28th June 2012

VMS – some crucial aspects of optoelectronic features

Znaki o zmiennej treści w aspekcie kąta dystrybucji wiązki świetlnej

EKSPERT W INTEGRACJI SYSTEMÓW DROGOWYCH

APM Konior Piwowarczyk Konior Sp. z o.o.

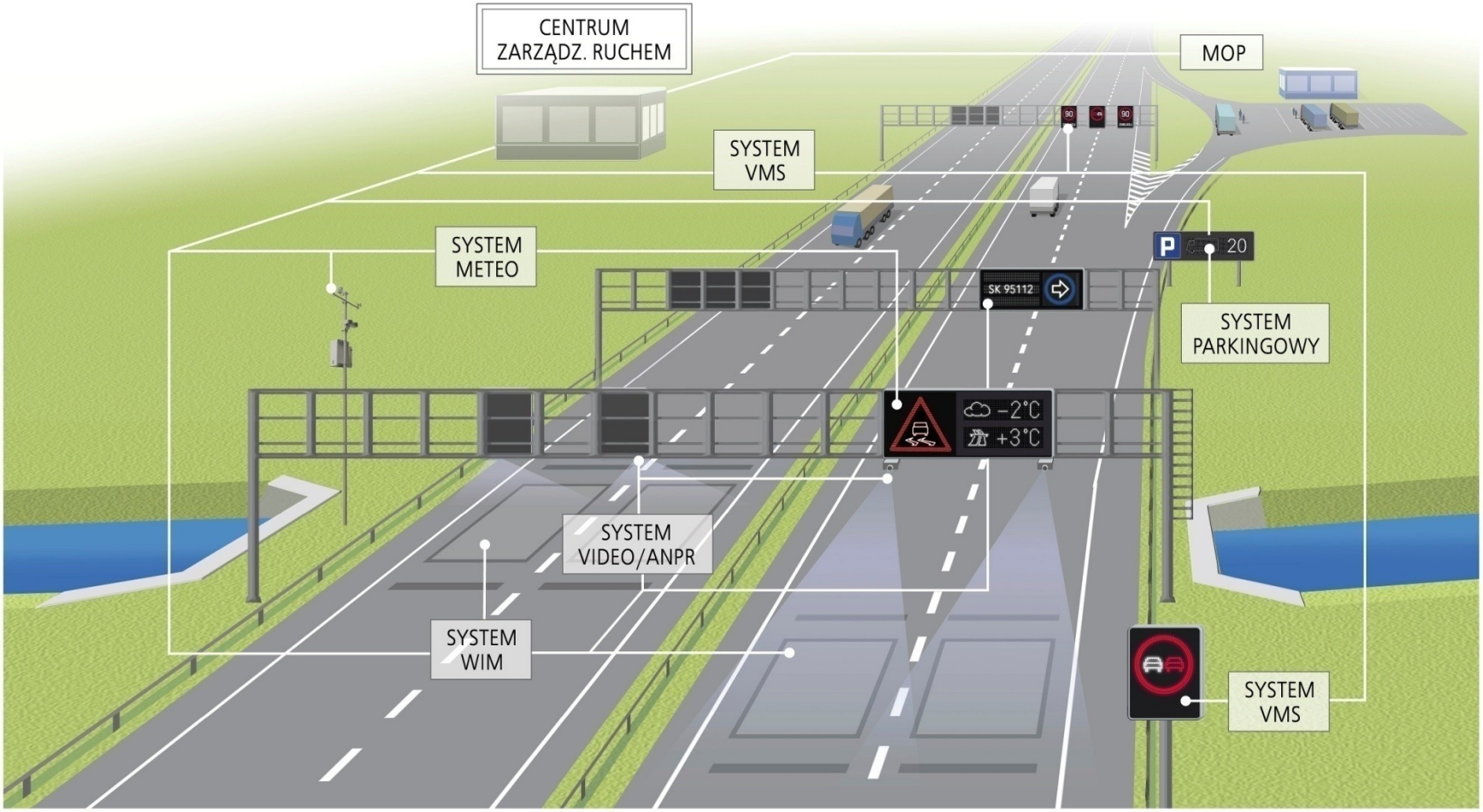
The APM company was established in 1994 on the initiative of Aleksander Konior, Paweł Piwowarczyk, and Marek Konior.

