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(54) **METHOD AND DEVICE FOR REGULATING THE ATMOSPHERIC CONDITIONS DURING A SPINNING PROCESS**

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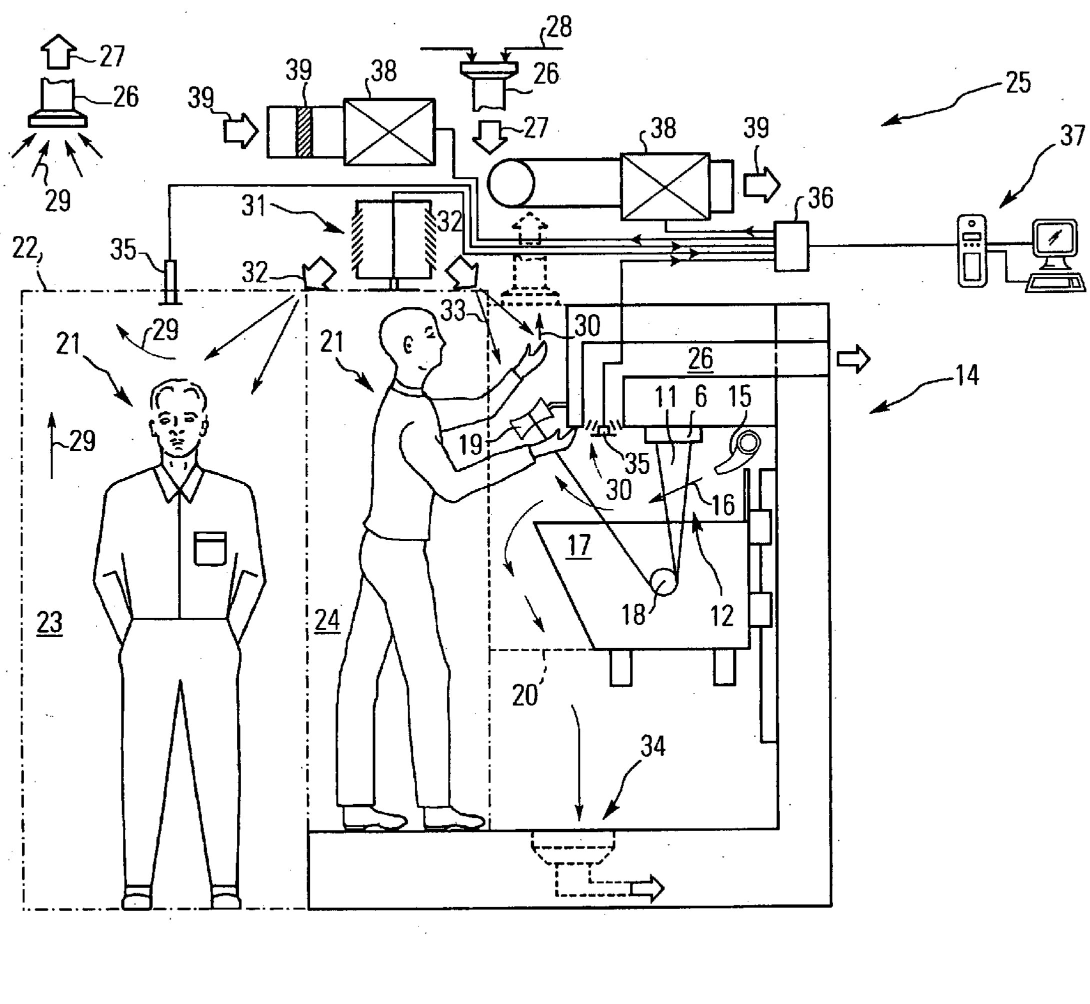
(57) **ABSTRACT**

The subject matter of the invention relates to a method and device for controlling the room air conditions in a room, in which a spinning process for the production of endless molded articles from a spinning mass containing water, cellulose and tertiary amine oxide takes place. In such a spinning process the spinning mass is extruded to form endless molded articles and is passed through an air gap, before it is immersed in a precipitating bath. Air-quenching of the endless molded articles by means of a gaseous substance stream takes place in the air gap, whereby the gaseous substance stream escapes into a spinning area surrounding the spinning process and deteriorates the room air conditions for the operating staff. Moreover, the air is heated and enriched with constituents from the spinning process, which increasingly renders the maintenance of favorable spinning conditions in the spinning area more difficult. For avoiding this, a device is provided, by means of which the room air conditions in the spinning area and in a staying area for operating staff for the maintenance and inspection of the spinning plant can be adjusted to a desired value.



