

COVID19 – Flash Series – Market Research



COVID 19 & Market Opportunity for FGD Systems and Other Air Pollution Control Equipments (APCE) in India Till 2025 for Industrial & Commercial Usage

Examining the market opportunity of Flue Gas Desulphurization (FGD) systems, Air filters, Incinerators, Oxidizers, Catalytic Reactors, ESP, Biofilters and Auxiliary Equipments and Other Devices across Thermal Power Sector, Oil & Gas Refineries, Metallurgical Plants, Chemical Manufacturing Segment, Rubber & Plastic Manufacturing, Fertilizer Manufacturing & Others (Paper, Coating, Printing and Glass Manufacturing Segments)

November 2020



Market Research Flash Report

Why eninrac’s market research on assessing market opportunity for FGD systems air pollution control equipment market?

5019 MW of Coal based power capacity in India on radar of being shut down, due to delays in submission of plan for emission control norm

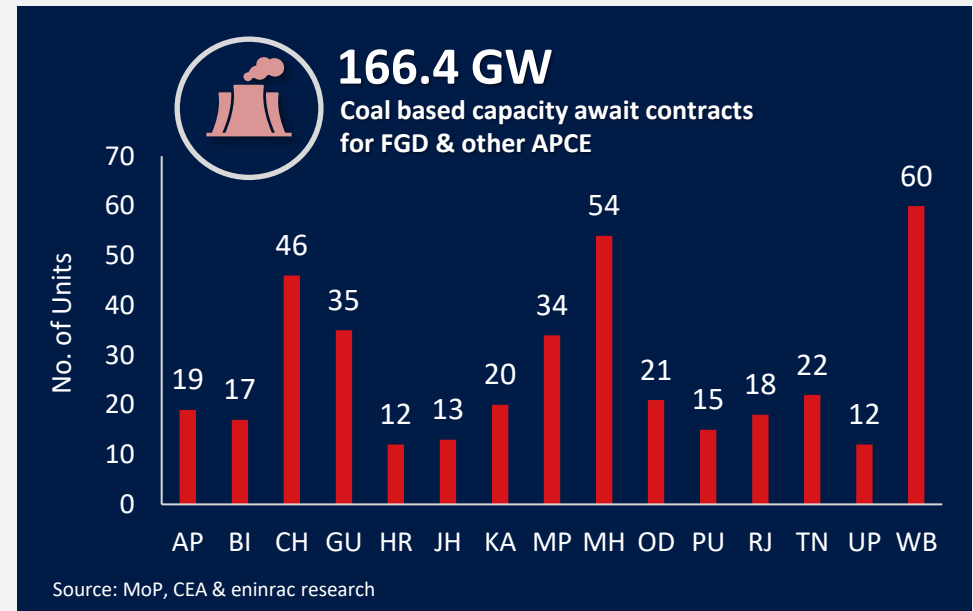
Due to the strict environmental norms, coal-based power plants across India are in the process of installing & upgrading FGD systems, ESPs and other air pollution control equipments. An opportunity of approximately 166 GW lies under for APCE value chain players till 2022.

India, historically has been dependent upon coal based thermal generation at large to meet its base load requirements which indeed is a polluting source of energy generation. Moreover, aging thermal power units, falling plant efficiencies, rising power demand and the need for meeting global environmental standards is diverting the existing thermal power generation market more towards upgrading and modernizing the existing units than adding up the fresh capacities. Infact about 166.4 GW of thermal power capacity has been targeted to install flue gas desulphurization (FGD) systems in a phased manner by 2022. Apart from this, the thermal power units that are already hitting the operational age of 10-15 years do hold significant business potential for efficiency upgradation & installing air pollution equipment control equipments in the years to come.



Approximately 65 GW (as on Sept’2020)of the thermal power capacity in India is under construction and is likely to get commissioned till 2025, hence offering additional business case for FGD systems, ESPs and other APCE

State wise Number of Coal Based Power Generation Units Awaiting Contracts for FGD & Other Air Pollution Control Equipments



