Overseas Market Information

Market Study on Engineering Process Outsourcing

(Part - II)

Major regions supplying engineering processes

The supply side of the engineering process market is seen to have certain common characteristics. Countries that have an engineering talent pool available to perform EPO services and carry the benefits of wage arbitrage and available capacities have formed the supplier base for Engineering Process (EP) requirements. The major countries outsourcing engineering processes are :

- Asia (India, China, Thailand, Taiwan, Philippines)
- Eastern Europe (Romania, Russia)
- North America (Mexico, Canada)

The emerging economies from where EPO services are being outsourced :

- Vietnam and Brazil

Export of engineering export to

- USA
- Canada
- Mexico
- Germany
- Italy
- UK

The details of Indian export of EPO to the above countries are obtained from UN Comtrade and furnished in *Annexure IV*.

Annexure IV

Indian Export of EPO to North America and European Union (Germany, Italy, UK)

Indian Export of EPO to USA

Period	*Trade Flow*	*Reporter*	*Partner*	*Commodity*	*Trade Value*
2002	Import	USA	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 33,078
2003	Import	USA	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 43,000
2004	Import	USA	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 4,007
2005	Import	USA	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 28,684
2006	Import	USA	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 181,166
2002	Import	USA	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr... [HS2002 Code 490600]	$ 33,078
2003	Import	USA	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr... [HS2002 Code 490600]	$ 43,000

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2004	Import	USA	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr... [HS2002 Code 490600]	$ 4,007
2005	Import	USA	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr... [HS2002 Code 490600]	$ 28,684
2006	Import	USA	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr... [HS2002 Code 490600]	$ 181,166
2005	Import	USA	India	Prefabricated structural components for building/civil engineering, of ceme... [HS2002 Code 681091]	$ 2,156
2002	Import	USA	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 8,686,220
2003	Import	USA	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 8,523,665
2004	Import	USA	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 11,961,555
2005	Import	USA	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 14,218,264
2006	Import	USA	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 20,136,933
2004	Import	USA	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 467,437
2005	Import	USA	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 31,986
2006	Import	USA	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 516,451
2002	Import	USA	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 33,615
2003	Import	USA	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 1,674,952
2004	Import	USA	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 62,927
2005	Import	USA	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 99,744
2006	Import	USA	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 21,531
2002	Import	USA	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 817,888
2003	Import	USA	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 42,255
2004	Import	USA	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 321,017

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2005	Import	USA	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 54,494
2006	Import	USA	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 17,605
2002	Import	USA	India	Automatic data processing machines, presented in the form of systems (excl... [HS2002 Code 847149]	$ 1,305,540
2003	Import	USA	India	Automatic data processing machines, presented in the form of systems (excl.... [HS2002 Code 847149]	$ 1,286,162
2004	Import	USA	India	Automatic data processing machines, presented in the form of systems (excl.... [HS2002 Code 847149]	$ 4,114,227
2005	Import	USA	India	Automatic data processing machines, presented in the form of systems (excl.... [HS2002 Code 847149]	$ 759,059
2006	Import	USA	India	Automatic data processing machines, presented in the form of systems (excl.... [HS2002 Code 847149]	$ 919,512
2002	Import	USA	India	Digital processing units other than of 8471.41/8471.49, whether or not cont... [HS2002 Code 847150]	$ 367,490
2003	Import	USA	India	Digital processing units other than of 8471.41/8471.49, whether or not cont... [HS2002 Code 847150]	$ 912,899
2004	Import	USA	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 537,563
2005	Import	USA	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 441,896
2006	Import	USA	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 859,582
2002	Import	USA	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 827,540
2003	Import	USA	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 573,533
2004	Import	USA	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 462,750
2005	Import	USA	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 843,800
2006	Import	USA	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 552,792
2002	Import	USA	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,486,584
2003	Import	USA	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,073,900
2004	Import	USA	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,201,176
2005	Import	USA	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,756,455
2006	Import	USA	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 3,448,226