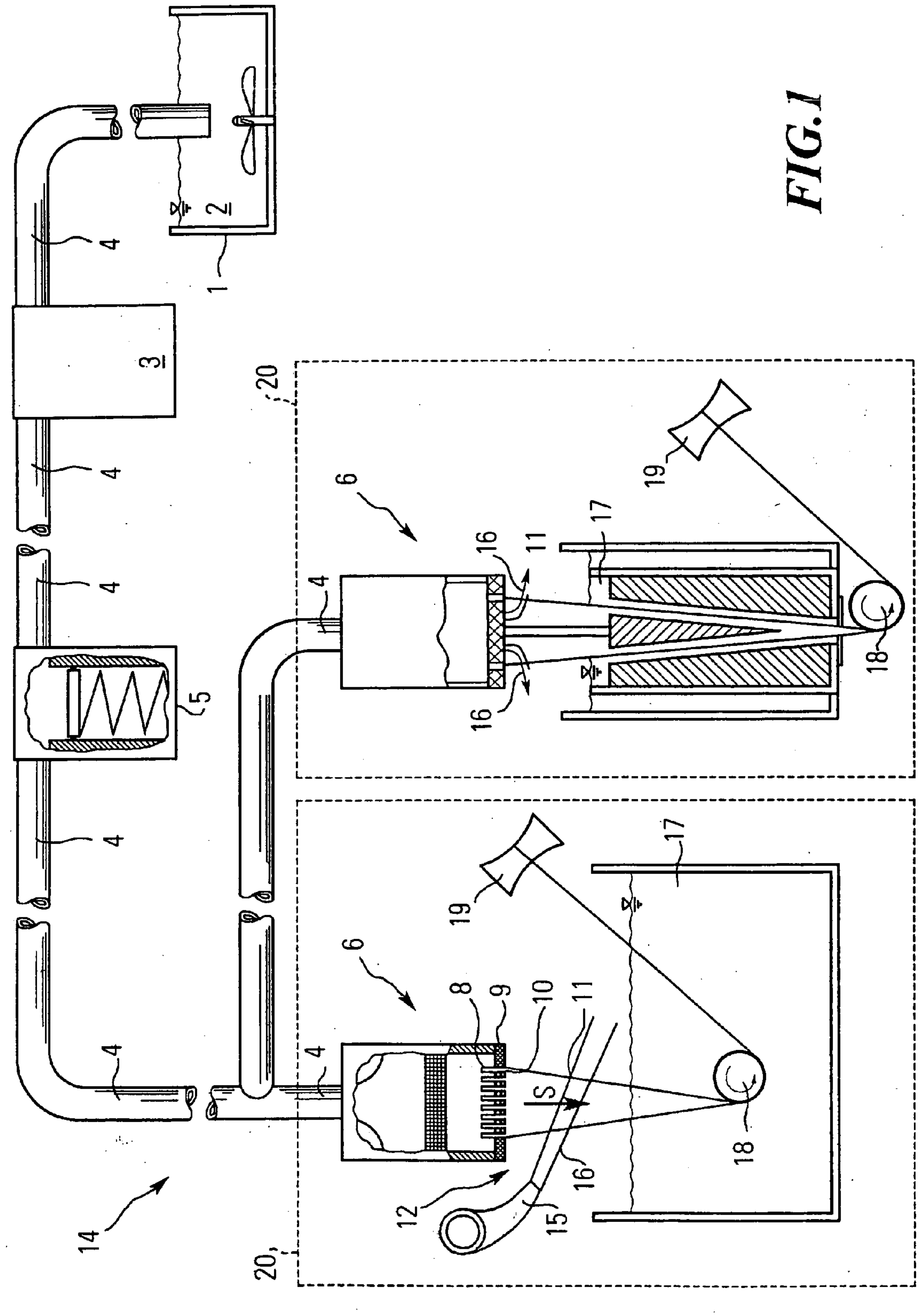


FIG.1

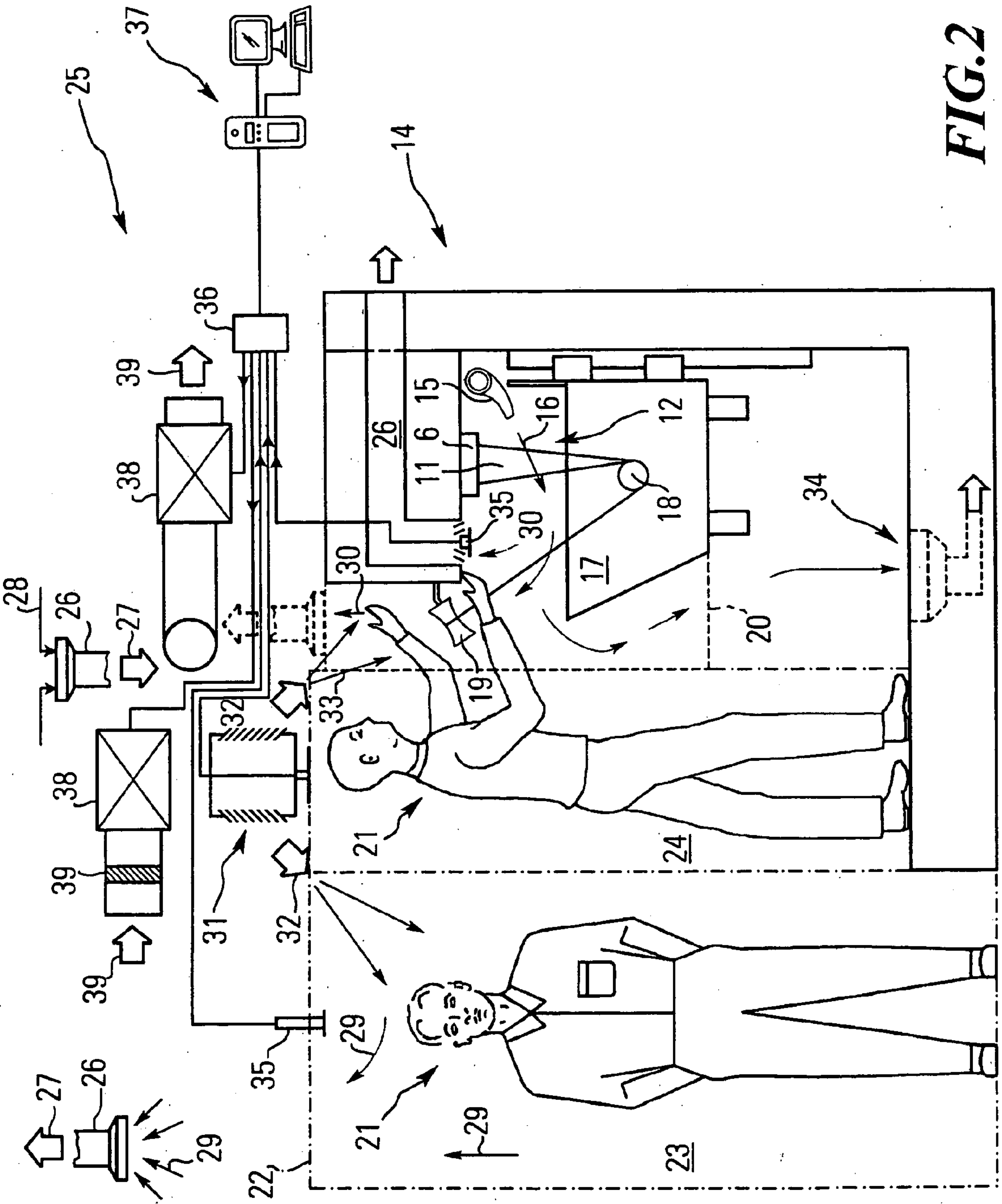


FIG.2

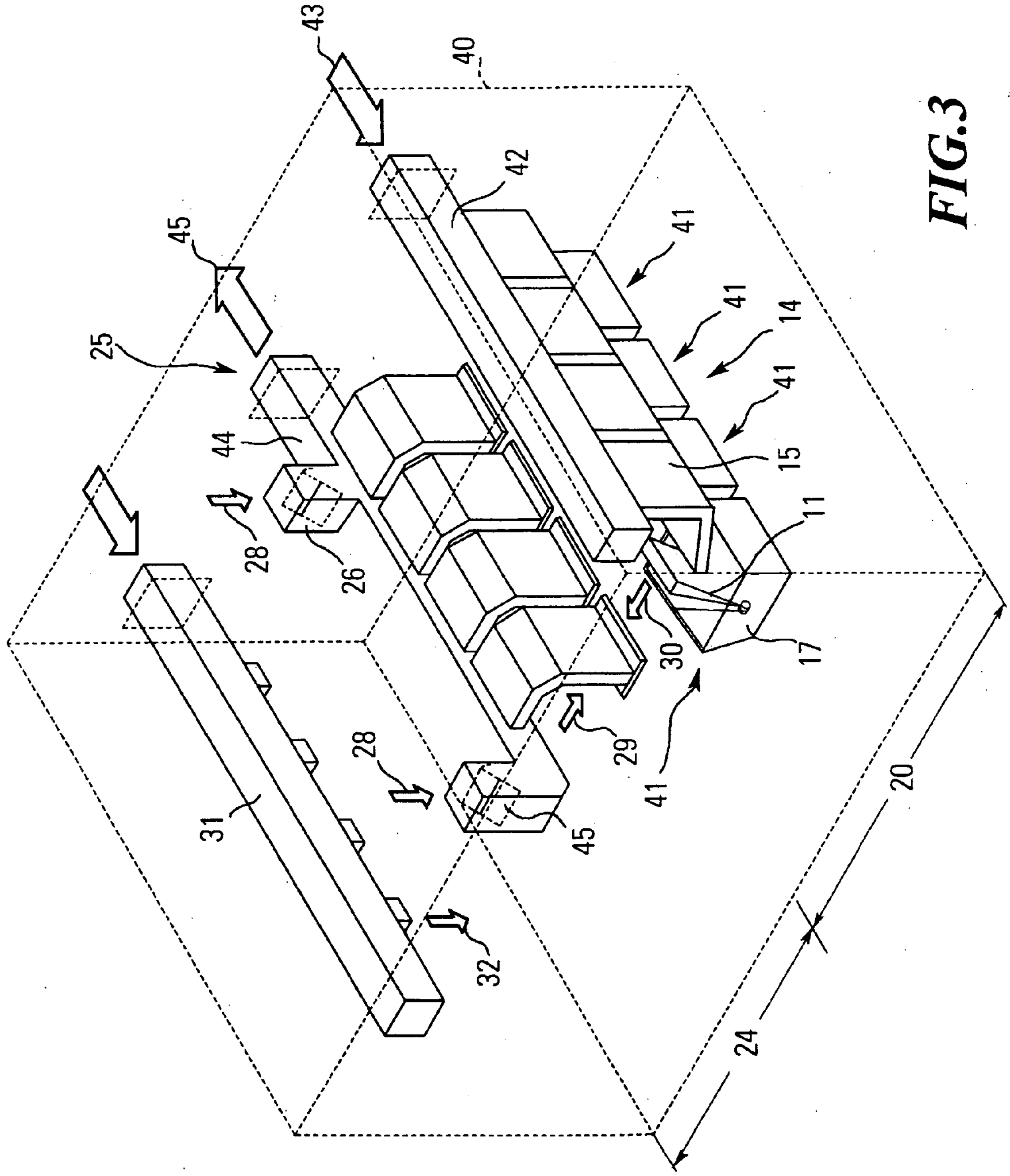


FIG.3

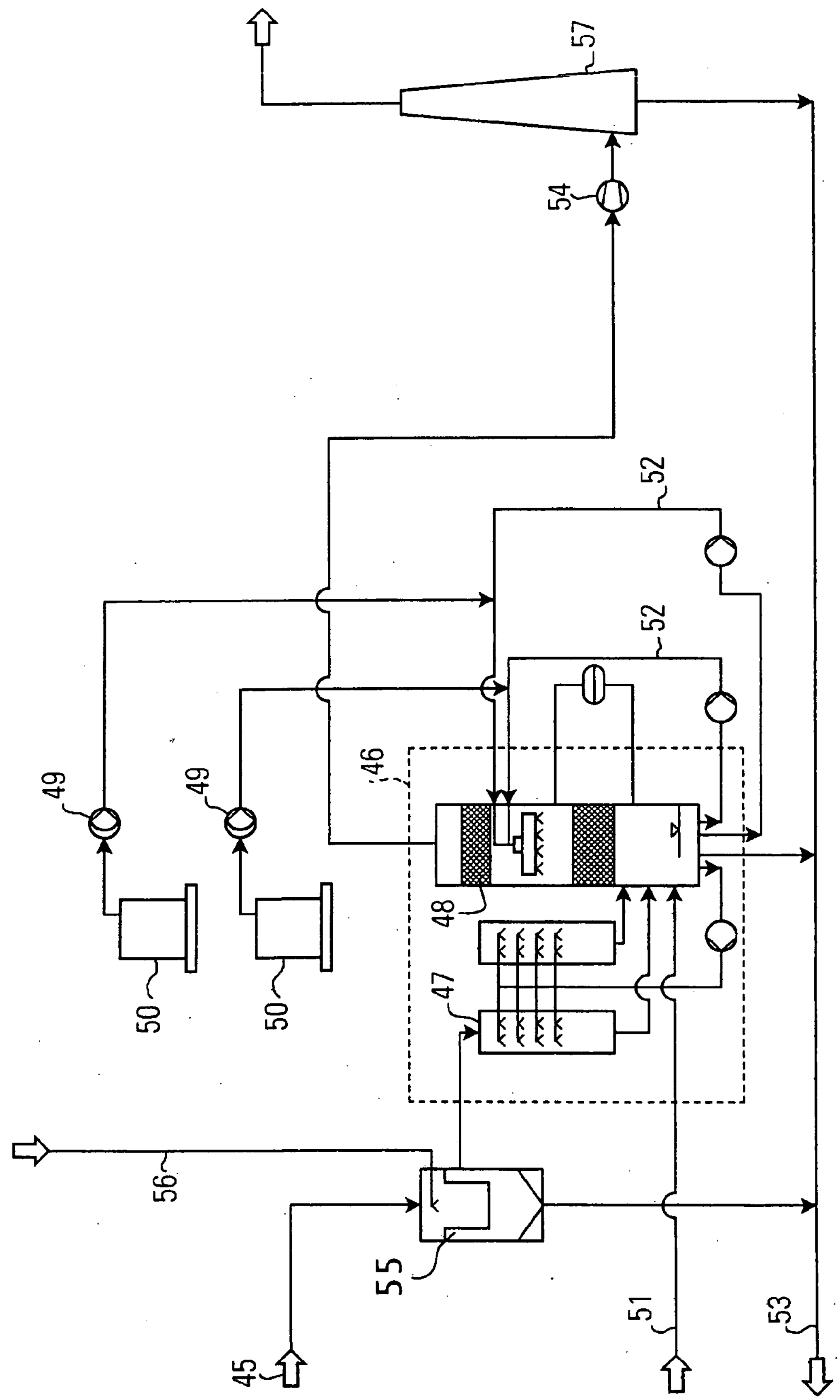


FIG.4

METHOD AND DEVICE FOR REGULATING THE ATMOSPHERIC CONDITIONS DURING A SPINNING PROCESS

[0001] The invention relates to a method and a device for controlling the room air conditions in a spinning process carried out in an open spinning area opposite the room, whereby endless molded articles are extruded, in the spinning area, from a spinning mass containing cellulose, water and tertiary amine oxide, and the extruded endless molded articles are air-quenched with a gas phase in an air jet prior to the immersion into a precipitating bath, and wherein the spinning plant can be inspected and maintained by operating staff in a staying area adjacent to the spinning area.

[0002] Endless molded articles from a spinning mass containing water, cellulose and tertiary amine oxide are substantially produced in the three process steps extruding, drafting and precipitating. N-methyl-morpholine-N-oxide (NMMNO) is used as tertiary amine oxide.

[0003] For the extrusion the heated spinning mass is passed through extrusion openings of the spinning plant and is extruded to form endless molded articles. An air gap is directly adjacent to the extrusion openings or, respectively, to the extrusion or spinning nozzles. In the air gap, a tensile force is applied to and drafts the endless molded articles. The thickness of the endless molded articles, e.g. the fiber titer of textile fibers, is adjusted by means of the tensile force. Moreover, under the influence of the tensile force, the molecules orientate themselves in the endless molded articles thereby increasing the mechanical stability thereof. Subsequently, the