₹ 597 Billion

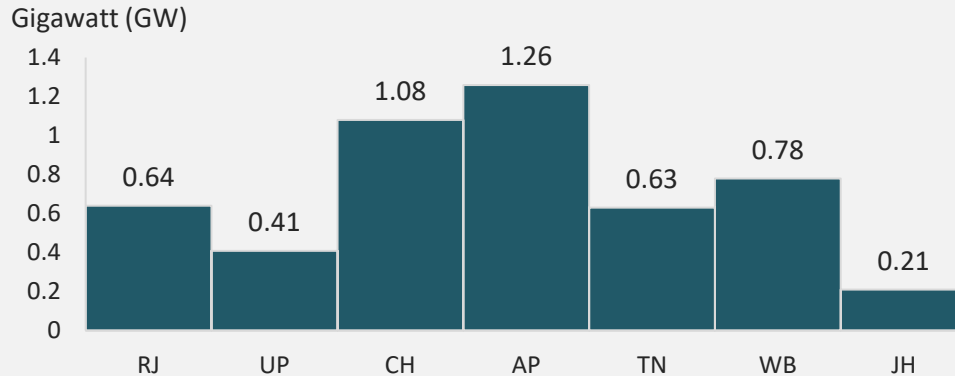
Anticipated Investment for installing FGD Systems by 2022

- AP- Andhra Pradesh
- BI- Bihar
- CH- Chattisgarh
- GU- Gujarat
- HR- Haryana
- JH- Jharkhand
- TN- Tamil Nadu
- UP- Uttar Pradesh
- KA- Karnataka
- MP- Madhya Pradesh
- MH- Maharashtra
- OD- Odisha
- PU- Punjab
- RJ- Rajasthan
- WB- West Bengal

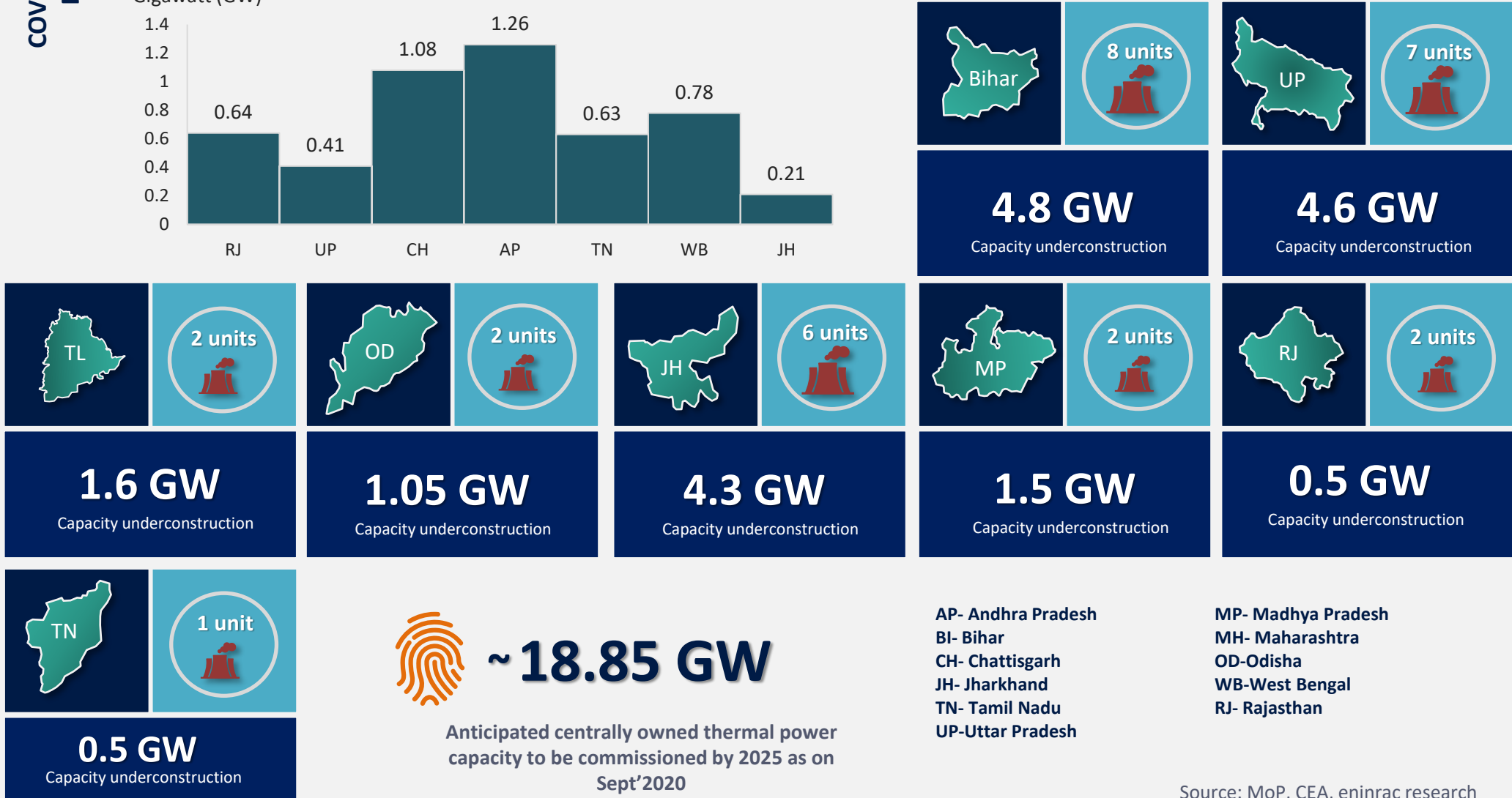
Opportunity for Installing FGD Systems and Other APCE in Thermal Power Units in India



