Upgrade possibility

From HPL to HPI(T)Plus



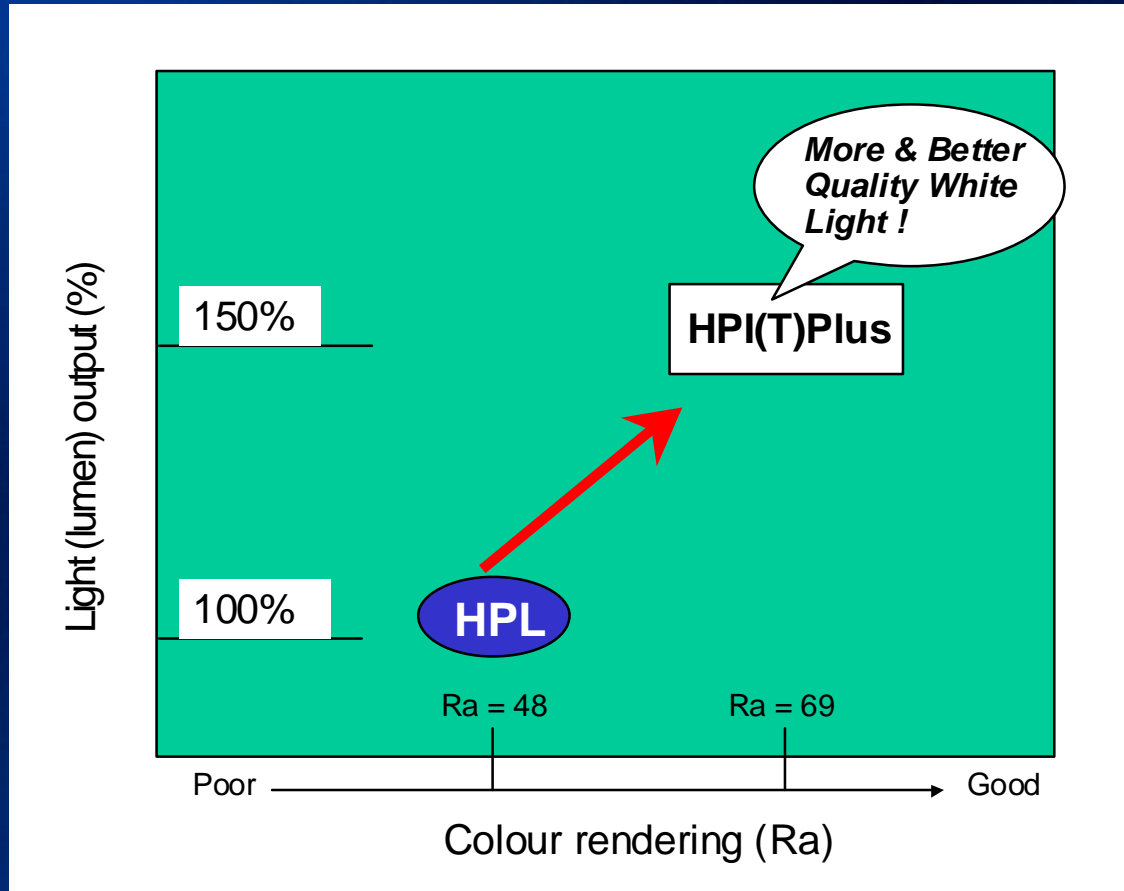
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Upgrade possibility