endless molded articles are immersed in a precipitating bath, in which the solvent still contained in the endless molded articles is precipitated. In industrial practice the spinning process takes place in a substantially closed room, mostly a hall, a spinning hall or the like.

[0004] The production of endless molded articles from a spinning mass containing cellulose, water and tertiary amine oxide involves on the one hand the problem that the surface adhesiveness or tackiness of the endless molded articles directly after the extrusion is very high. For rendering the fiber production process economical, extrusion nozzles with a high spinning density, i.e. a high number of extrusion openings per surface unit have, on the other hand, to be used. This inevitably leads to a small spacing between the individual extrusion openings and the extruded endless molded articles in the air gap and, thus, to a negative influence on the thermal balance in the area of the extrusion and drafting zone. Thus, high temperatures are generated that may reduce the spinning or drafting viscosity of the extruded endless molded articles to such an extent that the fibers break.

[0005] For reducing the surface adhesiveness and the temperature of the endless molded articles in the air gap, some solutions have been proposed in the prior art.

[0006] Document U.S. Pat. No. 4,246,221 describes the production of cellulose fibers and filaments, which are sprayed, in the air gap, with a nonsolvent such as water after the extrusion so as to reduce the adhesiveness of the filament surfaces.

[0007] As the spraying with a nonsolvent is relatively complicated, air quenching of the endless molded articles in the air gap with air or a gas mixture according to the prior art has generally been adopted.