Indian Export of EPO to Canada

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2002	Import	Canada	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 12,439
2004	Import	Canada	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 1,418
2005	Import	Canada	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 1,270
2006	Import	Canada	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 25,321
2002	Import	Canada	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr... [HS2002 Code 490600]	$ 12,439
2004	Import	Canada	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 1,418
2005	Import	Canada	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 1,270
2006	Import	Canada	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 25,321
2002	Import	Canada	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 727,211
2003	Import	Canada	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 584,662
2004	Import	Canada	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 825,185
2005	Import	Canada	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 856,983
2006	Import	Canada	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 1,247,086
2004	Import	Canada	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 18,970
2002	Import	Canada	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 26,826
2003	Import	Canada	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 23,430
2004	Import	Canada	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 5,246
2005	Import	Canada	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 10,927
2003	Import	Canada	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 4,203
2005	Import	Canada	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 1,991

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2006	Import	Canada	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 56,569
2002	Import	Canada	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 217,002
2003	Import	Canada	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 195,973
2004	Import	Canada	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 118,699
2005	Import	Canada	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 123,586
2006	Import	Canada	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 201,582
2002	Import	Canada	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 8,709
2003	Import	Canada	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 16,122
2004	Import	Canada	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 26,108
2005	Import	Canada	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 2,699
2006	Import	Canada	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 15,635
2002	Import	Canada	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 81,858
2003	Import	Canada	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 10,180
2004	Import	Canada	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 44,402
2005	Import	Canada	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 71,967
2006	Import	Canada	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 146,689
2002	Import	Canada	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 43,393
2003	Import	Canada	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 137,304
2004	Import	Canada	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 223,504
2005	Import	Canada	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 143,639
2006	Import	Canada	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 257,716

Indian Export of EPO to Mexico

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2005	Import	Mexico	India	Prefabricated structural components for building/civil engineering, of ceme ... [HS2002 Code 681091]	$ 32
2006	Import	Mexico	India	Prefabricated structural components for building/civil engineering, of ceme ... [HS2002 Code 681091]	$ 280
2002	Import	Mexico	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 1,579,929
2003	Import	Mexico	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 628,593
2004	Import	Mexico	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 2,708,931
2005	Import	Mexico	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 6,183,311
2006	Import	Mexico	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 1,989,571
2004	Import	Mexico	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 32,215
2005	Import	Mexico	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 1,500
2003	Import	Mexico	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 1,663
2004	Import	Mexico	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 1,500
2005	Import	Mexico	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 15,855
2006	Import	Mexico	India	Portable digital auto. data processing machines, weighing not >10kg, consis... [HS2002 Code 847130]	$ 2,669
2002	Import	Mexico	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 3,426
2003	Import	Mexico	India	Automatic data processing machines comprising in the same housing at least... [HS2002 Code 847141]	$ 17,333
2004	Import	Mexico	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 14,967
2005	Import	Mexico	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 9,551
2006	Import	Mexico	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 24,496
2002	Import	Mexico	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 8,250

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2003	Import	Mexico	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 1,700
2004	Import	Mexico	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 5,949
2005	Import	Mexico	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 248
2006	Import	Mexico	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 6,516
2002	Import	Mexico	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 562
2003	Import	Mexico	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 6,499
2004	Import	Mexico	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 14,440
2005	Import	Mexico	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 19,386
2006	Import	Mexico	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 108,076
2002	Import	Mexico	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 127,983
2003	Import	Mexico	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 29,986
2004	Import	Mexico	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 364,963
2005	Import	Mexico	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 83,328
2006	Import	Mexico	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 441,048
2002	Import	Mexico	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,152,729
2003	Import	Mexico	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 93,694
2004	Import	Mexico	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 838,024
2005	Import	Mexico	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 284,244
2006	Import	Mexico	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 636,458

Indian Export of EPO to Germany

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2002	Import	Germany	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 119,000
2003	Import	Germany	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 112,000
2004	Import	Germany	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 255,000
2005	Import	Germany	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 2,000
2006	Import	Germany	India	Plans and drawings for architectural, engineering, industrial, commercial [HS2002 Code 4906]	$ 76,000
2002	Import	Germany	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 119,000
2003	Import	Germany	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 112,000
2004	Import	Germany	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 255,000
2005	Import	Germany	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 2,000
2006	Import	Germany	India	Plans & drawings for architectural/engineering/industrial/commercial/topogr ... [HS2002 Code 490600]	$ 76,000
2002	Import	Germany	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 3,734,000
2003	Import	Germany	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 9,732,000
2004	Import	Germany	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 21,733,000
2005	Import	Germany	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 36,255,000
2006	Import	Germany	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 15,786,000
2003	Import	Germany	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 1,000
2004	Import	Germany	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 11,000
2006	Import	Germany	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 9,000
2002	Import	Germany	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 17,000
2003	Import	Germany	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 27,000