Thermal Power Capacities Across States not Submitted Plan to Comply with Emission Control Norms



Thermal Power Capacities Under Construction of Centrally Owned Plants





Key Signpost –NTPC announced installation of FGD systems across its units. Chattisgarh, Maharashtra and Uttar Pradesh offers maximum business case for the value chain players in terms of installing FGD systems across thermal power cumulatively contributing 60 GW to the total opportunity pie.



What’s our difference margin for market research?



Not only the thermal power units but the oil marketing companies (OMCs) too are investing big in the technological upgradation, expansion and overhauling of existing refineries, abiding the carbon emission norms . It is pertinent to note that an investment to the tune of approximately USD 5.2 Billion, is what Indian refining industry is anticipating till 2021 in developing its brownfield refineries. Talking about the new environmental standards that aimed reducing the carbon footprints and improve the air quality in and around the thermal power plants/refineries/captive power plants etc. opens up a huge a market for emission control instrument manufacturers like BHEL, L&T, Thermax, ISGEC, Tata Projects, GE Power India and many more likewise. More than 300 thermal power plants were given a period of 2-5 years by CEA to adhere to the strict air pollution standards notified as on June 2017 till 2020. Infact, a roadmap has been put in place by CEA for these plants to install essential pollution abatement technology within a period from 2020-2024.



1 Our Market Research Coverage Range

- Evaluating the market opportunities for players into manufacturing, installation & repair of FGD systems & APCE on regional basis with comprehensive market research feed
- Assessing business case for FGD systems, ESPs, Auxiliary equipments & air pollution control equipment manufacturers across varied large industrial segments in India with eninrac’s intense D2I model
- Competition landscaping and benchmarking of the product offerings and service capabilities of major OEMs into APCE manufacturing in India



2 Our Market Research DNA & Team of Domain Specialists

- We boast a highly qualified and experienced team of market research professionals having experience of working in top companies across different domains
- Our focus on nurturing industry connect is paramount which helps us generate high quality robust market feed which is filtered and sourced through from different levels
- Any market research report follows strict turn-around-time procedures with cross-vetting from our Knowledge Grid Experts which adds immense value to our research credentials for the deemed subject



3 Our Satisfied Patrons and Retention rate of over 97.6% on yoy basis

We have been bestowed with a phenomenal client retention rate and many satisfied clientele. Our client’s have been from wide variety of industry domains and from different geographic locations across the globe. Eninrac consulting is a trusted market research partner and an objective resource augmenting value for more than 257+ Group companies & 1000+ organization across 40+ countries.

Likely Recovery of Power & Utilities Sector in India Post COVID'19

The Flow – Pre-COVID19 Overview

The Flow – Overview of Sector

| | |
|--------------------------------------|--|
| Total Installed Capacity | As on September 2020, 371.9 GW |
| FDI Inflows | Total per cent 3.21% , (April 2000 – Dec 2019), equity inflows |
| Index of Industrial Production (IIP) | Electricity Growth 0.9% (April 2019 – January 2020) |
| Peak Deficit | 0.3% (as on Sep 2020) |
| Power Generation Split | Thermal 62% , RES 23% , Hydro 13% , Nuclear 2% |