[0008] In document WO 93/19230 it was described for the first time that, for the production of cellulose fibers according to the NMMNO process, the filaments exiting the nozzle can be cooled with air or a gaseous medium directly after the exit, so as to obtain a higher productivity.

[0009] According to the teaching of WO 96/21758 the spinning performance can be improved and the fibrillation tendency can be reduced, if the air humidity in two portions of the air gap is adjusted at different levels.

[0010] In the two devices according to WO 95/01470 and WO 95/01473 an annular spinning nozzle is employed for the production of fibers, allowing the supply of the cooling gas stream to the filament bundles in a constantly laminar manner.

[0011] Document WO 96/17118 describes a method according to which conditioned air is used for cooling the freshly spun filaments. In other words, air with a relative air humidity of up to 85% can be injected. DE 19717257 A1 describes an improvement where air between 14 and 25° C. is used for the air quenching.

[0012] Document WO 96/07777 describes a method for the production of cellulose fibers, whereby, for the production of fibrillation-reduced fibers, aliphatic alcohols such as methanol, ethanol, propanol and butanol are introduced in a gaseous state for air quenching the extruded filaments.

[0013] All of the devices and processes according to the aforementioned prior art documents commonly describe air-quenching at a very low velocity, so that the quench air stream is substantially laminar. The laminar stream has the purpose to avoid too strong a mechanical load of the endless molded articles by the air stream. According to the devices described in documents WO 94/28218 and WO 98/18983 the air jet is sucked off through a suction nozzle in the air gap on the opposite side for stabilizing the air-quenching direction.

[0014] As the cooling effects of these conventional air-quenching methods within the air gap are not sufficient to obtain high production rates of endless molded articles by simultaneously increasing the quality, which is due to the low air-quenching velocities, a turbulent gaseous substance stream is directed at the endless molded articles in the air gap in accordance with the teaching of document DE 102 00 406 filed by the applicant, the entire contents of which are included by reference in the present specification. Such a turbulent cooling gas stream effects a more efficient cooling, and a better intermixture in the area of the endless molded articles, as well as a better thermal compensation. The type of air supply described in DE 102 00 406, preferably not directly after the filaments exit the nozzle and not directly before the immersion thereof in the precipitating bath, stabilizes the spinning process. With simultaneously high hole densities a sufficient drafting tension during the extrusion can be applied on one hand. On the other hand, the endless molded articles no longer stick to each other in the air gap as soon as they touch each other, which could, otherwise, easily entail the tearing of individual endless molded articles or undrafted parts in the finished endless molded articles. If tearings occur, the extrusion process has to be stopped and restarted. Undrafted parts or thickenings result in a reduced fiber quality and increased waste.

[0015] Due to the strong turbulent intermixture in such a turbulent cooling gas stream, however, solution substances and degradation products from the spinning process are entrained by the cooling gas stream to an increased extent, and are transported into the environment of the spinning plant.

[0016] Due to the high velocities of the cooling gas stream, a removal by suction—as is described in WO 94/28218 or WO 98/18983—in the direct vicinity of the endless molded articles is no longer possible, as a strong suction effect would otherwise be exerted on the endless molded articles. Moreover, the turbulent cooling gas stream influences the room air conditions in the room in which the spinning process takes place, as it penetrates more easily through the endless molded articles deep into the spinning area or the staying area as a result of its high velocities.

[0017] In view of the aforementioned processes and devices comprising air-quenching by means of a gaseous substance stream, it is a basic problem that the degradation products transported by the gaseous substance stream are a burden to the room air conditions in the environment of the plant, thus entailing unfavorable working conditions for the operating staff.

[0018] In view of the production of Rayon fibers it is known from the prior art, e.g. from U.S. Pat. Nos. 3,924,984 and 4,477,951, to hermetically seal the spinning area and to suck off the degradation products released during the spinning process into the ambient air inside the sealed portion. The byproducts such as carbon disulfide and hydrogen sulfide are sucked out of the hermetically sealed spinning areas, as said gases are dangerous to health and must not be released into the work environment. Said documents additionally disclose that the spinning points are subjected to vapor for adjusting the spinning ambient temperature and the humidity, as the room air conditions are of great importance for the quality of the fibers.

[0019] Such insulated or sealed spinning areas are, however, disadvantageous in as far as the very unfavorable operating properties of such a plant are concerned: If maintenance or repair works take place, a hermetic sealing of the spinning area under a kind of protection cover is problematical, as the operating staff inspecting the spinning plant and the spinning process from an inspection area located in the staying area cannot, or only with difficulties, notice malfunctions in the spinning process through said protection cover. Moreover, if maintenance works take place in the spinning area, it is complicated to remove the hermetic cover at first. The provision of a protection cover also negatively influences the exchange of nozzles.

[0020] A solution for facilitating the maintenance and the inspection of a spinning plant is described in document DE 102 04 381 of the applicant, the entire contents of which are herewith incorporated by reference. The spinning plant according to DE 102 04 381 comprises spinning means, which are freely visible from an inspection area being a part of a staying area for the operating staff, and which are, at the same time, accessible by the operating staff—essentially out of one posture—in a maintenance area located between the inspection area and the spinning plant, which likewise forms part of the staying area.

[0021] For obtaining, as a consequence, an efficient air-quenching on one hand, which increases the quality of the spun endless molded articles, and, on the other hand, an easy inspection and maintenance performance of the spinning plant, it is accordingly necessary to keep the spinning area open with respect to the room, in which the spinning area is located or, respectively, in which the spinning process takes place.

[0022] If the air-quenching in the air gap takes place at high flow rates, as are commonly required for the spinning of cellulose fibers, there is the problem that the room air conditions in both the spinning area and the staying area for the operating staff deteriorate. A deterioration of the room air conditions in the spinning area, especially an increase of humidity and temperature, may require stronger air-quenching for maintaining a constant spinning quality. This, on one hand, results in the further deterioration of the room air conditions or the atmospheric environment of the room in the maintenance area and, on the other hand, in an increased mechanical stress on the endless molded article, up to filament breakage.

[0023] The invention is, therefore, based on the object to provide a method and a device allowing the use of efficient air-quenching, with the simultaneous ergonomic construction of the spinning plant, and the adjustment of the room air conditions necessary under the aspect of working technique.

[0024] According to the invention this object for the above-mentioned method is solved by controlling the exhaust air from and the additional air to the room, taking into account the gaseous substance stream, such that predetermined room air conditions are adjusted in the spinning area and/or maintenance area.

[0025] This solution is simple and differs from conventional air-conditioning plants in that, for the adjustment of the room air conditions, the gaseous substance stream is explicitly considered as a balancing quantity for controlling the room air conditions.

[0026] The air charged with the constituents formed during the spinning process will in the following be called process air, which comprises the vapors from the hot spinning mass and from the precipitating bath, the gaseous substance stream and heated air from the environment of the air gap.

[0027] An overall balancing of the air passage inside the room, in which the spinning process takes place, as well an adjustment of the air conditions for the process and in the room, also in view of the conditions required by a favourite working environment, do not appear to be known in the prior art.

[0028] Accordingly, the solution according to the invention allows to find a compromise between the air conditions in the spinning area, which are necessary for a good fiber quality, and the requirements relating to the room air conditions for the operating staff. For the fiber processing, specific air conditions have to be provided and kept constant over a longer period of time. Moreover, care must be taken that, while obtaining bearable climatic conditions at the working place, the air conditions required under the aspect of process engineering are not deteriorated, which, again, results in a poor product quality such as adhesiveness, thread breakings, irregularities in the thickness and stability of the fibers and fiber tows in the form of filaments and staple fibers.

