



Emphasis has been on development of the BPS technology by proof of concept in laboratory and field trials with Field Liner prototypes, optimisation of materials for commercial BPS products, and industrial scale 10-year in-service installations by major utilities in key markets of Africa and USA. All end users were contracted to purchase their BPS on a commercial basis. Milestones are listed below.

MILESTONES IN DEVELOPMENT AND COMMERCIALISATION OF THE BPS					
YEAR	PEER-REVIEWED SCIENTIFIC PUBLICATIONS		REPORTS		UTILITY COMPANY PURCHASE ORDERS
	DOCUMENT	SIGNIFICANT FINDINGS	BIOTRANS	INDEPENDENT	
1993	B) <u>IBB</u> C) <u>IRG Orlando</u>	BPS <u>prevent decay</u> of CCA-treated and creosote-treated posts Hurdle Theory explained the role of BPS in pole protection	A) Wood SA :- D) E) F) G)		
1994	K) <u>IRG Bali</u>	BPS <u>prevent leaching</u> of preservatives from posts Monolayer plastic prototype tests initiated on Eskom poles at Park Rennie	Wood SA :- H) I)		Eskom - Park Rennie, RSA
1995	N) <u>IRG Copenhagen</u>	Antifungal plastic invented for BPS	Wood SA-L) M)		eThekweni Electricity 1, RSA
1996	Q) <u>IRG Guadeloupe</u>	a) Park Rennie poles over 18 mths - BPS working as on posts b) <u>Multilayer BPS</u> invented & put into service on Eskom line at Umbumbulu	Wood SA :- P)	EEC report on CRAFT I	Eskom - Umbumbulu; eThekweni Electricity 2
1997	R) <u>Madison</u> T) <u>Applitech</u> U) <u>IRG Whistler</u>	BPS theory & calculations of cost savings explained as R) and presented as T) at Eskom Conference in Johannesburg; BPS <u>prevented leaching</u> from Umbumbulu poles over 1 year	Vineyards :- S)	EEC CRAFT II & III reports; Prof. J. Morrell report, Oregon State University	eThekweni Electricity 3; Benoni Town Council 1, RSA
1998	V) <u>Colorado World Pole Conference</u>	a) Park Rennie poles at 4 yrs show multilayer BPS <u>essential</u> b) BPS <u>prevented leaching</u> from Umbumbulu poles over 2 years	SA Market Survey; Eskom Umbumbulu 2-year report	B. Gordon cost savings report, eThekweni Electricity; Prof. J. Ridl's Environmental law report on BPS usage	eThekweni Electricity 4; Benoni Town Council 2



1999	X) Urban Management	BPS <u>improved</u> substandard Eskom poles at Umbumbulu over 3 years while standard poles without BPS were deteriorating – Eskom issued <u>National Stock No's</u> to product for Procurement purposes	Eskom Umbumbulu 4-year report	Eskom – National Stock Numbers issued for Field Liner BPS	Eskom - Hluhluwe; Seattle City Light 1, USA; eThekweni Electricity 5
2000	Y) <u>Colorado World Pole Conference</u>	BPS <u>continued to improve</u> substandard poles at Umbumbulu over 4 years while standard poles without BPS <u>continued to deteriorate</u>	1 st ready-to-use BPS patent specifications	CRAFT Project conclusions	Seattle City Light 2, USA; eThekweni Electricity 6
2001			SCL vapour barrier report	EEC-FAIR rep; CRAFTfinal rep.	Eskom - Hotazel; eThekweni 7
2002	Patent Offices	BPS development with Field Liner prototypes culminates with the patented commercial product known as the Biotrans Pole Sleeve	Eskom Umbumbulu 6year report; eThekweni Electricity 6 year report; TSI response	Elsenburg Vineyard 5-year report; Seattle City Light specify BPS for all poles 2002 - 07	Benoni Town Council 3; eThekweni Electricity 8
2003	<u>ESI Africa</u>	Role of BPS in pole protection at Umbumbulu over 6 years explained	ETA Awards	USA EPRI; Seattle City Light – "Near Perfect Pole"	Seattle City Light 3, USA; eThekweni Electricity 9
2004	Z) <u>Energize</u>	BPS <u>saved</u> substandard poles at Umbumbulu over 6 years while standard poles without BPS were <u>beginning to fail</u>	SCL UV stable; eThekweni Electricity report on TSI	Utility Pole Consultants	Seattle City Light 4, USA; eThekweni Electricity 10
2005		Eskom-approved independent inspectors <u>confirm</u> substandard Umbumbulu poles with BPS <u>had become</u> Class 1 poles at 10-years	Poleguard; Buffalo City Electricity report on TSI	eThekweni Electricity 5-year report; Ellensburg Vineyard 8-year samples	Buffalo City Electricity, RSA; Kenya Power and Lighting Company
2006	Note – to trace documents cited as A) – Z) above:- separate list of publications available on request		Volume of 26 BPS pubs. A-Z	AluFoil Trophy; eThekweni Electricity plan to specify BPS	Seattle City Light 5, USA
2007			<u>BPS specs</u> ; COP; MSDS;	OSU/ SCL rep; AWPA P20-07	SNOPUD, USA
2010	20 years' work summarised in peer-reviewed scientific article published to review BPS history and development: Baecker, A.A.W. (2010) Historical review of development of barrier protection systems for preserved wooden poles. <i>Int. Wood Prods. J.</i> , 1 (1), 6 – 14.				
2011 – 2016	SANS 457; 753, 754 and 1288 amendments submitted to SABS showing that BPS permit preservative reduction in treated wooden poles. The proposals led to: New SABS specification (CD of SANS 1634: 2015) drafted for barrier protection systems				