Since the beginning of its activity, the company renders on the Road Traffic Safety Devices Market.

Comprehensive projects realized by the company include: audit, preparation of the design concept, realization and implementation of the designed solutions, as well as technical support.

EXPERT IN ROAD SYSTEMS INTEGRATION

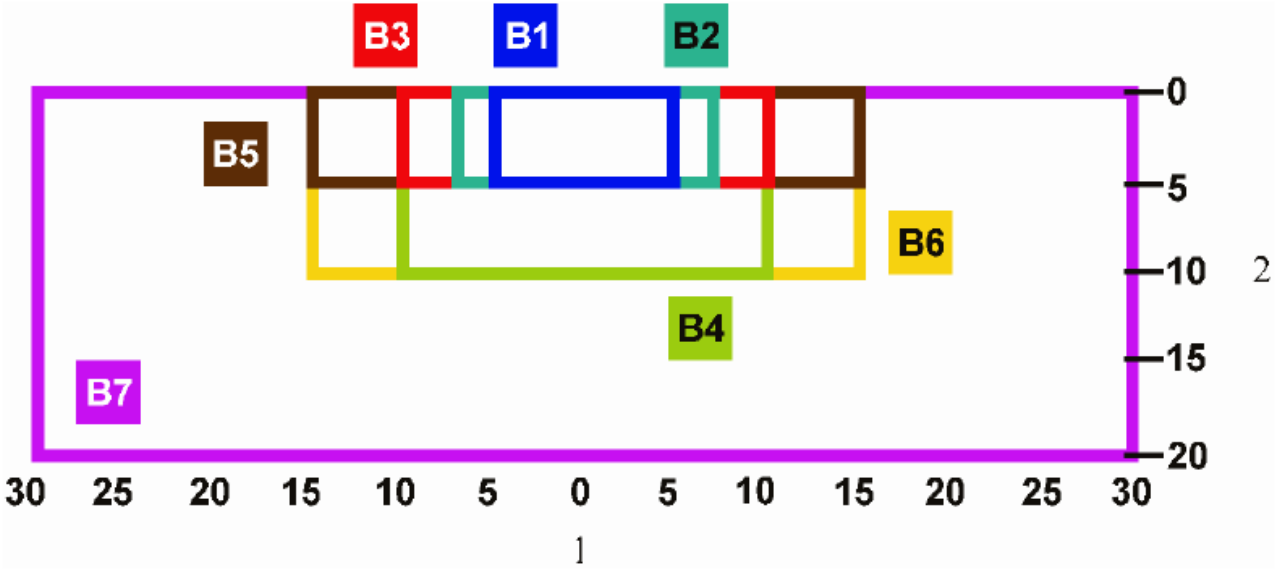
ITS Road Systems



Variable Message Sign (VMS) – acc. EN 12966-1

VMS is a sign where the information shown can be changed.
The information can be text and/or symbols.