[0029] The worldwide use of spinning plants for processing solutions from cellulose in aqueous tertiary amine oxide, and the climatic conditions resulting therefrom, which differ according to the locations, have to be taken into account when making concepts for spinning plants according to the amine oxide process. In the tests described below, room air conditions with additional air and exhaust air streams were simulated, and the spinning process was observed and the air volume withdrawn from the spinning process was analyzed.

[0030] By adjusting predetermined room air conditions in the spinning area and/or the maintenance area, the room air conditions can optimally be controlled in view of the process control and the well-being of the operating staff, despite the gaseous substance stream from the spinning area, and the exhaust air can be supplied to a subsequent post-processing plant.

[0031] Another possibility for withdrawing air streams from the spinning machine and the spinning room to an exhaust air processing plant, for the adjustment of the room air conditions, is necessary, for instance, if spontaneous exothermal reactions of the mixture from cellulose and aqueous tertiary amine oxide occur, so that the ambient air not be contaminated by degradation products.

[0032] The solution according to the invention eventually also allows the addition of viscosity-modifying, slightly boiling liquids to the spinning mass, which liquids spontaneously evaporate during the extrusion, especially at extrusion and processing temperatures of approximately 100° C. or more. Without the inventive control of the room air conditions in the spinning hall said vapors would escape into the environment directly adjacent to the spinning plant, or into the working area, e.g. in the form of solvent vapor enriched with water, water vapor or with a cellulose solvent and the degradation products thereof, where they would negatively influence the climatic working conditions.

[0033] The room air conditions can especially be adjusted to predetermined values or desired values (target values) of certain quantities of state. These quantities of state are preferably those that are most strongly influenced by the spinning process. Such quantities of state are, for instance, the contents of tertiary amine oxide and/or other degradation products of the spinning process in the room air, which the gaseous substance stream conveys out of the endless molded articles, or the humidity or temperature of the room air. Said quantities of state may be used individually or in optional combinations with each other as control quantities or actuating variables for controlling the room air conditions.

[0034] Thereby, the process quantities have to be adjusted and measured, such as the exhaust air quantity in m^3/h, the additional air quantity in m^3/h, the exhaust air temperature in ° C., the additional air temperature in ° C., the relative air humidity or the humidity in the air in (kg water)/(kg dry air), and related to the operating parameters of the spinning machine. Additional measurements of the air composition in the exhaust air, such as the contents of amines, other organic solvents and water may also take place, so as to control a possibly connected subsequent treatment plant for air in response to the process such that good spinning and room conditions, as well as a high recovery and precipitation degree of air ingredients are obtained. According to an advantageous embodiment, one or more sensors may be provided for this purpose in the spinning area and/or the maintenance area. These sensors detect the actual value of such a quantity of state representing the room air conditions and forward the same to a controller. In the controller the actual value can then be compared with a predetermined desired value and, in correspondence with the deviation of the actually measured quantity of state from the desired value, the room air conditions can be tracked or controlled. Such a tracking of the room air conditions may, for example, be adjusted by controlling the volume flow rate of the exhaust air. Alternatively, or in addition to controlling the volume flow rate of the exhaust air, also the volume flow rate of the additional air supplied to the room can be tracked. Moreover, the temperature and/or the humidity of the additional air can be changed in correspondence with the deviation of the room air conditions from the desired value by heating devices and/or moisteners. If, for example, a humidity measured in the spinning area is too high, the additional air supplied to the spinning area may be dried to an increased extent.

[0035] The additional air may thereby consist of external air or, at least partially, of purified and circulated air.

[0036] For avoiding that too large a volume flow rate of the gaseous substance stream enriched with the constituents from the spinning process escapes from the spinning area into the maintenance area, where it burdens the room air conditions, the exhaust air can, at least partially, directly be sucked out of the spinning area by means of a process air exhaustion. Preferably the entire, or at least the major part, of the process air is thereby sucked off, before it can reach the maintenance area. For this purpose, corresponding suction openings may be arranged in the spinning area itself, or in the direct proximity of the spinning area.

[0037] The exhaustion in the proximity of the air gap is, however, not unproblematic, as a sufficient distance of the suction openings from the endless molded articles in the air gap and from the surface of the precipitating bath is required, for not loading the filaments in the air gap by the exhaust stream too much on one hand, and for keeping the precipitating bath surface as quiet as possible on the other hand. This embodiment has the advantage that, due to the direct exhaustion from the spinning area, the room air conditions in the spinning area can more directly be controlled and a larger exchange of air can be obtained.

[0038] According to another advantageous embodiment the exhaust air can, at least partially, be sucked directly out of the maintenance area, so as allow the direct adjustment of the room air conditions also in this area by means of the exhaust air control.

[0039] For obtaining a temperature distribution in the room, in which the spinning process takes place, that is as constant as possible, and for avoiding the accumulation of hot room air in the proximity of the ceiling, it may be provided in accordance with an advantageous embodiment that the exhaust air is, at least partially, sucked off from the portion of the room close to the ceiling.

[0040] For directly controlling the room air conditions in the staying area, especially in the maintenance area, part of the additional air may be supplied directly into or adjacent to the staying area.

[0041] In another advantageous embodiment the additional air stream is passed along predetermined paths by positioning the exhaust air devices. Thus, especially a flow in the maintenance area and/or the spinning area can be obtained, by which the operating staff is largely shielded against the affects of the gaseous substance stream and the process air. This shielding may, for instance, take place in the form of an air curtain, i.e. by a layer of air preferably streaming vertically along a front of the spinning plant.

[0042] In tests it has proved to be advantageous, if between 10 and 80 m^3, preferably between 10 and 30 m^3, exhaust air per kg of endless molded articles produced during the spinning process in the spinning area are sucked off in and/or in the proximity of the spinning area. The exhaust air sucked of at this point primarily contains process air.

[0043] According to another advantageous embodiment, between 3 and 50 m^3 gaseous substance per kg of endless molded articles produced during the spinning process in the spinning area can be blown into the air gap by the air-quenching device, preferably at velocities of more than 30 m/s.

[0044] The room air conditions can particularly be improved by circulating 3 to 10 times the volume of the room per hour.

[0045] The quantity of exhaust air sucked out of the room per hour may be 1.2 to 2.5 times the gaseous substance stream from the air-quenching device.

[0046] According to another advantageous embodiment, which particularly also constitutes an invention independently of the inventive adjustment of predetermined room air conditions in the spinning area and/or the maintenance area, the exhaust air, once withdrawn from the room in which the spinning process takes place, can be purified. In accordance with an advantageous advanced development the exhaust air may, for this purpose, be fed to a purification step, in which the portion of the portions deriving from the spinning process in the exhaust air is reduced.

[0047] The precipitated constituents, e.g. the recovered tertiary amine oxide, or the degradation products formed in the thermal treatment during the production of the suspension solution in the spinning process, may be recirculated into the spinning process or may be removed. The purification step may particularly comprise a drop eliminator, a quencher and/or an aerosol separator, as well as a process step in which a substantially biological purification by means of a microbial degradation of degradation products of the spinning process takes place in biofilters. Moreover, an electrostatic filter with a purification upstream or downstream thereof may be provided, in which the exhaust air is conducted through electrically charged fixtures such as netting wires. The aerosol separator is preferably arranged upstream of an acidic or alkaline washing stage so as to recover the useful materials N-methyl-morpholine-N-oxide (NMMNO), N-methyl-morpholine (NMM) and morpholine (M) contained in the exhaust air, particularly in the withdrawn process air, and to recirculate them to the spinning process.

