

**1200 – 1500 HP ENGINE WITH ASSOCIATED AUTOMOTIVE PERIPHERALS  
(POWER PACK) FOR ARMoured CORPS : MAKE I PROJECT**

1. **Name of the Proposal.** 1200 – 1500 HP engine with associated automotive peripherals (Power Pack) for Armoured Corps.
  
2. **User Directorate in SHQ.** Directorate General of Armoured Corps.
  
3. **Introduction.** T-90 tanks are presently fitted with 1000 HP engine. To ensure combat overmatch with adversary some upgrades have been/ and are being fitted and certain upgrades have been planned to be integrated. This has resulted in reduction of power to weight ratio of the tanks hence there is a requirement to upgrade the engine of T-90. The project for upgrading the present engine of T-90 from 1000 to 1200-1500 HP engine with associated automotive peripherals (Power pack) has been accorded ' **Approval in Principal** ' to be progressed under the **Make – I** category.
  
4. **Brief Description.** T- 90 S/SK tanks are the main stay of the Indian Armoured Corps. Induction of T-90 tanks started in 2002 and out of 1657 T - 90 tanks which will be held with Indian Army, 1193 tanks have already been inducted. At present T - 90 tanks are powered by a 1000 HP engine which provides a power to weight ratio of 21.5 HP/ ton. A number of upgrades have been planned for incorporation in T - 90 platform. All these upgrades will result in a net increase of approximately 4 tons of weight. This increase in weight will reduce the power to weight ratio of the tank, there by impacting the battle field mobility. Hence, there is a requirement to upgrade the engine of T-90 tank. The engine will be along with associated automotive peripherals i.e complete power pack to include engine, transmission and cooling system.
  
5. **Proposal.** Power pack is the main source which provides mobility to main battle tanks. The project of 1200-1500 HP Engine along with associated automotive peripherals will provide a unique opportunity to Indian Defence Industry to design and develop a critical technology in India which will give a major boost to Atma Nirbhar Bharat. It will also help to build research and manufacturing capabilities to foster technological spinoffs benefitting a host of dual use applications. The Ministry of Defence, GoI, intends to procure quantity 957, 1200 – 1500 HP engine along with associated automotive peripherals in the first phase.
  
6. **Broad Technical Specifications.** Att as **Appx A.**

7. **Indigenous Content (IC)/ Categorisation.** Successful development under **Make – I**, will result in acquisition, from successful Development Agency(ies) (DA/DAs), through the '(Buy Indian- IDDM)' category with indigenous Design and Development and a minimum of **50% IC**.

8. The questionnaire to seek industry response for carrying out feasibility study for project 1200-1500 HP Engine along with associated peripherals (Power Pack) has been uploaded.

9. **Disclaimer.** This project brief is neither an agreement and nor an offer by the MoD to the prospective bidders or any other person. The purpose of this project brief is to provide interested parties with information that may be useful to them in submitting their proposals pursuant to this project brief. The questionnaire has been prepared to obtain information for the feasibility study to assess the status of enabling technologies and capabilities of the Indian industry. This project brief includes statements, which reflect various assumptions and assessments arrived at by the MoD in relation to the project. This project brief, questionnaire and any assumptions, assessments and statements made herein do not purport to contain all the information that each responding entity may require. The responding entity shall bear all its costs associated with or relating to the preparation and submission of proposal pursuant to this project brief and the questionnaire. Wherever necessary, MoD reserves the right to amend or supplement the information, assessment or assumptions contained in this project brief and the questionnaire. The MoD reserves the right to withdraw the project brief and the questionnaire or foreclose the procurement case at any stage. The issuance of this project brief and the questionnaire does not imply that the MoD is bound to shortlist a responding entity for the Project. The MoD also reserves the right to disqualify any responding entity should it be so necessary at any stage on grounds of National Security.

10. **Contact Details.**

Col AC-2 (ISE-2)  
Dte Gen of Armd Corps (AC-2)  
IHQ of MoD (Army)  
A Wing, Sena Bhawan  
New Delhi -110011  
Email – [dcat.modac90@gov.in](mailto:dcat.modac90@gov.in)

**BROAD TECHNICAL SPECIFICATIONS**

<b><u>Specification</u></b>	<b><u>Parameters</u></b>
(a) <b>Physical Characteristics</b>	(i) The engine with associated automotive peripherals (Power Pack) should be fitted in the existing envelope of the tank's engine and transmission compartment.
	(ii) Upgraded engine and associated automotive peripherals should be able to withstand the combat load of the tank (49 Tons $\pm$ 5%) with all modifications.
(b) <b>Operational Characteristics</b>	(i) Should be able to generate a power to weight ratio of minimum 25 HP/T with full combat load of tank.
	(ii) <u>Operating Temperature</u> . The system should be capable of operating in environment conditions available in the sub-continent and conform to JSS /MIL standards, as applicable to the equipment.
	(iii) The engine should be capable of providing de-rating in high altitude area up to an altitude of 4500 mtrs.
	(iv) The system should have audio/visual warning signal for the following:- (aa) Low oil pressure. (ab) High temperature of engine oil and coolant. (ac) Battery charging. (ad) Choked air cleaner. (ae) Low coolant level.
	(v) The engine should be multi fuel injection, with diesel as primary fuel.
	(vi) The engine should have at least one standby starting system apart from the main starting system.
	(vii) Automatic engine shut down mechanism should be integrated with the existing warning system of:- (aa) NBC Protection System. (ab) Fire Fighting System.
	(viii) The engine should fully integrate with all associated sub-systems, interfaces / controls.

	<p>(ix) Transmission system - 7 Forward and One Reverse</p> <p>(x) The T-90 tank upgraded with the new engine and automotive peripherals should meet following mobility parameters:-</p> <p>(aa) Average speed (Cross Country) - between 35 - 45 kmph.</p> <p>(ab) Average speed (highway) - not less than 50 kmph.</p> <p>(ac) Maximum speed (highway) - not less than 60 kmph.</p> <p>(ad) Time taken to reach 32 kmph from rest on plain hard ground - less than 10 seconds.</p> <p>(ae) Should be able to undergo shallow fording at depths of 1.2 meter and medium fording at 1.8 meter of water.</p> <p>(af) Cross-country performance:-</p> <p style="padding-left: 40px;">(aaa) Maximun Gradient - 30<sup>0</sup></p> <p style="padding-left: 40px;">(aab) Maximun Tilt Angle - 25<sup>0</sup></p> <p style="padding-left: 40px;">(aac) Trench Crossing Width - 2.6 to 2.8 m.</p> <p style="padding-left: 40px;">(aad) Vertical Obstacle - 0.85 m.</p>
<p><b>(c) Maintenance Characteristics</b></p>	<p>(i) MTBF - 650 hours.</p> <p>(ii) MTTR - 10 hours.</p> <p>(iii) Life of engine and it's assemblies:-</p> <p style="padding-left: 40px;">(aa) Engine Assembly (Original) - not less than 700 hours.</p> <p style="padding-left: 40px;">(ab) Air Compressor (Original) - not less than 650 hours.</p> <p style="padding-left: 40px;">(ac) Power Train Assembly - not less than 5000 km.</p> <p>(iv) Facility to undertake OH of the engine.</p> <p>(v) Provision of spares so as to enable EME to undertake repairs at 'I', 'O' and 'D' level.</p> <p>(vi) Engineering Support package to include SMT/STE/Test jigs</p>