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2004	Import	Germany	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 1,000
2005	Import	Germany	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 44,000
2006	Import	Germany	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 21,000
2002	Import	Germany	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 20,000
2003	Import	Germany	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 57,000
2004	Import	Germany	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 71,000
2005	Import	Germany	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 68,000
2006	Import	Germany	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 130,000
2002	Import	Germany	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 251,000
2003	Import	Germany	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 143,000
2004	Import	Germany	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 104,000
2005	Import	Germany	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 500,000
2006	Import	Germany	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 249,000
2002	Import	Germany	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 272,000
2003	Import	Germany	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 274,000
2004	Import	Germany	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 468,000
2005	Import	Germany	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 240,000
2006	Import	Germany	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 228,000
2002	Import	Germany	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 198,000
2003	Import	Germany	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 4,845,000

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2004	Import	Germany	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 1,437,000
2005	Import	Germany	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 1,271,000
2006	Import	Germany	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 90,000
2002	Import	Germany	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 465,000
2003	Import	Germany	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 74,000
2004	Import	Germany	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 135,000
2005	Import	Germany	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 353,000
2006	Import	Germany	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,133,000

Indian Export of EPO to Italy

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2006	Import	Italy	India	Prefabricated structural components for building/civil engineering, of ceme ... [HS2002 Code 681091]	$ 1,101
2002	Import	Italy	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 65,154
2003	Import	Italy	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 76,879
2004	Import	Italy	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 74,178
2005	Import	Italy	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 136,282
2006	Import	Italy	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 1,340,893
2002	Import	Italy	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 1,645
2004	Import	Italy	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 5,300
2006	Import	Italy	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 5,179
2003	Import	Italy	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 2,273
2005	Import	Italy	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 1,268

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2006	Import	Italy	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 16,342
2003	Import	Italy	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 7,958
2004	Import	Italy	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 9,159
2005	Import	Italy	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 18,787
2006	Import	Italy	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 1,670
2002	Import	Italy	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 24,426
2003	Import	Italy	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 22,952
2006	Import	Italy	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 11,885

Indian Export of EPO to UK

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2005	Import	UK	India	Prefabricated structural components for building/civil engineering, of ceme ... [HS2002 Code 681091]	$ 1,473
2002	Import	UK	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 3,237,777
2003	Import	UK	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 1,359,025
2004	Import	UK	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 2,004,293
2005	Import	UK	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 7,047,457
2006	Import	UK	India	Automatic data processing machines and units thereof [HS2002 Code 8471]	$ 5,677,706
2002	Import	UK	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 475,941
2003	Import	UK	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 12,530
2004	Import	UK	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 21,583
2005	Import	UK	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 10,714
2006	Import	UK	India	Analogue/hybrid auto. data processing machines [HS2002 Code 847110]	$ 21,553

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2002	Import	UK	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 82,371
2003	Import	UK	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 81,760
2004	Import	UK	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 22,748
2005	Import	UK	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 67,995
2006	Import	UK	India	Portable digital auto. data processing machines, weighing not >10kg, consis ... [HS2002 Code 847130]	$ 45,496
2002	Import	UK	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 891,004
2003	Import	UK	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 80,418
2004	Import	UK	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 5,546
2005	Import	UK	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 4,593,797
2006	Import	UK	India	Automatic data processing machines comprising in the same housing at least ... [HS2002 Code 847141]	$ 318,772
2002	Import	UK	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 143,306
2003	Import	UK	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 82,431
2004	Import	UK	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 66,139
2005	Import	UK	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 2,485
2006	Import	UK	India	Automatic data processing machines, presented in the form of systems (excl. ... [HS2002 Code 847149]	$ 133,555
2002	Import	UK	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 13,920
2004	Import	UK	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 144,313
2005	Import	UK	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 23,279
2006	Import	UK	India	Digital processing units other than of 8471.41/8471.49, whether or not cont ... [HS2002 Code 847150]	$ 36,055
2002	Import	UK	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 348,927

