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Pest Repelling Device

Abstract

Apparatus and associated methods relate to a pest repelling magnetic field generating device (PRD) having a temperature sensor to detect the temperature of a solenoid coil during operation. The detected temperature to be used to ensure that the PRD operates within an ideal temperature range. Additionally, a fan is oriented within a housing of the PRD to force the flow of air from inside a housing of the PRD to outside a housing the PRD. In an illustrative example, the PRD may shut off if the temperature of the solenoid coil moves outside the ideal temperature range. By operating the PRD within an ideal temperature range, the service life of the PRD may be extended. Further, the fan may mitigate dust collection within the housing of the pest repelling magnetic field generating device.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application claims the benefit of U.S. Provisional Patent Application Ser. No. 63/364,301 titled “Reconfigurable Pest Repellant Field Generator,” filed by Scott Joseph Connell on May 6, 2022. [0002] This application claims the benefit of U.S. Provisional Patent Application Ser. No. 63/370,616 titled “Pest Control Cameras and System With Night Vision,” filed by Scott Connell on Aug. 5, 2022. [0003] This application claims the benefit of U.S. Provisional Patent Application Serial No. 63/477, 138 titled “Remotely Operated Pest Control Systems,” filed by Scott Connell on Dec. 23, 2022. [0004] This application is a Continuation-in-part and claims the benefit of U.S. patent application Ser. No. 17/161,196 titled “Pest Repelling Device,” filed by Raymond Connell on Jan. 28, 2021, which is a Continuation and claims the benefit of U.S. patent application Ser. No. 16/736,575 titled “Pest Repelling Device,” filed by Raymond Connell on Jan. 7, 2020, which is a Continuation and claims the benefit of U.S. patent application Ser. No. 16/128,222 titled “Pest Repelling Device,” filed by Raymond Connell on Sep. 11, 2018, which is a Continuation and claims the benefit of U.S. patent application Ser. No. 15/011,162 titled “Pest Repelling Device,” filed by Raymond Connell on Jan. 29, 2016. [0005] This application also contains subject matter related to U.S. patent application Ser. No. 13/502,034 titled “Pest Repellent System and Device,” filed by Ray Connell on Jul. 2, 2012, and Australian Patent Application Serial No. 2015200650 titled “Improved Pest Repellent System and Device,” filed by Ray Connell on Feb. 10, 2015. [0006] This application incorporates the entire contents of the foregoing application(s) herein by reference.

TECHNICAL FIELD
[0007] Various embodiments relate generally to electro-magnetic devices for repelling pests.
SUMMARY
[0008] Apparatus and associated methods relate to a pest repelling magnetic field generating device (PRD) having a temperature sensor to detect the temperature of a solenoid coil during operation. The detected temperature to be used to ensure that the PRD operates within an ideal temperature range. Additionally, a fan is oriented within a housing of the PRD to force the flow of air from inside a housing of the PRD to outside a housing the PRD. In an illustrative example, the PRD may shut off if the temperature of the solenoid coil moves outside the ideal temperature range. By operating the PRD within an ideal temperature range, the service life of the PRD may be extended. Further, the fan may mitigate dust collection within the housing of the pest repelling magnetic field

