Expression of Interest (EOI) for Transfer of Technology (TOT) of
Fast Setting and High Strength Polymer Concrete Composites (PolyCC)

Introduction:

Defence Laboratory, Jodhpur has developed Fast Setting and High Strength Polymer Concrete Composites (PolyCC) based on two types of resin systems mainly for rapid repair of runways, helipads and bunkers. PolyCC can be useful for other wartime rehabilitation requirements viz. fast construction / repair of missile launching pads, Class 'A' roads, Test Beds and anchoring of different military structures. Other civil applications include fast repair and construction of express highways, bridges, underground structures, industrial floors, pipes, panel slabs and foundation.

The following resin systems have been developed by Defence Laboratory, Jodhpur:

(i) High temperature resin system is suitable for preparation of PolyCC at ambient temperatures ranging from 10°C to 50°C.
(ii) Low temperature resin system is suitable for preparation of PolyCC at ambient temperatures ranging from –20°C to 10°C.

PolyCC can be manoeuvred to achieve very high compressive strengths >400kg/cm^2 and flexural strength >90 kg/cm^2 within two hours of curing as compared to that achieved by cement concrete in 28 days. Besides fast setting and high strength, they possess additional characteristics, viz., excellent adhesion, water tightness, surface smoothness and resistant to chemical, heat, abrasion and fatigue.

Preparation:

PolyCC can be prepared by mixing the respective resin system as binder with locally available gravel/aggregates as filler in the presence of initiator and accelerator. After polymerisation, a three-dimensional polymeric network is formed which is responsible for the high strength of PolyCC.

Advantages of PolyCC Technology:

- Innovative technology requires no water at all.
- PolyCC can be prepared using locally available fillers & Aggregates.
- Workable at hot as well as sub-zero temperature conditions.
- High compressive strength (> 400 kg/cm^2)