Period	Trade Flow	Reporter	Partner	Commodity	Trade Value
2003	Import	UK	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 176,661
2004	Import	UK	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 259,182
2005	Import	UK	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 106,696
2006	Import	UK	India	Storage units (of auto. data processing machines) [HS2002 Code 847170]	$ 73,357
2002	Import	UK	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,040,600
2003	Import	UK	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 466,347
2004	Import	UK	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 328,847
2005	Import	UK	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 235,887
2006	Import	UK	India	Automatic data processing machine units (excl. of 8471.50-5471.70) [HS2002 Code 847180]	$ 1,348,416

The Goods and Services included under EPO

- Plans and drawings for architectural, engineering, industrial, commercial (HS2002 - 4906)
- Plans & drawings for architectural/engineering/industrial/commercial (HS2002 - 490600)
- Automatic data processing machines and units thereof (HS2002 - 8471)
- Analogue/hybrid auto. data processing machines (HS2002 - 847110)
- Portable digital auto. data processing machines, weighing not >10kg, (HS2002 - 847130)
- Automatic data processing machines comprising in the same housing at least ... (HS2002 - 847141)
- Automatic data processing machines, presented in the form of systems (HS2002 - 847149)
- Digital processing units other than of 8471.41/8471.49, (HS2002 - 847150)
- Storage units (of auto. data processing machines) (HS2002 - 847170)
- Automatic data processing machine units (excl. of 8471.50-5471.70) (HS2002 - 847180)

The tabulated data related to Export of EPO shows immense opportunity of export of EPO in the said region.

Key Drivers for Outsourcing Engineering Process

Labour cost arbitrage : labour cost arbitrage along with available capacities to perform engineering work is driving corporations in developed countries to outsource EPO services to low-cost locations.

Reduced product life cycle time : shrinking product life cycles have pressured organizations to produce newer products but with shorter periods to market them. This meant outsourcing more and more EPO services.

Utilization of internal resources on core functions : organizations would like to focus their time and skilled manpower resources on developing its core technology, core engineering design, etc. This meant that low/medium end engineering processes could be outsourced.

Outsourcing non-available technology : organizations outsource EPO services that cannot be done in-house because of lack of technology.

Outsourcing for strategic reasons : fast-emerging economies like India and China form a strategically important destination for organizations to outsource engineering processes to gain better market access and develop better products for local markets.

Scalability : organizations outsource engineering processes because they do not have the requisite capacity to carry out a certain volume of work in the given period of time. It is better to outsource a low-value, high-volume work to be performed in a short span of time.

Global EPO Outsourcing Cost

The cost of outsourcing EPO services from various countries is a function of

- Salaries of engineers
- Cost of running an establishment
- Incentives/benefits received from the Government to run the business

In the absence of data on the cost of running an establishment and Government incentives in various countries, the cost differential is indicated by the differential salaries commanded by engineering graduates in various countries. There is a significant gap between the salaries of engineers of developed countries like the US and developing countries like China and India. However it must be noted that with rising salaries in countries like India (coupled with the rising value chain level of EPO services), the wage cost arbitrage is gradually diminishing.

Estimation of Indian Engineering Process Outsourcing

The various parameters that were taken into consideration to estimate the global EPO market demand and India's market potential for EPO are : the global R&D expenditure which is fairly representative of global engineering expenditure by organizations; the extent of engineering processes outsourced; and India's market share in the global EPO market (projected). Of the total global expenditure on R&D, engineering process outsourcing will continue to grow in the future. The current global EPO market is at 2 per cent-3 per cent of the total global R&D expenditure. This will continue to rise and is expected to reach to 4 per cent-5 per cent by 2010 and about 7 per cent-9 per cent by 2015. This means that the global EPO market is poised to grow to $ 33 bn-$ 40 bn by 2008, $ 50 bn-$ 70 bn by the year 2010 and $ 110 bn-$ 140 bn by 2015. The estimated demand for engineering process outsourcing (EPO) to India has grown at 30 per cent-35 per cent from 2004-06. This demand is expected to grow at the same rate for the next 3 years until 2010. Therefore the current market size of $ 3.2 bn-$ 3.4 bn for EPO services from India is expected to grow to $ 5 bn-$ 6.5 bn by 2008 and reach a level of about $ 12 bn by 2010. The Indian market share for EPO will continue to rise from the 12 per cent market share in the year 2004 to reach about 15 per cent-18 per cent by 2010. The Indian market share of the total global EPO industry can potentially command 18 per cent-22 per cent by 2015. The Indian EPO market has the potential to assume a size of $ 25 bn-$ 30 bn annually in the long term by the year 2015.