generating device.
[0009] Various embodiments may achieve one or more advantages. For example, some embodiments may include multiple temperature sensors to detect more accurate information concerning the temperature of the PRD. Various examples include a processor to operate the PRD according to different parameters, for example, time period parameters vs temperature parameters. In an another example, a user may control multiple PRD's via networked device, such as, for example, a mobile device.
[0010] The details of various embodiments are set forth in the accompanying drawings and the description below. Other features and advantages will be apparent from the description and drawings, and from the claims.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0011] FIG. **1** is a schematic view of an exemplary multiple pest repellent devices (PRD) in operation in a pre-wired facility, and a user controlling the PRD's via a mobile device.
[0012] FIG. **2**A is a perspective view of the outside of a housing of an exemplary PRD.
[0013] FIG. **2**B is a perspective view of the inside of a housing of an exemplary PRD.
[0014] FIG. **2**C is a perspective view of the components of an exemplary PRD.
[0015] FIG. **3**A is a cross-section view of an exemplary solenoid coil with a singular temperature sensor.
[0016] FIG. **3**B is a cross-section view of an exemplary solenoid coil with multiple temperature sensors.
[0017] FIG. **4** is a graph of periods of operation for an exemplary PRD.
[0018] FIG. **5** is a schematic diagram of an exemplary embodiment of a PRD circuit.
[0019] FIG. **6** is a flow chart diagram of an exemplary pest repelling operation.
[0020] FIG. **7** is a flow chart diagram of an exemplary profile selection subroutine.
[0021] Like reference symbols in the various drawings indicate like elements.
DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS
[0022] FIG. **1** is a schematic view of an exemplary multiple pest repellent devices (PRD) in operation in a pre-wired facility, and a user controlling the PRD's via a mobile device. An AC power line **105** connects to an external power connector **110** of a facility **100**. Wires **115** are located throughout the facility **100** and connect to the external power connector **110** to distribute power throughout the facility **100**. The wires **115** having power outlets **135** located throughout the facility. As depicted, each PRD **120***a*, **120***b* connects to different power outlets **135**. Each PRD **120***a*, **120***b* includes a coil (described in further detail in FIGS. **2**A-**2**C), a temperature sensor (described in further detail in FIGS. **3**A-**3**B), a fan (described in further detail in FIGS. **2**A-**2**C), and a processor to operate the PRD (described in further detail in FIG. **5**). The temperature sensor detects the temperature information of the coil and transmits the temperature information to the processor. The processor uses the transmitted temperature information to determine whether or not to permit current flow through the coil. By only permitting current to flow through the coil at ideal operating temperatures of the coil, the service life of the PRD **120***a*, **120***b* is extended. As such, the fan also extends the service life of the PRD **120***a*, **120***b* by causing air to flow from an inside of the PRD **120***a*, **120***b* to an outside of the PRD **120***a*, **120***b*. The direction of the air flow mitigates dust build-up in the PRD **120***a*, **120***b*.
[0023] When in operation, each PRD **120***a*, **120***b* modulates a magnetic field **125** that radiates in all directions from the PRD's **120***a*, **120***b*. The wires **115** further serve as a path for the PRD's **120***a*, **120***b* to transmit, along the wires, the magnetic field **130**. In various embodiments, the PRD **120***a*, **120***b* may advantageously modulate the magnetic field **125** in a manner effective to repel pests

from the facility **100**.

[0024] As depicted, a user **150** operates a mobile device **145**. The mobile device **145** is in two-way communication with a network **140**. The network **140** is further in two-way communication with the PRD **120***a* located in the facility **100**. In an exemplary embodiment, the user **150** may receive status information about the operation of the PRD's **120**. In response to the received status information, the user **150** may send operation instructions to the PRD's **120***a*.

[0025] In some embodiments, the user **150** may send operation instructions that include individual shutoff commands for each PRD **120***a*, **120***b*. For example, in a situation where the user **150** may be away from the facility **100** for an extended period of time, the user **150** may receive status information for one PRD **120***a* showing the temperature of the coil above a predetermined ideal operating temperature. The user may receive status information for the other PRD **120***b* showing the temperature of the coil within a predetermined ideal operating temperature. In response to the received signals, the user **150** may issue a shutdown command for the PRD **120***a* while continuing operation of the PRD **120***b*. In some embodiments, the status information about the PRD **120***a*, **120***b* may include other information besides temperature of the coil, for example, time in operation for the PRD **120***a*, **120***b*.

[0026] FIG. **2**A is a perspective view of the outside of a housing of an exemplary PRD. In the depicted figure, the PRD housing **200** is rectangular in shape having a profile similar to that of a right trapezoid. The housing **200** may be constructed of sheet metal. As such, two opposing parallel walls of the housing have different heights, one wall having a greater height and the opposing wall having a lesser height. The housing **200** includes an upper portion **205** and a lower portion **210**. The upper portion **205** includes three apertures **230***a*-**230***c*. As depicted, the apertures **230***a*-**230***c* are located on the upper portion **205** near the wall of lesser height. The three apertures **230***a*-**230***b* may each receive a light indicator to indicate the status of the PRD **120***a*, **120***b*. For example, the aperture **230***b* may receive a light indicator to indicate the power status of the PRD **120**. If the PRD **120** is receiving power, the light indicator at aperture **230***b* may light on. The aperture **230***a* and **230***c* may receive light indicators to display the operation state of the PRD **120***a*, **120***b*. For example, a light indicator at aperture **230***a* may activate to indicate that the PRD **120***a*, **120***b* is a standby mode. A light indicator at aperture **230***c* may activate to indicate that the PRD **120***a*, **120***b* is in an oscillation mode. In some embodiments, the light indicators at apertures **230***a*-**230***c* may activate individually or in conjunction to indicate different operating states.