[0048] The device according to the invention may also be constructed as a retrofit kit, with which existing plants for the production of endless molded articles from a spinning mass containing water, cellulose and tertiary amine oxide may be retrofitted.

[0049] The invention will hereinafter be explained in more detail by means of working examples with reference to the drawings, wherein

[0050] **FIG. 1** shows an embodiment of a spinning process for the production of endless molded articles from a spinning mass containing water, cellulose and tertiary amine oxide in a schematic general survey;

[0051] **FIG. 2** shows a perspective drawing of an embodiment of a spinning plant comprising a spinning area and a staying area;

[0052] **FIG. 3** shows a perspective drawing of the removal of exhaust air by suction and the supply of additional air in a room comprising a spinning plant;

[0053] **FIG. 4** shows a schematic general survey of the method for purifying the exhaust air.

[0054] At first, a survey will be provided on the method for producing endless molded articles from a spinning mass containing water, cellulose and tertiary amine oxide, with reference to **FIG. 1**.

[0055] In a reaction vessel **1** a spinning mass **2** is prepared, which contains cellulose, water and tertiary amine oxide, e.g. N-methyl-morpholine-N-oxide (NMMNO), as well as, if required, stabilizers for thermally stabilizing the cellulose and the solvent. Such stabilizers may, for example, be propyl gallate and media or mixtures thereof with an alkaline effect. If need be, further additives such as anorganic and organic salts, titanium oxide, barium sulfate, graphite, carboxymethylcelluloses, polyethylene glycols, chitin, chitosan, alginic acid, polysaccharides, colorants, chemicals having antibacterial effects, flame retardants containing phosphor, halogens or nitrogen, activated carbon, blacks or electrically conductive blacks, silicic acid as well as organic solvents such as low, medium and higher boiling alcohols, dimethyl formamides, dimethyl acetamides, dimethyl sulfoxides as thinning agents etc. may be contained in the spinning mass.

[0056] The spinning mass **2** is transported via a pump **3** through a conduit system **4**, in which a pressure compensating container **5** can be arranged for compensating pressure and volume flow rate deviations in the conduit system. Thus, an extrusion head **6** can be supplied with the spinning mass **2** continuously and constantly. The conduit system **4** is provided with temperature control devices (not shown), by means of which the temperature of the spinning mass **2** during the transport thereof through the conduit system **4** can exactly be controlled. An exact temperature control is necessary, as the chemical and mechanical properties of the spinning mass strongly depend on the temperature. For example, the viscosity of the spinning mass **2** drops with increasing temperature and shear rate.

[0057] Moreover, burst protection devices (not shown) with bursting discs are provided in the conduit or line system **4** at regular intervals, which are necessary because of the tendency of the spinning mass to a spontaneous exothermal reaction. The burst protection devices avoid damages in the conduit system **4** and in the pressure compensating container **5** as well as of the subsequently connected extrusion head **6**, if such a spontaneous exothermal reaction takes place. If a reaction in the spinning mass takes place, the pressure in the conduit system **4** increases, which results in the bursting of the bursting discs and in the discharge of the bursting pressure to the environment.

[0058] A spontaneous exothermal reaction in the spinning mass **2** can especially occur when a certain temperature is exceeded, or as a result of aging of the spinning mass **2**, especially in areas with stagnant water. For avoiding such an aging of the spinning mass in areas of stagnant water, the conduit system is designed in a flow-favorable manner in the area flown through by the highly viscous spinning mass **2**. In the extrusion head **6** the spinning mass is distributed in a nozzle volume **7** to a plurality of extrusion channels **8** in the form of spinning capillaries arranged in several rows, which, in **FIG. 1**, extend perpendicularly to the plane of projection. Thus, a plurality of endless molded articles is simultaneously produced by one extrusion head **6**, whereby the endless molded articles exit the extrusion head substantially in the form of a plane curtain. Each spinning capillary **8** is, at least section-wise, surrounded by a heating device **9**, by which the wall temperature of the spinning capillary is controllable. The wall temperature of the spinning capillary **8** is approximately 150° C., the temperature of the spinning mass approximately 100° C. The heating device **9** extends preferably up to the discharge opening **10** of the extrusion channel positioned in the direction of flow S. Thus, the wall of the extrusion channel **8** is heated up to the extrusion channel opening **10**.

[0059] In the extrusion channel **8** the spinning mass is extruded and is subsequently discharged into an air gap **12** in the form of a spinning filament **11**. An air-quenching device **15** is arranged in the air gap **12**, by which a gaseous substance stream **16** is directed at the curtain of endless molded articles **11**. The gaseous substance stream **16** is turbulent and has a velocity of at least 30 m/s. It is directed downwardly with respect to the horizontal line and clearly spaced away from the extrusion head. Its height in the direction, in which the endless molded articles are passed through, is less than 10 mm.

[0060] The extrusion head **6** and the elements described in the following form part of a spinning plant **14** standing in a room not illustrated in **FIG. 1**, e.g. a factory hall. Upon passing through the air gap **12**, the curtain of endless molded articles immerses into a precipitating bath **17**, in which the solvent is precipitated out of the endless molded articles.

[0061] A deviation or deflector device **18** is arranged in the precipitating bath **17**, through which the plane curtain is deviated in the direction of a bundling device **19**. The bundling device bundles the individual endless molded articles **11** to substantially one point, and this fiber bundle is passed on to additional process steps (not shown in **FIG. 1**).

[0062] The spinning plant may also comprise additional spinning locations, as is schematically illustrated in **FIG. 1**. Thus, an extrusion head **6** comprising extrusion openings distributed on an annular surface may be provided at another spinning location, where the endless molded articles are immersed into the precipitating bath **17** after they have passed through the air gap **12**. In the precipitating bath the endless molded articles are guided into an annular gap between a spinning funnel and a displacer. A screen is arranged at the exit of the spinning funnel. The deviation device **18** is arranged outside the precipitating bath.

[0063] The spinning process illustrated in **FIG. 1** particularly affects the room air conditions in the spinning areas **20** shown in dotted lines in **FIG. 1**. The room air, or atmospheric, conditions in this area are essentially characterized by the temperature radiation of the heated extrusion head **6** and the still hot endless molded articles **11**, as well as by the constituents dissolved from the endless molded articles **11** and the precipitating bath **17** by the gaseous substance stream **16**, and by the vapors of the hot spinning mass and the precipitating bath. The spinning area **20** comprises the area in which the spinning means **6**, **12**, **15**, **16**, **18** and **19** are arranged and the air-climatic conditions are substantially influenced by the spinning process. The spinning means comprise the components of the spinning plant participating in the extrusion of the spinning mass up to the coagulation of the endless molded articles.

[0064] In **FIG. 2** the spinning plant **14** with its spinning area **20** is illustrated schematically. **FIG. 2** moreover schematically shows operating staff **21** staying in a staying area **22** for inspection and maintenance works on the spinning plant **21**. The staying area extending along the spinning plant **14** with a distance of up to 1.5-3 m comprises an inspection area **23**, in which the operating staff makes check patrols and can inspect and supervise the spinning process performed by the spinning plant **21**. For this purpose, spinning means are freely visibly arranged in the spinning area **20** such that they can at once be inspected by an operator making his check patrol. Thus, the operating staff immediately notices irregularities in the spinning area. In particular, the air gap **12** is positioned in the central vision area of an operator **21** walking or standing upright in the inspection area **23**.