Estimated projection of demand for global and Indian EPO market

Based on an analysis of the study's findings, the estimated market demand for EPO

Exhibit 11 : EPO market demand assessment ($ bn)

Year	*Global EPO Market*	*Indian EPO Market*
2004	13 - 15	1.5 - 1.8
2005	17 - 20	2.3 - 2.5
2006	21 - 25	3.2 - 3.4
2008	33 - 40	5 - 6.5
2010	50 - 70	10 - 12
2015	110 - 140	25 - 30

Overview of India's EPO Industry

Types of EPO services suppliers

India's EPO suppliers can be classified into four kinds :

- **IT organizations :** a number of Indian IT services organizations in India like TCS, Wipro, Infosys, Satyam, Patni, and HCL provide a host of engineering services besides their core IT services business.
- **Core engineering organizations :** companies like Plexion, Geometric, InfoTech, Nielsoft, Quest and Quantech provide engineering services as their core business. Core engineering organizations can also be sub-classified into Indian engineering organizations and engineering services organizations from abroad with a delivery centre in India.
- **Captive centre :** these are R&D centre built by outsourcing organizations to meet the global engineering services requirements from offshore locations. Engineering and R&D centre of GM, Ford, Motorola and Texas Instruments are a few examples of numerous such engineering centres in India.
- **Original equipment manufacturers :** OEMs like Mahindra and Mahindra, Tata Motors, Hindustan Motors (HM) and Eicher have built engineering capabilities over the years and have expanded their engineering services to cater to outside needs

Size of Indian EPO Services Providers

For an assessment of the market size, Indian EPO organizations can be classified into large, medium and small-sized depending upon the revenue generated by them. These three categories do not include captive centre, which can vary in size.

- **Large-sized organizations :** the top five IT organizations account for about a third of EPO revenue for India. These are HCL Technologies, Tata Consultancy Services, Infosys, Satyam Computers and Wipro. The FY'05 revenue from engineering services of these five put together is estimated at about $ 1 bn.
- **Medium-sized organizations :** In the medium-sized category lie most of the reputed and growing EPO organizations that have annual revenues in the range of $ 10 m-$ 75 m. Reputed medium-sized organizations would be about 50-75 in number and account for about 33 per cent of the total revenue that comes from Indian EPO services.
- **Small-sized organizations :** These organizations employ between 5 to 50 engineers of varying skills. Such organizations in the country are estimated to be more than 1,000 in number and their contribution to the national EPO revenues would be in single digit percentage.
- **Captive Centre :** These centres are an important component of the EPO market from India as they account for about 30 per cent of the engineering work being outsourced from India. While the total number of R&D centre in the country is estimated to be more than 150 (including engineering services, pharmaceuticals, biotech, etc.) around 70-80 of these captive centres work in various domains of engineering.

Features of the Indian EPO Market

The large EPO organizations number about five (the top five IT organizations). Medium-sized organizations number about 50-75; captive centre (involved in engineering work) number about 70-80; and small organizations number over 1,000. About a third of India's EPO revenues come from the medium-sized organizations, which are about 4 per cent-5 per cent of the total number of EPO organizations in the country. About 30 per cent of the revenue comes from captive centre which are about 6 per cent-7 per cent of the total number of EPO organizations. The large-sized organizations contribute about 30 per cent of the revenue and are only about half a percent in number. The largest number comprises the small organizations at about 88 per cent-90 per cent. They contribute 6 per cent-7 percent of the EPO revenue.

This implies that more than 95 per cent of India's EPO revenue comes from about 10 per cent-12 per cent of the total number of engineering service providers in the country.

Of the total EPO market in India, 32 per cent comes from the electronics and telecom sector, 23 per cent from aerospace, 11 per cent from the automotive sector, and 8 per cent from industrial construction and utilities. The rest of the market comes from various other industry sectors like shipbuilding engineering, civil construction, heavy engineering, mining, metallurgy, consumer durables, agriculture and textiles, etc. The revenue generated per hour in the EPO industry is a function of the level of skilled manpower deployed and the complex nature of the job. The revenue per hour could, therefore, range from as low as $ 5 - $ 10 an hour for less complex work like 3D drafting to $ 70 - $ 100 for complex functions like high end testing and analysis or core product design.

