

# Pressure Swing Adsorption (PSA) Medical Oxygen Generation Plants

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In news

PM CARES Fund Trust has allocated 201.58 crore rupees for installation of additional 162 dedicated Pressure Swing Absorption (PSA) Medical Oxygen Generation Plants inside public health facilities in the country.

## Key highlights

- The procurement will be done by the Central Medical Supply Store which is an autonomous body of the Ministry of Health and Family Welfare.
- A total of 162 plants with a total capacity of 154.19 MT are to be installed in 32 States and UTs.
- The Government hospitals where these plants are to be installed have been identified in consultation with the States and UTs concerned.
- The plants have a warranty for the first 3 years. For the next 7 years, the project includes a Comprehensive Annual Maintenance Contract.

## Significance

This mechanism will further strengthen the public health system and enable long term systematic augmentation of medical oxygen availability in a cost effective manner. Adequate and uninterrupted supply of oxygen is an essential pre-requisite for managing moderate and severe cases of COVID -19, in addition to various other medical conditions where this need arises. Installation of PSA Oxygen Concentrator Plants in public health facilities is an important step to reduce the

health facility's dependence on the system of store and supply and to enable these facilities to have their own oxygen generation capacity.

### **What is Pressure swing adsorption (PSA)?**

It is a technology used to separate some gas species from a mixture of gases under pressure according to the species' molecular characteristics and affinity for an adsorbent material. It operates at near-ambient temperatures and differs significantly from cryogenic distillation techniques of gas separation

### **Usage of Pressure swing adsorption (PSA) in oxygen generation**

- It is used to supply medical oxygen, or as a substitute for bulk cryogenic or compressed-cylinder storage, which is the primary oxygen source for any hospital
- **Typically Oxygen plants use air as a feedstock and separate it from other components of air using pressure swing adsorption or membrane separation techniques.**

### **How the Oxygen Pressure swing adsorption (PSA) works?**

As you know air contains 21% Oxygen, 78% Nitrogen, 0.9% Argon and 0.1% other trace gases. An Oxygen generator separates this oxygen from Compressed Air through a unique process called Pressure Swing Adsorption. (PSA).

The Pressure Swing Adsorption process for the generation of enriched oxygen gas from ambient air utilises the ability of a synthetic Zeolite Molecular Sieve to absorb mainly nitrogen. While nitrogen concentrates in the pore system of the Zeolite, Oxygen Gas is produced as a product.

### **About PM CARES Fund**

Keeping in mind the need for having a dedicated fund with the primary objective of dealing with any kind of emergency or distress situation, like posed by the COVID-19 pandemic, and to provide relief to the affected, a public charitable trust

under the name of 'Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund (PM CARES Fund)' has been set up. PM CARES Fund has been registered as a Public Charitable Trust. The trust deed of PM CARES Fund has been registered under the Registration Act, 1908 at New Delhi on 27th March, 2020.

### **Objectives :**

- To undertake and support relief or assistance of any kind relating to a public health emergency or any other kind of emergency, calamity or distress, either man-made or natural, including the creation or upgradation of healthcare or pharmaceutical facilities, other necessary infrastructure, funding relevant research or any other type of support.
- To render financial assistance, provide grants of payments of money or take such other steps as may be deemed necessary by the Board of Trustees to the affected population.
- To undertake any other activity, which is not inconsistent with the above Objects.

### **Constitution of the Trust :**

- Prime Minister is the ex-officio Chairman of the PM CARES Fund and Minister of Defence, Minister of Home Affairs and Minister of Finance, Government of India are ex-officio Trustees of the Fund.
- The Chairperson of the Board of Trustees (Prime Minister) shall have the power to nominate three trustees to the Board of Trustees who shall be eminent persons in the field of research, health, science, social work, law, public administration and philanthropy.
- Any person appointed a Trustee shall act in a pro bono capacity.

### **Other details :**

- The fund consists entirely of voluntary contributions from individuals/organizations and does not get any budgetary support. The fund will be utilised in meeting the objectives as stated above.
- Donations to PM CARES Fund would qualify for 80G benefits for 100% exemption under the Income Tax Act, 1961. Donations to PM CARES Fund will also qualify to be counted as Corporate Social Responsibility (CSR) expenditure under the Companies Act, 2013
- PM CARES Fund has also got exemption under the FCRA and a separate account for receiving foreign donations has been opened. This enables PM CARES Fund to accept donations and contributions from individuals and organizations based in foreign countries. This is consistent with respect to Prime Minister's National Relief Fund (PMNRF). PMNRF has also received foreign contributions as a public trust since 2011.