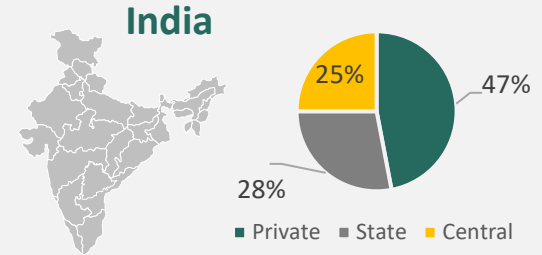
The Turbulence – Current Impact of COVID19

| The Turbulence – Current Impact of COVID 19 | Low | Medium | High | Unknown | Remarks |
|---|-----|--------|------|---------|---|
| Price variations of key raw materials like Coal | | | | | Limited impact on imported coal prices. Any changes observed in coal prices may be a pass through |
| Cash flow constraints & consumer demand | | | | | Since there is no demand from industrial & commercial consumers the revenue collection cycle of power distribution utilities might be impacted which could cascade to generation & transmission companies |
| Supply chain disruptions & imports | | | | | Coal supply logistics shall have minimal impact with power being categorised as essential service. However, supply chain might be affected |
| Labour force & lockdown impact | | | | | The power demand shall be muted and the availability of labour force shall be lowered too, but likely not to impact majorly |
| Export market & demand centres | | | | | Domestic demand shall increase and there shall be a shift of demand centre from industrial & commercial consumer to domestic. Unknown impact on power exports to Bhutan & Bangladesh |

Level of impact on the sector



Developer Wise Power Generation Capacity



The Ripples – COVID19 Aftermath

- The demand levels are supposed to witness a **lowered intensity with growth rate expected at 3%** which was at 5% on CAGR basis from 2015-2019.
- The **capital expenditure shall be hit for** the sector as already investments in thermal sector was low and with demand taking a hit as economic activity shall reduce. Focus for the sector shall be to maintain the pre-COVID19 status quo
- The tariff revision for the utilities which was due in March 2020 **shall be delayed and the cash flows shall also witness a downward trajectory**, given the billing and collection efficiencies of the discoms shall be impacted.
- Falling demand from industrial and commercial categories might **see the cross-subsidisation burden being pass through** to the domestic category consumers
- Real Time Market (RTM) application shall be deferred and may not be seen in effect till Q2 2021



The Calm – When normalcy returns?

- Being classified in the necessary service the thermal power generation, power distribution and transmission sector shall be a sector which shall witness lesser impact of the pandemic COVID 19. It is anticipated that normalcy might prevail in the **sector by Q3 2020**, if the cases don't rise exponentially in the country.

Normalcy Returns - Q3 2020



Contents & Coverage – On FGD Systems & Air Pollution Control Equipment Market Research

01 FGD & APCE Market in India – Know How & Impact of Pandemic

This chapter shall cover the assessment of need for FGD systems and other APCE in India with respect to the industrial and commercial usage. Key regulation & policies and opportunity landscape for value chain players in APCE market

04 Demand Assessment & Opportunity Examination for FGD Systems & APCE by Equipment Type Wise till 2025

This section covers the equipment type wise opportunity for FGD systems and APCE in India till 2025 – market size of Wet FGD Systems, Dry & Semi Dry FGD Systems, Auxiliary Equipments, Electrostatic Precipitator, Biofilters, Catalytic Reactors, Oxidizers, Incinerators, Air Filters and Others

07 Region Wise Market Opportunity for FGD Systems and APCE in India Till 2025

This chapter covers the state wise market size for FGD systems and APCE across major industrial segments for existing and upcoming manufacturing units till 2025

02 Market Opportunity for FGD & APCE for Industrial Usage till 2025

What shall be the business opportunity for installation of FGD systems & APCE such as Air filters, Incinerators, Oxidizers Catalytic Reactors , ESP, Biofilters and Auxiliary Equipments across industries – thermal power units, refineries, chemical units, fertilizers, metallurgical plants, rubber & plastic manufacturing units etc till 2025

05 Examining the Market Share, Market Size and Competition Landscaping of Major OEMs in FGD and APCE Market

This section focuses on Profiling of Major Players in FGD and APCE Market, Examining their Market Share & Size, Competition Landscaping and Benchmarking -Vendor Base (Organized/Unorganized), Discount Margins Offered, Extended Scope Capabilities (Turnkey EPC etc), Manufacturing Facility & Capacity , After sales service/O&M Services etc

08 Market Opportunity Split for Key Value Chain Players in FGD & APCE Market in India Till 2025

Capturing market size of OEMs, MRO players, EPC players and PMC till 2025

COVID'19 & Market Opportunity for FGD Systems and Air Pollution Control Equipments (APCE) in India Till 2025

03 Market Opportunity for FGD & APCE by end use type till 2025

This chapter shall cover the market opportunity for FGD systems & APCE as per their end use till 2025 like – For NOX emission control , for SOX Emission control, for COX emission control & for particulate matter emission control.