Relation between beam width classes – acc. EN 12966-1



Key

1 Beam width horizontal
2 Beam width vertical

Beam width class	Test angles [°]	
	Horizontal	Vertical
B7	-30 +30 0	0 0 -20

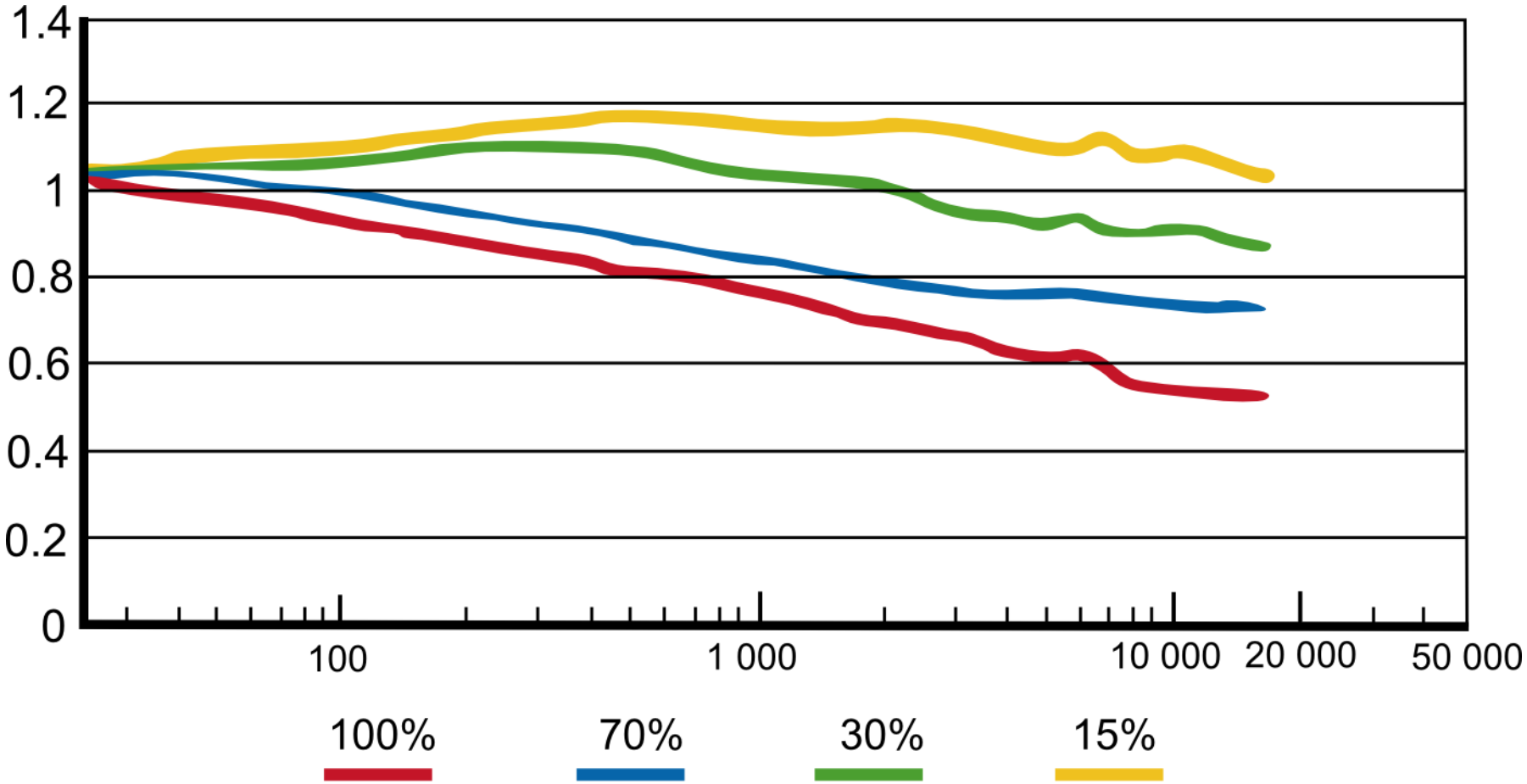
Examples of typical applications to assist in the correct selection of Beam Width Class – acc. EN 12966-1

Beam width class	Typical application
B1	High speed road, two running plus one safety lanes, sign mounted at high level above traffic typically size ranges D and E
B2	High speed road, three running plus one safety lanes, sign mounted at high level above traffic typically size ranges D and E
B3	High speed road, four running plus one safety lanes, sign mounted at high level above traffic or at the side of the road and requiring a wider beam width to cover all the lanes, typically size ranges D and E
B4	Medium speed road, sign mounted at high level, typically size ranges B and C
B5	Urban areas, shoulder mounted sign, sign mounted at low level, typically size ranges A, B and C