From HPL to HPI(T) Plus



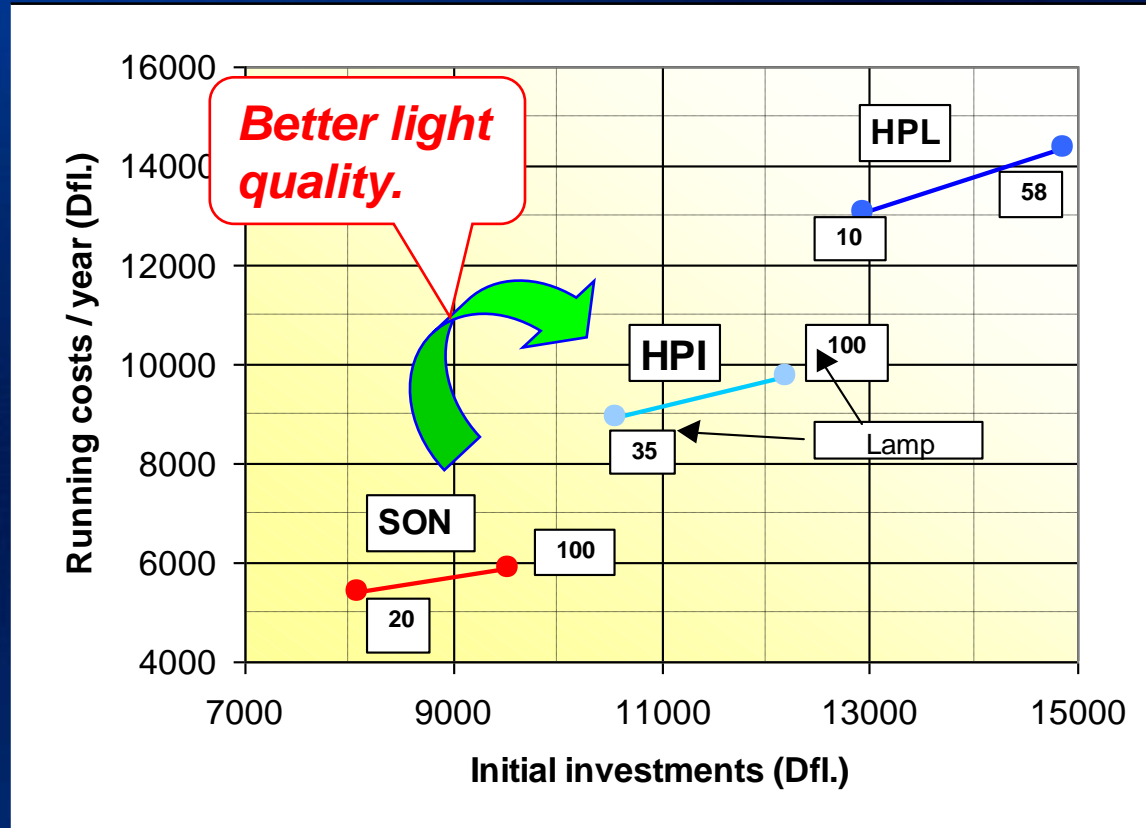
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Upgrade possibility

New: from SON to HPI(T)Plus (from yellow to white light)



