



# Cooling intricate parts with an additive wall mounted pressurized spray/jet

## IITM Technology Available for Licensing

### Problem Statement

- In a conventional rotating system, like a turbomachinery, several critical sub-components of the system generate a **substantial amount of heat** while under operation which **leads to the failure** of either the **sub-component** or the **system** by itself.
- Further, the life of the mechanical components like gears, bearings, or seals become **unreliable** when the oil films break down due to insufficient flow on gears or bearings. Over a period, lubrication/cooling systems have evolved to meet the increasing demands on the starter systems including additional issues.
- Hence, there is a need to address above issues by providing effective solution.

### Technology Category/ Market

**Technology:** Additive wall mounted pressurized spray/jet;

**Industry:** power transmission systems , Automotive Engines, etc..

**Application:** Turbomachinery,

**Market:** The global Industrial spraying nozzle market is projected to grow **USD 3.2B** by 2031 at a **CAGR of 6.3%** during forecast period (2024-2031).

### Technology

- Present invention describes an **additive wall mounted pressurized spray/jet system** for cooling intricate parts in rotating systems & engines.
- Said additive wall mounted pressurized **spray/jet system** comprises:
- plummer blocks, main shaft, side lid of driven unit, bearing holder & housing for driven unit, ring plate, disc assembly, middle housing, driven unit side bearings, drive side bearings, drive housing, shower heads, locknut, drive side lid, motor assembly and lube supply assembly including other associated parts.

- The system **significantly increases** the ability of cooling a shower head which force cools the components of a rotating system or engine.
- The system combines the **pressurized lubrication system** with a splash system with incorporating additional flow features on the housing components, which will reduce the heat generation & increase the life of all critical components of rotating system. (Refer the figure)

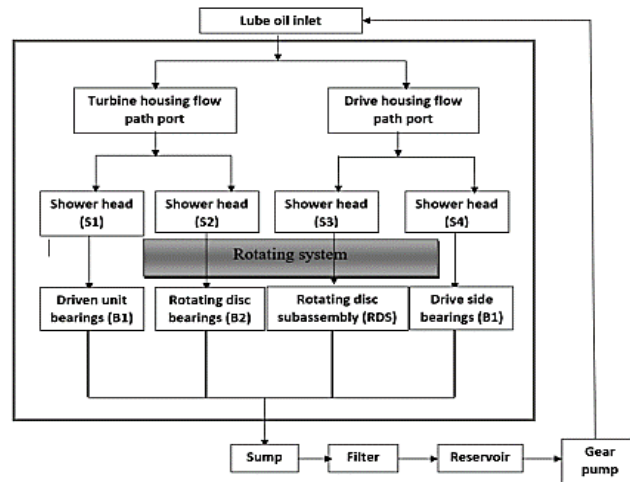


Fig.1: Illustrates a high-level flow chart of operations illustrating the working of the shower heads based pressurized lubrication/cooling system;

### Intellectual Property

**IITM IDF Ref. 2107;**

**IN Patent No. 512504 (Granted)**

### TRL (Technology Readiness Level)

**TRL- 4**, Proof of Concept ready, tested & validated in Laboratory

### Research Lab

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## Industrial Consultancy & Sponsored Research (IC&SR)

### Key Features / Value Proposition

#### ❖ Technical Perspective:

- Provides **adequate lubrication** with cooling of critical parts & **enhancing** heat transfer.
- The **specially** designed shower heads, in turn, are fitted into the **holders**.
- Facilitates the increase the life of all critical components of rotating system

#### ❖ Industrial Perspective:

- The additive wall mounted pressurized spray/jet system is **easy to handle, cost-effective & less maintenance.**

#### Application:

- **Starting engines for commercial & aircrafts jet engines, turbo chargers, power transmission systems using gear boxes, & special purpose automotive engines etc..**

### Images

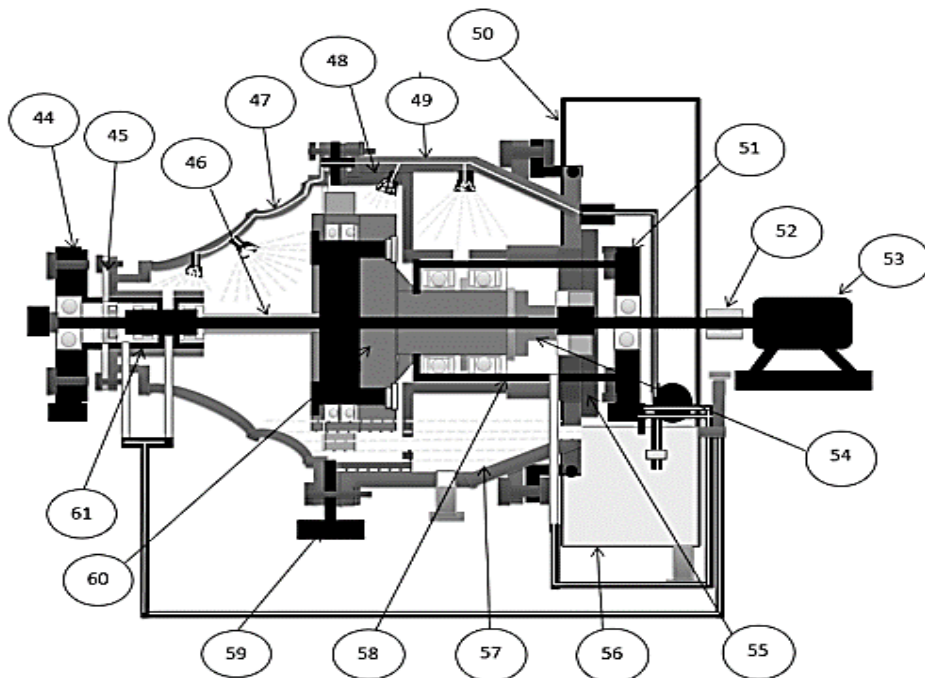


FIG.2: : Illustrates a graphical representation a pressurized lubrication/cooling system with shower heads and splash system.

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