[0027] The lower portion **210** includes, on a side wall between the parallel walls, a group of apertures **225** arranged to form a circular pattern. The lower portion **210**, along the wall of greater height, has two apertures. The first aperture receives a power connector **215**. The second aperture receives a fuse **220** such that the fuse **220** is accessible from the outside of the housing **200**. In some embodiments, the fuse **220** may be located at different locations of the housing **200** for increased accessibility to the fuse **220** in relation to the placement of the PRD. In some embodiments, the housing **200** may be composed of sheet metal. In other embodiments, the housing **200** may be composed of a plastic material.

[0028] FIG. **2**B is a perspective view of the inside of a housing of an exemplary PRD. As depicted, a construction of the PRD **120***a*, **120***b* is illustrated without the upper portion **205** of the housing **200**. A three-sided U-shaped coil support frame **235** includes two parallel side walls, and a singular wall connecting the two parallel side walls. The U-shaped coil support frame **235** may be constructed of sheet metal. The U-shaped coil support frame **235** attaches, at the open end of the parallel walls to the lower portion **210** of the housing **200**. A solenoid coil **240** attaches to the parallel side walls of the U-shaped coil support frame **235**. In some embodiments, multiple solenoid coils may be attached inside the U-shaped coil support frame. A spring may be placed between the multiple coils to prevent the multiple coils from touching.

[0029] A circuit board **250** attaches to lower portion **210** of the housing **200**. The circuit board **250** includes a circuit for operating the PRD **120***a*, **120***b* including a processor **255** to receive information and generate operation commands. Three indicator lights **245**_a_-**245**_c_ for indicating status information about the operation state of the PRD **120**_a_, **120**_b_ attach to the circuit board **250**. In some embodiments, the number of indicator lights **245**_a_-**245**_c_ may be increased or decreased.

[0030] A fan **260** attaches to a side wall of the lower portion **210** in alignment with the group of apertures **225**. In various embodiments, multiple groups of apertures may be distributed around the housing **200** to align with multiple fans.

[0031] FIG. **2**C is a perspective view of the components of an exemplary PRD. As depicted, the upper portion **205** of the housing **200** is located above the lower portion **210**. The upper portion **205** includes the apertures **230**_a_-**230**_c_ aligned to receive the indicator lights **245**_a_-**245**_c_. The indicator lights **245**_a_-**245**_c_ attach to the circuit board **250**. The circuit board **250** is between the upper portion **205** and the lower portion **210**. The U-shaped coil support frame **235** above the lower portion **210** and below the upper portion with the solenoid coil **240** to a side of the U-shaped coil support frame. As depicted, the fuse **220** and the power connector **215** are behind and beside the lower portion **210**. Below the lower portion **210**, four rest pedestals are depicted. The pedestals may raise up the housing **200** to provide an air space thereunder. In some embodiments, intake apertures may be formed in a bottom the housing **200**. The intake apertures may advantageously provide an air flow intake path for air to be drawn to cool the PRD components, such as the solenoid coil **240**, in response to the action of the exhaust fan **260**. The intake apertures may be provided, in some examples, along the seams of the housing **200** where the top meets the base portions of the housing **200**, for example. Filter screens may be used to substantially mitigate the ingress of dust, for example.

[0032] FIG. **3**A is a cross-section view of an exemplary solenoid coil with a singular temperature sensor. The solenoid coil **300** includes an axle **305**. The axle **305** runs through the center of the wiring **310** of solenoid coil **300**. As depicted, the axle **305** connects to ground **330**. The wiring **310** of the solenoid coil **300** includes two terminal connections **315 320**. The two terminals **315 320** may connect the solenoid coil to other electrical components. For example, the terminal connector **315** may connect to a power source and the terminal connector **320** may connect to an activation switch. In some embodiments, the activation switch may be a triac. A temperature sensor **325** is located in the longitudinal center of the solenoid coil **300**.