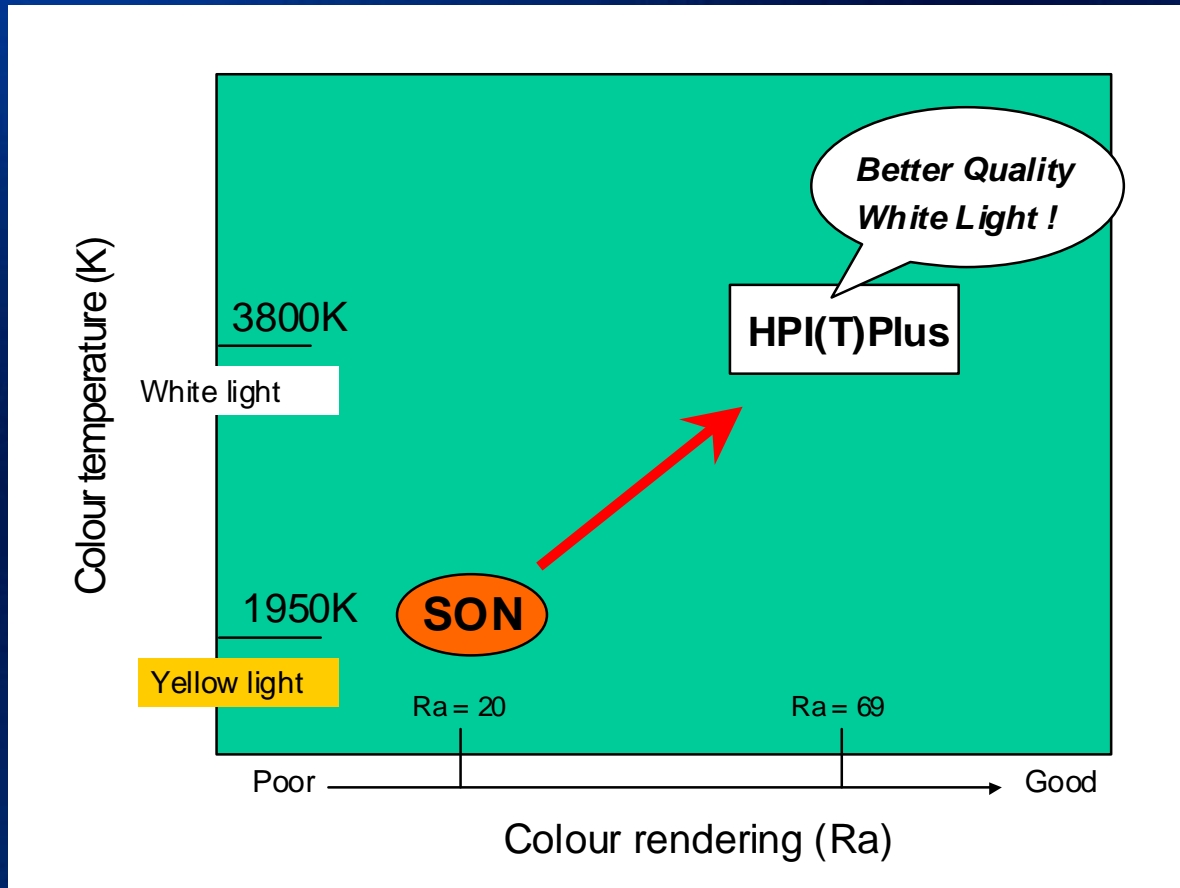
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Upgrade possibility

New: from SON to HPI(T)Plus (from yellow to white light)



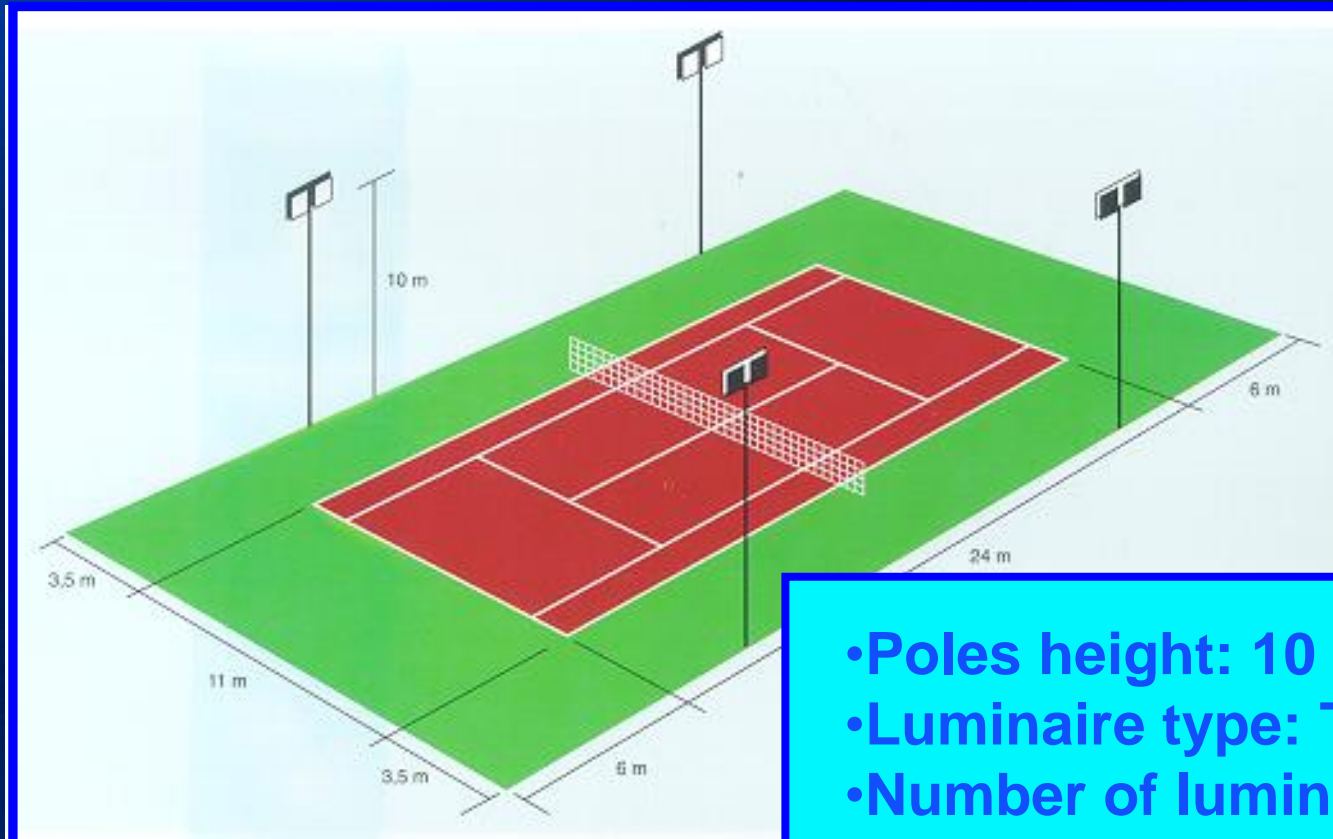
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Outdoor sport example