[0065] Especially if the room, in which the spinning process takes place, is a factory hall, the staying area **22** and spinning area **20** are small in comparison with the room, and may cover less than half the volume of the room The room-climatic balancing volume thereby includes the staying area and the spinning area.

[0066] For carrying out maintenance works on the spinning means in the spinning area **20**, the person goes into a maintenance area **24** slightly elevated over the inspection area, which likewise forms part of the staying area **22**. In the maintenance area the operating staff **21** can possibly access the entirety of spinning means without having to bend down. The entirety of spinning means is thereby located within the reach of the person standing in the maintenance area **21**, so that the same can carry out all works in the spinning area **20** out of one posture.

[0067] The room air conditions in the staying area **22** and the spinning area **20** are adjusted to a desired or target value in view of at least one desired or target quantity by a device **25** for controlling the room air conditions. For this purpose the device **25** comprises exhaust air devices **26** through which exhaust air **27** is sucked out of the environment of the spinning plant **21**. As is shown in **FIG. 2**, an exhaust air device **26** is also disposed in the proximity of the ceiling so as to suck off therefrom hot air accumulating in the upper portion of the room. Said exhaust air devices primarily suck off room air only slightly charged with process air.

[0068] Additional exhaust air devices take care that as little process air as possible escapes from the spinning area into the maintenance area and/or from the maintenance area into the remainder of the room.

[0069] Furthermore, exhaust air devices may be provided in or in the proximity of the inspection area **23**, which suck the air **29** out of the maintenance area **23**. Finally an exhaust air device is provided, which is arranged in the spinning area **20** or directly adjacent thereto such that it sucks off the air **30** preferably only from the spinning area. In **FIG. 2**, the exhaust air device **26** for the process air is integrated in the portion above the precipitating bath **17** of the spinning plant **14**. For avoiding that an air current is generated by the exhaustion, which influences the spinning process, the exhaust air device is provided with a fluid mechanical device, not shown, by means of which the direction from which the air is sucked in out of the spinning area can be adjusted. An additional exhaust air device may be disposed above the maintenance area, as is illustrated by the dotted line.

[0070] The air sucked off by this exhaust air device is primarily the process air with the gaseous substance stream **16**, and is enriched with constituents from the spinning process. Due to the heating of the extrusion head and the temperature of the endless molded articles said air, moreover, has a high temperature.

[0071] Another exhaust air system (not shown) may be arranged at the bursting devices, so as to immediately suck of the gases formed in an exothermal reaction and when the burst devices burst.

[0072] The room air conditioning device **25** moreover comprises an additional air device **31**, through which additional air **32** can be fed to the room. The additional air **32** is directed by the additional air device **31** such that only a few degradation products from the spinning process are contained in the staying area **22**. The additional air may be fresh ambient air or circulated and purified air, or circulated and purified exhaust air is admixed to the ambient air.

[0073] The additional air device **31** interacts, especially in the spinning area **20**, with at least one exhaust air device **26** such that the current **33** of additional air is conducted in predetermined directions. Thus, it can be assured that the operating staff **21** carrying our maintenance works in the maintenance area **24** is supplied with sufficient additional air and is protected against the room-climatic effects of the spinning process.

[0074] According to the working example shown in **FIG. 2**, the additional air device **31** blows in additional air **32** from above between the person **21** and the frontage of the spinning plant **14**, and the exhaust air device **26** simultaneously sucks process air out of the spinning area **20** along the frontage of the spinning plant **14**, shielded by the additional air **32**. In addition, an optional exhaust air device **34** in the bottom area of the spinning plant **14** can suck off additional air out of the spinning area **20**. As is outlined by the arrows in **FIG. 2**, an air curtain is thereby formed between the operator in the maintenance area and the spinning area, especially in the air gap.

[0075] Alternatively, the additional air **32** may also be supplied as well or source ventilation (not shown) from below, e.g. from the bottom area or toe space of the spinning plant, or from the side.

[0076] The room air conditioning device **25** finally comprises at least one sensor **35**, by means of which at least one quantity of state representative of the room air conditions can be detected and forwarded to a controller **36** of the device **25**. The quantities of state detected by the at least one sensor may differ in dependence on the position of the sensor. In the example shown in **FIG. 2**, for example, a sensor **35** is provided in the inspection area **23**, another sensor **35** is provided in the maintenance area **24** and a third sensor **35** is provided adjacent to the air gap **12** or in the air gap **12** itself. The sensor in the proximity of the air gap **12** can, for instance, detect the contents of tertiary amine oxide or of other degradation products in the room air. The sensor **35** in the maintenance area can detect the humidity, and the sensor **35** in the inspection area **23** can detect the temperature. Thus, each quantity critical for the room air conditions is detected respectively in each of said areas **20**, **2324**, so that room air conditions being optimal in view of the separate relevant quantities of state can separately be generated in each area **20**, **23**, **24**.

[0077] The controller **36** compares the actual values of the quantities of state representative of the room air conditions detected by the sensors **35** with desired values stored in a memory (not shown). Said desired values can be modified and monitored by an input/output unit **37**, e.g. a computer. The input/output unit **37** can also detect the current operating state of the device **25** and display the same for the operating staff **21**.

[0078] In case of deviations between the actual quantities of state detected by the sensors **35** and the desired values, the controller **36** controls pumps **38** such that the flow rates **39** of additional or exhaust air are changed in combination with each other or individually such that the deviations from the desired values are reduced. Also the distribution of the volume flow rates of the exhaust air sucked off through the individual exhaust air devices can be modified via areas **22**, **23**, **24** by non-illustrated flap systems. Moreover, the blow-out direction of the additional air **32** can be modified at some locations. In addition, the controller **36** controls additional devices **39**, such as heating devices and humidifiers or dehumidifiers, by means of which certain quantities of state of the additional air, such as humidity and temperature, can be changed and the deviations of the room air conditions from the desired value can be minimized in view of these quantities of state.

[0079] **FIG. 3** shows a room **40** comprising the spinning plant **14** and the room air conditioning device **25** in a perspective, easy to survey illustration. Room **40** is, for instance, a hall or a similar room in a fabrication plant for endless molded articles.

[0080] As can be seen from **FIG. 3**, several spinning stations **41** can be arranged parallel to each other in the spinning plant **14**, whereby at least one curtain of endless molded articles **11** is produced in each spinning station **41**. Each spinning station **41** comprises an air-quenching device **15** associated therewith and a precipitating bath **17**. In room **40** also several rows of spinning positions **41** may be arranged successively. Each spinning position **41** may be associated with its own spinning area **20**, which is equipped with sensors separated from the adjacent spinning areas and controlled to certain room air conditions.

[0081] The volume flow rate of the gaseous substance stream generated by the air-quenching device **15** is, in each spinning station **41**, between 10 and 500 m^3/h, depending on the dimensions of the individual spinning stations. In each spinning station heat between 0.5 and 4 KW has to be withdrawn from the spinning process. The surface of each spinning station is approximately 2 to 3 m^2. The spinning area **20** associated with each spinning station has a volume between 10 and **20** m^3.

[**0082**] For clarity's sake, essential parts of the spinning plant **14**, such as the extrusion head **6** or the bundling device **19**, have been omitted in **FIG. 3**.

[**0083**] According to the example shown in **FIG. 3**, the air-quenching devices **15** of spinning positions **41** are supplied with a gaseous substance stream **43** from a common collective pipe **42**.

[**0084**] According to the example shown in **FIG. 3**, each spinning station or, respectively, each spinning area of a spinning station is associated with an exhaust air device **26**, by means of which the air **30**, which primarily contains process air, is sucked out of the spinning area, and the air **29**, which primarily contains larger portions of room air and only smaller portions of process air, is sucked out of the maintenance area and is forwarded to a collective pipe **44**.