[0033] FIG. **3**B is a cross-section view of an exemplary solenoid coil with multiple temperature sensors. As depicted, the axle **305** runs through the center of the wiring **310** of the solenoid coil **300**. The temperature sensor **325** remains located in the longitudinal center of the solenoid coil **300**. A second temperature sensor **340** is located above a left side of the solenoid coil **300**. A third temperature sensor **335** is located below a right side of the solenoid coil **300**. Each of the temperature sensors **325**, **335**, **340** may transmit temperature information about the solenoid coil **300** relative to the location of each temperature sensor **325**, **335**, **340**. As such, more accurate temperature information concerning the temperature of the solenoid coil may be collected to improve the operation efficiency of the PRD **120**.

[0034] In some embodiments, a combination of the temperature sensors **325**, **335**, **340** may be used. For example, the temperature sensor **325** may be used in conjunction with the second temperature sensor **340**, or the second temperature sensor **340** and third temperature sensor **335** may be used in conjunction and without the temperature sensor **325**.

[0035] FIG. **4** is a graph of periods of operation for an exemplary PRD. As depicted, the vertical axis represents the values for a triac that controls the current flow through the solenoid coil **300**. The triac has a deactivation period **415** when the triac has a value of zero **410**. The triac has an activation period **420** when the triac has a value of one **405**. A periodic cycle **440** includes a deactivation period **415** and an activation period **420**. The periodic cycle **440** may have a length of 4.8 seconds. The deactivation period **415** and the activation period **420** may be of equal length, for example, both the deactivation period and the activation periods may have a length of 2.4 seconds. During the deactivation period **415**, the triac prevents current from flowing through the solenoid coil **300**.

[0036] During the activation period **420**, the triac permits current to flow through the solenoid coil in burst cycles **425**. The burst cycles **425** are smaller periods within the activation period **420**. Each burst cycle **425** includes a current flow period **430** and a current no-flow period **435**. During the current flow period **430**, the triac permits current to flow through the solenoid coil **300**. During the current no-flow period **435**, the triac does not permit current to flow through the solenoid coil **300**. The current flow period **430** and the current no-flow period **435** may be equal in length. These burst cycles **425** create a pulsating effect during the activation period **420**. The activation period **420** may include many burst cycles **425**, for example, 225 burst cycles may be included in one activation period.

[0037] In some embodiments, the deactivation period **415** and the activation period **420** may be of different lengths. In other embodiments, the current flow period **430** and the current no-flow period **435** may be equal in length.

[0038] In some embodiments, the deactivation period **415** and the activation period **420** may not be dependent on the length of time, for example, the deactivation period **415** and activation period **420** may be dependent on the temperature of the solenoid coil **300**. A predetermined threshold for a high temperature for the solenoid **300** may be set, such that, when the temperature of the solenoid coil **300** exceeds the predetermined high-temperature threshold, the PRD **300** may enter the deactivation period **415**. A predetermined threshold for a low temperature for the solenoid coil **300** may be set, such that, when the temperature of the solenoid coil **300** exceeds the predetermined low temperature, the PRD **300** may enter the activation period. The activation period may last as long as the temperature of the solenoid coil **300** does not exceed predetermined high temperature.

[0039] FIG. **5** is a schematic diagram of an exemplary embodiment of a PRD circuit. A semiconductor switching device **510** connects in series to an iron core coil **515** between a hot and neutral line of the AC line **505**. The iron core coil **515** is disposed within a filter control **520**. A temperature sensor **525** detects temperature information for the iron core coil **515** and transmits the detected temperature information to a central processing unit (CPU) **535**. The CPU **535** has a random access memory module (RAM) **540**, a non-volatile memory module (NVM) **545**, a user interface module (UI) **550**, a communications port module (Comm) **560**, and a processor **570**.

[0040] The CPU **535**, in response to receiving the detected temperature information, triggers the processor **570** execute a pest repelling operation (described in further detail in FIG. **6**). The pest repelling operation involves the processor **570** executing a health check of the PRD by comparing the detected temperature information against a predetermined ideal operation temperature range contained in the NVM **545**. For example, if the detected temperature exceeds the predetermined ideal range, the processor **570** may communicate with the NVM **545** to generate a shutdown command to a switch controller **555**. The switch controller **555** executes the shutdown command by deactivating the semiconductor switching device to prevent current from flowing through the iron core coil **515** effecting a current blocking state. In another example, if the detected temperature does exceed the predetermined ideal range, the processor **570** may generate a turn-on command to a switch controller **555** for activating the semiconductor switching device **510** to modulate a conductivity through the iron core coil **515** effecting a current flow state.