06 Maintenance, Repair & Overhaul (MRO) Market Opportunity for FGD Systems and APCE in India Till 2025

This section shall deal with the opportunity assessment of MRO players across TPP, oil & gas refineries, metallurgical plants, chemical plants, fertilizer plants, rubber & plastic manufacturing and other manufacturing plants till 2025

09 Tracking key projects

Covering track of Greenfield / Upcoming Manufacturing Plants in India along with track of Projects for Capacity Expansion / Renovation / Modernization of Manufacturing Plants in India across major industrial segments



Key Highlights for Market Research on APCE Business Opportunity in India

COVID'19 & Market Opportunity for FGD Systems and Air Pollution Control Equipments (APCE) in India Till 2025

1. MOEFCC mandating installation of FGD units in all thermal power plants
2. Stringent emission norms for major polluting industries identified by CPCB in India to offer great business case for air pollution control equipments
3. Approximately INR 33,414 crores has been invested by major Indian refiners so far expanding, modernizing & upgrading of existing refineries in the country. Of the identified investment tune about 68% is the standalone contribution of BPCL
4. It is anticipated that given the current scenario, cumulative opportunity size for emission control equipment manufacturers stands to be INR 840 Billion till 2022 into thermal power generation segment
5. NTPC announced installation of FGD systems across its units
6. Approximately 148 GW of thermal power capacity needs installation of FGD systems in India
7. BHEL awarded INR 137 crore for renovation and modernization of electrostatic precipitators (ESPs) of three units of 200 MW each at Ramagundam Super Thermal Power Station (STPS) Stage I (3x200 MW). BHEL is already executing similar R&M projects for NTPC and state utilities including Gujarat State Electricity Corporation and Chattisgarh State Power Generation Company
8. An investment to the tune of approximately USD 5.2 Billion, is what Indian refining industry is anticipating till 2021 in upgrading its brownfield refineries to enhance the efficiency
9. L&T has received engineering, procurement and construction (EPC) order to set up flue-gas desulphurisation (FGD) system at Vindhychal Super Thermal Power Station at stage-I & II (6x210 mega watt (MW) & 2x500 MW



Differentiating Insights for Market Research on APCE Business Opportunity in India

1. Key industry wise market opportunity for FGD systems, ESPs, Auxiliary Equipments & other APCE in India till 2025
2. State wise market opportunity for FGD, systems, Auxiliary Equipments & other APCE in India till 2025
3. End use type wise market opportunity for FGD, systems, Auxiliary Equipments & other APCE in India till 2025
4. Key regulations and policies regards the efficiency and emission standards for major industrial segments in India
5. Market opportunity for OEMs manufacturing FGD, systems Auxiliary Equipments & other APCE in India till 2025
6. Market opportunity for EPC players in FGD, systems Auxiliary Equipments & other APCE in India till 2025
7. Market opportunity for MRO service providers in FGD, systems Auxiliary Equipments & other APCE in India till 2025
8. Current market size and market share of FGD, systems Auxiliary Equipments & other APCE in India & likely change in the opportunity pie till 2025
9. Competition landscaping and profiling of major market leaders in the FGD, systems Auxiliary Equipments & other APCE segment in India
10. Impact assessment for manufacturing plant owners to go for FGD or setting up renewable capacities – Cost Benefit Analysis



Must Buy For

- Original Equipment Manufacturers (OEMs)
- Equipment Sub contractors/Suppliers
- Pollution Control Equipment Manufacturers/Suppliers
- FGD Manufacturers / Suppliers
- Engineering , Construction and Procurement Players
- O&M Service Providers
- MRO Service Providers
- Thermal Power Plant Developers
- Captive Power Plant Developers
- Iron & Steel Manufacturers
- Rubber & Plastic Manufacturing
- Fertilizer Manufacturing
- Refineries & Petrochemical Plant Owners
- Government & Regulatory Bodies
- Research Institutions/Bodies
- Funding Bodies/Banks



For Queries

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COVID'19 & Market Opportunity for FGD Systems and Air Pollution Control Equipments (APCE) in India Till 2025



Companies Mentioned

- BHEL
- Siemens
- GE
- Tata Projects
- L&T
- Enviropol Engineers
- Technip India
- ISGEC Heavy Engineering
- Mitsubishi Heavy Industries Systems
- Thermax
- Ducon Technologies
- Clyde Bergmann
- AOF Filtration Systems
- IMECO Limited
- NGSL
- TTPL
- MET Technology



Truth is ever to be found in the simplicity,
and not in the multiplicity and confusion of
things

- Sir Isaac Newton



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