Tennis course: Three solutions



- Poles height: 10 m
- Luminaire type: TEMPO
- Number of luminaire: 8

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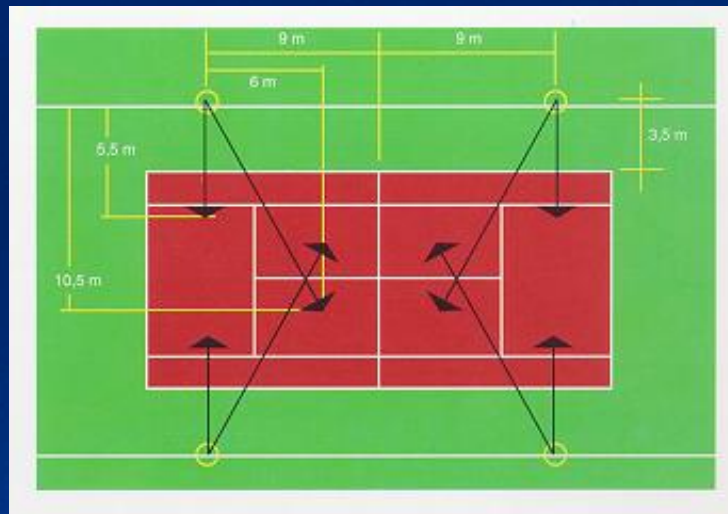


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Outdoor sport example

Tennis course: Three solutions

Lamp (400W)	Gear	Lum.output	Illum. level (lux)
HPI-T Plus	BSN+SN58	38.000	235
SON-T	BSN+SN58	48.000	315
HPI-T (old)	BHL+SI51	35.000	200



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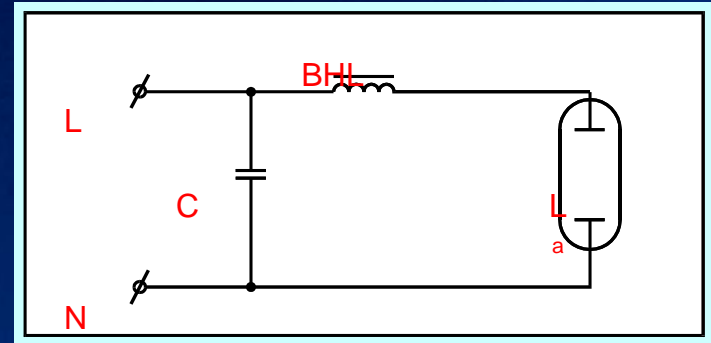
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Circuit options (1)