[0041] The CPU **535** may receive user input data from a serial port (RS232) connect to the Comm **560** or from a human machine interface (HMI) **575**. The processor **570** may execute the user input data to select a burst profile (described in further detail in FIG. **7**) according to the user input data. For example, if the user input data calls for a modification to a burst cycle **425** during the activation period **420**, the processor may communicate with the NVM **545** to generate a burst profile to the switch controller **555**. The switch controller **555** will activate and deactivate the semiconductor switching device **510** between current blocking states and current flow states according to the burst profile.

[0042] A display **590** is connected to the UI **550** for displaying information about the operation of the PRD to a user.

[0043] A zero cross detector **580** connects to the hot and neutral lines of the AC line **505** to operate in conjunction with a phase shifter (PS) **585** to generate a phase shift control signal to the CPU **535**. Upon receiving the phase shift control signal, the processor **570** may use the phase shift control signal to generate a burst profile, in accordance with the phase shift control signal, to the switch controller **555**.

[0044] FIG. **6** is a flow chart diagram of an exemplary pest repelling operation. At step **610**, the processor performs a self-healthcare check to generate a health message, at step **615**, to a communications port. At **620**, if the health message is negative, the processor, at step **625**, checks to see if the temperature of the coil exceeds a predetermined threshold. If the temperature does exceed a predetermined threshold, the processor, at step **630**, sets a timer to turn off the PRD. At step **635**, an expiration check is conducted to determine if the timer has expired. If the timer has not expired, the expiration check will repeat itself until the timer is expired. Once the expiration check determines the timer has expired, the processor will perform a self-health check at step **610**.

[0045] If, at step **625**, the temperature of the coil does not exceed the predetermined threshold, then, at step **640**, the fan turns on to exhaust air from the housing of the PRD. At step **645**, the processor receives a burst profile for the operation of the PRD (described in further detail in FIG. **7**). Using the burst profile, at step **650**, an activate sequence is initiated for an activation period generating control signals, at step **655**, in accordance with per switch control timing parameters, to begin the burst by activating the switch to permit current to flow through a solenoid coil. At step **660**, the processor determines, according to the burst profile from step **645**, if it is time to end the burst by deactivating the switch. If it is not time end the burst, the processor will further generate control signals, at step **655**. If it is time to end the burst, at step **665**, the processor will determine whether or not to begin a next burst. In the event of a next burst, the processor repeats steps **650-665**. If no next burst is called for at step **665**, the processor will decide if it is time to deactivate the PRD. In the event it is not time to deactivate the PRD, step **665** repeats. In the event it is time to activate the PRD, the processor, at step **675**, will determine if it is time to activate the PRD. If it is time to activate the PRD, the processor will begin the process again, at step **610**. If it is not time to activate the PRD, the processor will determine, according to the burst profile received at step **645**, whether or not the pest repelling operation is complete. If the pest repelling operation is not complete, step **675** repeats. If the pest repelling operation is complete, the operation ends.

[0046] FIG. **7** is a flow chart diagram of an exemplary profile selection subroutine. FIG. **7** depicts the subroutine for step **645**. At step **705**, the processor determines whether user input will be required. A negative response at step **705** will cause the processor to determine if a dynamic selection will be used. If a dynamic selection is required, whether or not the PRD needs to be synchronized with other PRD's is determined, at step **720**. In the event that the PRD needs to be synchronized with other PRD's, at step **725**, synchronized information is retrieved from synched PRD's. At step **730**, a next profile is selected according to the information received from step **725**. The next profile will then be retrieved, at step **750**, from a data store. The next profile is then transmitted to step **650**.

[0047] In the event that the PRD does not need to synchronize with other PRD devices, at step **720**, a next profile will be automatically selected based on predetermined selection criteria, at step **735**. The selected next profile will then be retrieved, at step **750**, from a data store. The next profile is then transmitted to step **650**.

[0048] In the event that no dynamic selection is required, at step **710**, a next profile will be set to a default profile, at step **715**. The next profile will then be retrieved, at step **750**, from a data store. The next profile is then transmitted to step **650**.

[0049] If, at step **705**, it is determined that user input is required, a user will be prompted to select a profile, at step **740**. The user input will be received, at step **745**, to select the next profile. The next profile will then be retrieved, at step **750**, from a data store. The next profile is then transmitted to step **650**.