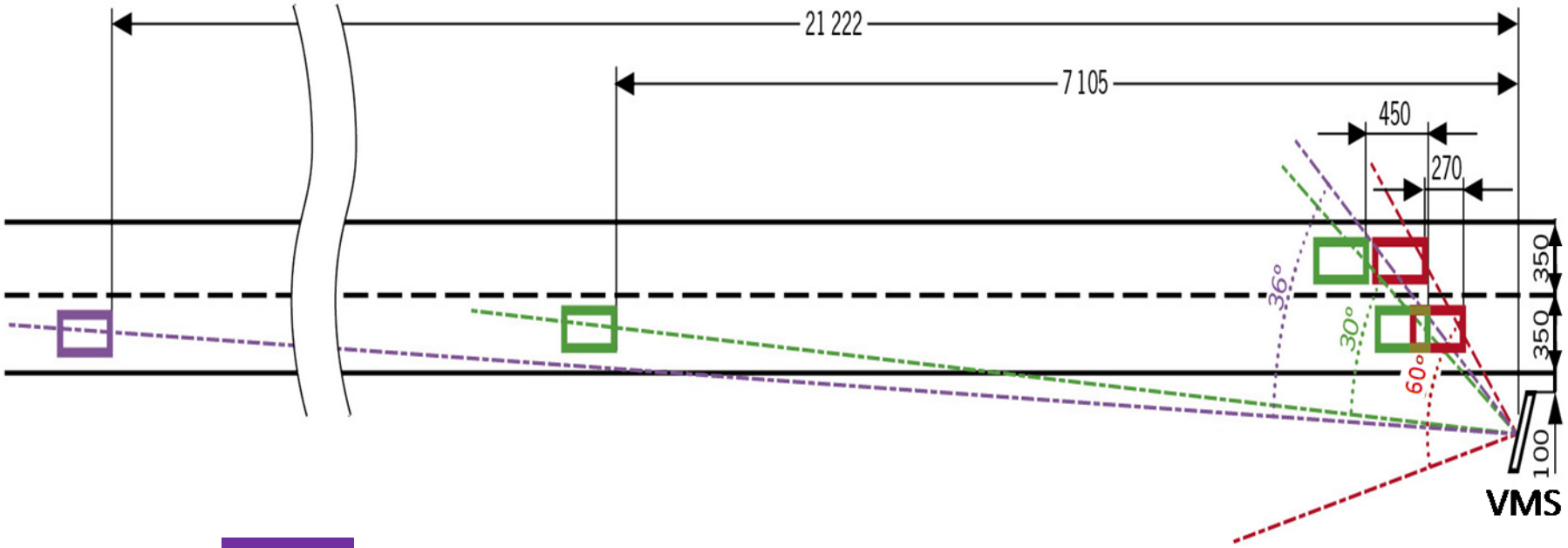
Examples of typical applications to assist in the correct selection of Beam Width Class – acc. EN 12966-1

Beam width class	Typical application
B6	As B5 above, sign mounted at high level
B7	For special applications where very wide horizontal and vertical beam widths are required NOTE 1 In urban areas B7 could be used where the approach speed is slow and legibility distance is short, it could account for the interests of cyclists and pedestrians. NOTE 2 In highway applications B7 could be used where extreme road curvature has to be accommodated e.g. a circular entry slip road onto a high speed highway.

The decrease of the relative luminance value over time, with different LED currents



An example of the visibility of the sign for different classes of the beam distribution – text 160 mm, pp=20 mm (maximum readability distance 96 m)



B6(+)		visibility distance 212 m
B6		visibility and readability distance 71 m
B7		visibility distance >212 m

The Optical Performance Efficiency (OPE)

$$OPE = (L_R \times I_N \times BW \times pp^2) / (a \times I^2 \times Lx)$$

L_R:	achieved luminance ratio (see test report by Notified Body),
I_N [mA]:	maximum allowed forward current (see LED data sheet),
BW:	beam width acc. EN12966-1,
pp [mm]:	element spacing (pixel pitch) acc. to definition of EN12966-1,
a:	number of light sources per element, LEDs of the same colour per pixel,
I [mA]:	operating current to meet requirement on luminance and luminance ratio (see test report of CE-Certificate),
L_x:	factor depending on the achieved luminance class acc. to EN12966-1,

Thank you for your attention!

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