HPI Plus BUS(-P) lamps

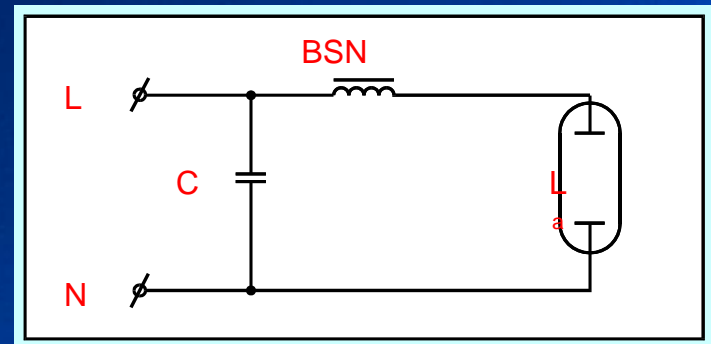
HPL circuit

- BHL ballast
- No external ignitor required
- Lowest cost option



SON circuit without ignitor (NEW)

- BSN ballast
- No external ignitor required

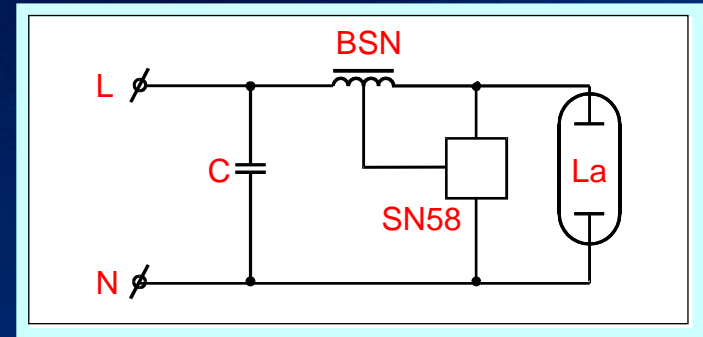


Circuit options (2)

HPI Plus BU(-P) lamps / HPIT Plus lamps

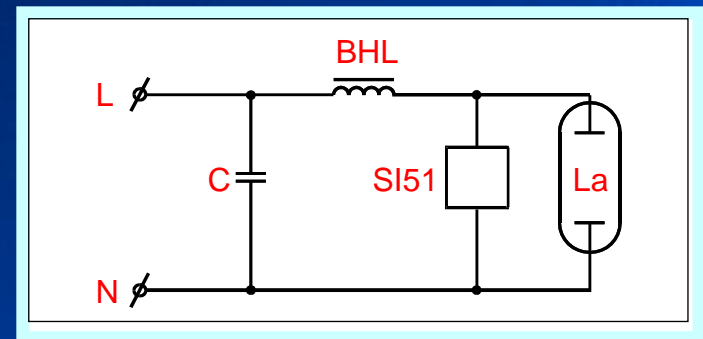
SON circuit BSN ballast and SN 58 ignitor

- Semi parallel ignitor (4 to 5 kV pulse)
- Ignitor tap on ballast



HPI circuit (HPL circuit with ignitor)

- BHL ballast and SI 51 ignitor
- Parallel ignitor (750 V pulse)
- No ignitor tap on ballast



Gear (1)

HPI Plus lamps (HPL / HPI circuit)

Lamp type	Ballast		Ignitor	Capacitor (μ F/V)
	Type	Losses (W)		
HPI Plus 250 W BU & T	BHL 250	16 - 21	SI 51	18/250
HPI Plus 400 W BU(-P) & T	BHL 400	20 - 26	SI 51	28/250
HPI Plus 400 W BUS (-P)	BHL 400	20 - 26	Not required	28/250

(Nominal mains: 220, 230, 240V / Frequency: 50, 60Hz)

Gear (2)

HPI Plus (SON circuit)