[0050] Although various embodiments have been described with reference to the Figures, other embodiments are possible. For example, the communications port **560** may include wireless network module to enable communication between a PRD and a mobile wireless device. The wireless communication may be peer-to-peer or via a wide area network. In other embodiments, a user may input operation commands via a mechanical user input located on the device.

[0051] In some embodiments, AC phase control may be employed by the processor as a method of operating the solenoid coil by not firing the triac until the AC line voltage reaches a desired phase angle. By delaying trigger signal to the triac, the processor can effectively control the current waveform amplitude, and thereby the strength of the generated magnetic field weakens. This may advantageously be used to manage the temperature of the solenoid coil, for example, on days when the ambient temperature is high. By reducing the amplitude of the current, less heat will be generated by the current, and the pest repellent operation may be maintained at a reduced magnetic field in the event of high ambient temperature.

[0052] In other embodiments, the switch may be a bidirectional switch. The processor may be a single core processor or multi-core processor. Suitable processors for the execution of a program of instructions include, by way of example and not limitation, both general and special purpose microprocessors, which may include a single processor or one of multiple processors of any kind of computer. Generally, a processor will receive instructions and data from a read-only memory or a random access memory or both. The essential elements of a computer are a processor for executing instructions and one or more memories for storing instructions and data. Storage devices suitable for tangibly embodying computer program instructions and data include all forms of non-volatile memory, including, by way of example, semiconductor memory devices, such as EPROM, EEPROM, and flash memory devices; magnetic disks, such as internal hard disks and removable disks; magneto-optical disks; and, CD-ROM and DVD-ROM disks. The processor and the memory can be supplemented by, or incorporated in, ASICs (application-specific integrated circuits). In some embodiments, the processor and the member can be supplemented by, or incorporated in hardware programmable devices, such as FPGAs, for example.

[0053] In other embodiments, a centralized database may contain identification information, for example, serial numbers, about each PRD distributed throughout a facility. The PRD's may transmit operation information, for example, the temperature of a solenoid coil to be saved in the centralized database. A centralized location, for example, a company offering monitoring services, may access the database to monitor operation information for individual PRD's to ensure proper functioning of an individual PRD. For example, the company may be alerted when an individual PRD operation nears a predetermined high threshold temperature. As such, the company may proactively monitor the individual PRD to ensure that the individual PRD shuts down if the predetermined high threshold temperature is exceeded. In the event the PRD does not shut down if the high threshold temperature is exceeded, the company may respond more quickly to addressing the issue. In some embodiments, the centralized database may collect information from PRD's across multiple facilities.

[0054] A number of implementations have been described. Nevertheless, it will be understood that various modification may be made. For example, advantageous results may be achieved if the steps of the disclosed techniques were performed in a different sequence, or if components of the disclosed systems were combined in a different manner, or if the components were supplemented with other components. Accordingly, other implementations are contemplated within the scope of the following claims.

Claims

1-20. (canceled)

21. A computer program product (CPP) tangibly embodied in a storage device, the CPP including operations that, when executed by a processor, cause the processor to perform operation to remotely control one or more remotely connected pest monitoring device based on user status information and a pest activity profile, the operations comprising: receive a remote communication signal from a plurality of pest monitoring devices; retrieve, from a status database, an account standing associated with the plurality of pest monitoring devices; if the account standing does not meet a predetermined criterion for operating the plurality of pest monitoring devices, then generate control signals to deactivate the plurality of pest monitoring devices; and, if the account standing meets a predetermined criterion for operating the plurality of pest monitoring devices, then, based on a machine learning model, generate control signals to configure the plurality of pest monitoring devices, wherein the machine learning model is trained on a statistical model of pest activity, historical configurations of the plurality of pest monitoring devices, and a current configuration of the plurality of pest monitoring devices to generate an updated configuration of the plurality of pest monitoring devices, such that the pest control system is configured to actively reduce pests.

22. The CPP of claim 21, wherein the plurality of pest monitoring devices comprises at least one pest repelling magnetic field generating device, wherein the at least one pest repelling magnetic field generating device comprises a fan oriented to force air to flow through at least one aperture of the pest magnetic field generating device from an inside of the pest magnetic field generating device to the outside of the pest magnetic field generating device, wherein the operations further comprising transmit the control signals to the at least one pest repelling magnetic field generating device.

23. The CPP of claim 21, wherein the operations further comprising generate and display a recommendations and report display based on the statistical model of pest activity.