The average revenue generated by EPO in India (according to our primary survey) is estimated at $ 18 - $ 20 per hour. But times are changing fast as more and more complex engineering work contracts are going to Indian EPO service providers.

Role and Challenges for Small Organizations

The number of small organizations in the EPO industry has grown significantly. These organizations play an important role : they expand the base for engineering capabilities and also serve as a breeding ground for development of engineering expertise in the country.

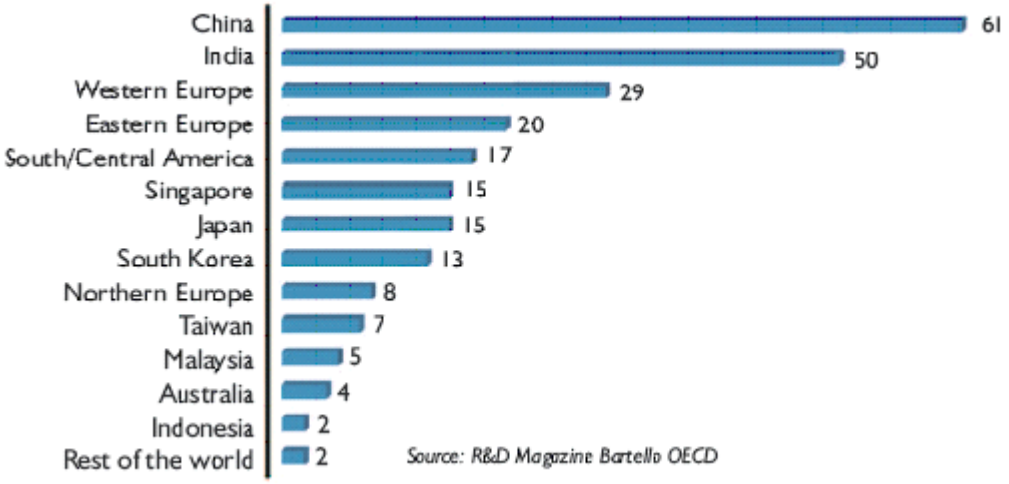
Challenges for Small Organizations

- Being smaller in size and lesser known such organizations find it difficult to attract new business.
- Given the high investment needed per seat, the financial constraints of these smaller players restrict them from expanding capacity specifically when volume of business is not consistent.
- Use of unlicensed software by some players makes it difficult for the other small players to be competitive in the market.
- In the absence of adequate marketing the smaller players are not able to generate big business from international markets.
- Absence of adequate venture capital discourages fresh start-ups.

India's Competitive Analysis

Strengths	Weaknesses
• Large pool of excellent engineers • Well-developed legal and political system • India's reputation in the ITO/BPO sectors • English-speaking manpower • India's capability to deliver high-end engineering solutions • India's emerging economy makes it strategically important • Labour cost arbitrage	• Weak infrastructure • Weak marketing efforts • Poor focus on developing the right talent
Opportunities	**Threats**
• Significant market potential exists for India	• Competition from other countries • India's diminishing wage cost arbitrage advantage • Diversion of limited Human Resources to other industry sectors • Keep the country competitive in an important business area

China - the most preferred destination for investment in R&D (respondents in %)



Recommendations

The recommendations on the thrust industry sectors and the thrust regions/markets have taken into consideration the potential of the market, analysis of competitors, and existing/potential capability of India.

Thrust Industry Sectors and Thrust Regions

With the global demand for EPO services growing rapidly, India must focus on all the major industry sectors that are involved in EPO services. They are :

- Electronics and Telecommunications
- Automotive
- Aerospace and Defense
- Utilities and Industrial Construction

EPO opportunities in each of these sectors are big. Global outsourcing of engineering processes is increasing in all these sectors. So, for India to attain the projected target of $ 25 bn by 2015, an efficient plan of action must be set into motion in all of them. Among these sectors, aerospace and automotive have the potential to become the thrust sectors in our endeavour to carve out a greater share of the global EPO pie.

(Source : EEPC)

(To be continued at next issue)