Lamp type	Ballast		Ignitor	Capacitor (μ F/V)
	Type	Losses (W)		
HPI Plus 250 W BU & T	BSN 250	21 - 26	SN 58, SN 58 T5*	32/250
HPI Plus 400 W BU(-P) & T	BSN 400	28 - 30	SN 58, SN 58 T5*	45/250
HPI Plus 400 W BUS (-P)	BSN 400	28 - 30	Not. required	45/250

(Nominal mains: 220, 230, 240V / Frequency: 50, 60Hz)

* Self stopping ignitor

Advantages vs competitor lamps

HPI(T) Plus lamps

3 band Na/Tl/In iodide Philips	2 band Na/Sc filling
Excellent lumen maintenance	Poor lumen maintenance
Compatible with both HPL and SON circuits	Mainly on SON systems
Natural colour impression	Greenish colour impression
Can ignite on low voltage ignitors	Require high voltage ignitors

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Advantages vs competitor lamps

HPI(T) Plus lamps - why Teflon protection ?

- Protection is needed where metal halide lamps are used in open luminaires to contain the fragments of an arc tube in the unlikely event of its explosion at the end of lamp life; or to contain the fragments of the outer bulb in case of external disturbances.
- Two protection mechanisms are available: to protect the arc tube with a shatter shield (eg **Osram**) or to cover the whole lamp with a teflon coat (eg **Philips**)

Advantages vs competitor lamps

HPI(T) Plus lamps - why Teflon protection ?

- A shatter shield only provides protection when the arc tube explodes and not in the case of external disturbances
- When using Teflon damage caused to the lamp both by internal or external factors are contained within the teflon envelope
- Metal halide lamps designed for usage in closed luminaires will be affected in their operation when such internal changes as the addition of a shatter shield over the arc tube are made. Laboratory results show an increased sodium migration leading to **short lamp life.**

Advantages vs competitor lamps

HPI(T) Plus lamps - why Teflon protection ?

- A program of simulated explosions proved conclusively that the **Teflon** coated solution is **100%** reliable.

This is not in the case with the **shatter shield**.

Questions and Answers

Q1. Are Philips HPI(T) Plus lamps compatible both on mercury and sodium gear ?

A1. *Starting end 1999 all Philips HPI 250 and 400 W lamps are compatible on mercury and sodium gear. The lamps will be labeled HPI(T) Plus.*

Q2. What is the lifetime and maintenance on SON gear ?

A2. *The lifetime and lumen maintenance of HPI Plus lamps are the same on mercury and SON gear.*

Questions and Answers

Q3. Can Philips HPI(-T) Plus lamps replace HPS(SON) lamps?

A3. *HPI(-T) Plus lamps are electrically retrofit with HPS lamps. Care should be taken to ensure the maximum temperature limits of the lamp and other system components in the luminaire is not exceeded.*

Q4. Can the new “Plus” types be used to maintain the existing Philips installations?

A4. *When the lamps are operated on HPL gear (this is the case for existing Philips installations) there are no differences in performance compared with the old versions.*

Questions and Answers

Q5. Why Teflon protected version (-P)?

A5. Protection is needed where metal halide lamps are used in open luminaires to contain the fragments of an arc tube in the unlikely event of its explosion at the end of lamp life; or to contain the fragments of the outer bulb in case of external disturbances.

Two protection mechanisms are available: arc tube with a shatter shield or to cover of whole lamp with a Teflon coat. Shatter shield only provides protection when the arc tube explodes and not in the case of external disturbances. With the Philips Teflon solution both potential problems are solved.

Questions and Answers

Q6. Can HPI(T)Plus lamps replace ALL competitors metal halide lamps?

A6. Yes. The unique feature of the Philips HPI(T)Plus range of lamps is that they are compatible on both HPL (Mercury) and SON gear. Some Competitors lamps run on HPL gear only while others run on SON gear only. The Philips HPI(T)Plus range of Metal Halide lamps can run on both sets of gear so they can replace all competitors lamps of this type.

Philips HPI(T) Plus

**Compatibility
on HPL and SON gear**

A new opportunity

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