(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :03/11/2025
(21) Application No.202511106443 A
(43) Publication Date : 19/12/2025

(54) Title of the invention : A COMPUTER-BASED SYSTEM FOR ENERGY-EFFICIENT SMART DATA CENTERS

(51) International classification	:G05B 19/418, B60W 10/04, B60W 10/24, H04N 25/53, F24H 15/443
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The invention discloses a computer-based system (100) for energy-efficient smart data centres, comprising an IoT sensor network (101), workload management unit (102), server infrastructure (103), energy optimization module (104), cooling control unit (105), renewable energy integrator (106), and central control processor (107). The system intelligently distributes workloads, optimizes cooling mechanisms, and integrates renewable energy sources. Using predictive analytics, it ensures minimized energy wastage, enhanced operational efficiency, and sustainability. The invention provides a fault-tolerant, adaptive framework for next-generation smart data centres with reduced carbon footprint.

No. of Pages : 15 No. of Claims : 6