[**0085**] Furthermore, the hot air from the ceiling area of room **40** is sucked off in the collective pipe **44** by means of exhaust air devices **26** provided close to the ceiling. The distribution of the volume flow rates between the exhaustion close to the ceiling and the exhaustion from the spinning area **20** or, respectively, the maintenance area **22** is effected by hydraulic fixtures **45**, such as flaps or throttles.

[**0086**] According to **FIG. 3**, the additional air **31** is supplied in the maintenance area **24** above the head level of the operating staff. Alternatively, the additional air can also be supplied from the bottom or the side. According to the working example shown in **FIG. 3**, the gaseous substance stream and the additional air come from different sources. The additional air supplied may, for example, be fresh air, the gaseous substance may be purified exhaust air.

[**0087**] The exhaust air **45** conducted out of room **40** comprises, especially if it comes from the spinning area **20**, a high concentration of constituents deriving from the spinning process. Said constituents are removed from the exhaust air by a purification stage as is, for example, shown in **FIG. 4**.

[**0088**] **FIG. 4** shows a schematic illustration of such a purification stage. In **FIG. 4**, the exhaust air **45** is thereby exemplarily fed to the purification process from two separate rooms **40**.

[**0089**] The exhaust air **45** is at first fed to a washing system **46**. The washing system **46** comprises a quencher **47** as well as at least one demister **48**. The demister **48** is supplied with washing media **50** via the dosing pumps **49**. Such washing media may be water, HCl, H_2SO_4 or a solution containing NaOH.

[**0090**] Moreover, fresh water is supplied to the demister via a conduit **51**. Part of the washing media can circulate inside the demister via conduits **52** and can be reused. Another part of the liquid accumulated in the demister **48** is fed to a waste line **53**. The discharged portion is supplemented with the fresh water.

[**0091**] The washed exhaust air is sucked out of the upper part of the demister of the washing system **46** via a fan **54**.

[**0092**] The exhaust air is finally supplied to a chimney **57**, where it flows into the ambient air in the form of pure gas. The precipitate from the chimney is likewise supplied to the waste line. Alternatively, the purified exhaust air can also be admixed to the additional air fed to room **40**.

[**0093**] The exhaust air can be supplied to an aerosol separator **55** provided upstream of the washing system, allowing the recovery of the useful materials such as N-methyl-morpholine-N-oxide (NMMNO), N-methyl-morpholine (NMM) and morpholine (M) contained in the exhaust air, as well as of other reaction products, prior to a possible acidic or alkaline washing. An electrostatic filter may thereby be provided, in which the exhaust air passes an electrically charged filter system. Upstream and/or downstream of the electrostatic filter the exhaust air may be washed.

[**0094**] The aerosol separator is likewise supplied with fresh water via a conduit **56**. The waste water from the aerosol separator **55** is likewise fed to the waste line **53**.

[**0095**] The exhaust air washing plant may, as is illustrated, be provided with additional washing devices in multiple stages, or only with parts of the illustrated washing device. A ventilator can be positioned upstream, inside or downstream of the washing plant.

[**0096**] In addition to the components shown in **FIG. 4**, the purification stage may also comprise a microbial purification, during which a microbial degradation of constituents in the exhaust air out of the spinning process takes place by means of biofiltration.

[**0097**] In the hereinafter described examples, the air conditions in the spinning area or, respectively, in the room in which the spinning process takes place were influenced by varying the process conditions, and the effects on the spinning process and the operability of the spinning plant were analyzed.

[**0098**] An NMMNO spinning mass consisting of 13% pulp of the MoDo type having a medium DP of 680.76% and 11% water was fed to the spinning machine at different spinning solution temperatures.

[**0099**] By means of a rectangular spinneret the spinning solution was extruded into an air gap in the form of a filament and precipitated in an NMMNO-containing precipitating bath. The endless molded articles exiting the spinning nozzle in the form of a filament were subjected to an air stream by means of different air-quenching devices.

[**0100**] The height of the air gap in the direction in which the endless molded articles are passed through was between 15 and 25 mm.

[**0101**] In all cases a Lyocell fiber having a fiber fineness of approximately 1.4 dtex was produced. The devices employed therefor are, for example, described in DE 100 19 660 A1 and DE 100 37 923 A1, both of which documents are entirely incorporated in the disclosure of this application.

[**0102**] In the tests for exactly balancing the air volumes the plant was sealed, so that the subsequently described production density expressed in fiber production per room surface [kg/h per m^2] could be illustrated.

[**0103**] In the following examples, the volume and the temperature of the process air, the process exhaust air and the room air was varied and measured.

[0104] The air volume currents were determined by means of a propeller-type volume flow rate meter of the company Testoterm. For determining the air temperatures a resistance thermometer was employed.

[0105] The temperature of the additional room air was uniformly approximately 25° C.

[0106] The exhausting devices used in examples 2 to 8 were adjusted by varying the exhaustion geometry such that the secondary air factor, which is the dimensionless relation of process exhaust air volume to additional process air volume, i.e. the gas stream volume from the air-quenching device, corresponded to the values mentioned in the examples. A secondary air factor of 0 thereby designates an open system where no process air exhaustion takes place. A secondary air factor of 1 designates a closed, shielded system, in which exactly the air from the air-quenching device is sucked off, and a secondary air factor >1 designates a partially open system, in which the process exhaustion additionally exhausts room air at the exhaust edges.

[0107] Finally, the odor burden in the maintenance area, the spinning behavior and the accessibility and operability of the plant by a person standing in the maintenance area were assessed subjectively. In view of the odor burden it was likewise taken into account if a visible smoke development, which typically is an indication of high temperatures, occurred in the spinning area. This resulted in a worse evaluation.

[0108] For the better comparability all values and data were related to 1 kg/h of produced fiber.

EXAMPLE 1

[0109] The air-quenching device had an air gap width of 8 mm, by which a laminar quench air current with a moderate quench air velocity, but large volume flow rate (28 m^3 air per kg product) was generated.

[0110] The spinning process was carried out without an own exhaust air device for process air.

[0111] The discharged heated process air escaped unimpededly into the spinning or, respectively, operating area. In the operating area a temperature of nearly 40° C. was adopted at the head level of an operator positioned in the maintenance area. Moreover, a relatively strong odor burden and white smoke could be observed.

[0112] The room exhaust air volume was adjusted to approximately 48 m^3/kg by means of an exhaust air ventilator controlled by a frequency converter, which corresponds to a ventilation number (change of the air volume in the room per hour) of approximately 7.

[0113] The air was withdrawn at a temperature of approximately 30° C.

[0114] The spinning behavior was good. Due to the absence of an exhausting device in the spinning area also a good operability from the maintenance area and a good visibility from the inspection area were provided.

EXAMPLE 2

[0115] In example 2, an exhausting device extending over the entire air gap height and nozzle width was arranged in the spinning nozzle area as illustrated in **FIG. 2**. Apart therefrom, the conditions remained unchanged. Said exhausting device effected a nearly complete shielding of the spinning area against the operating area.

[0116] By this arrangement the process air was blown to the filaments by means of the air-quenching device and simultaneously sucked through the yarn sheet by means of the exhausting device.

[0117] The secondary air factor of the exhausting device was in this case 1, as the additional process air volume and the process exhaust air volume were adjusted to the same value.

[0118] The spinning behavior in this example was worse than in example 1. The air passage seems to be negatively influenced by the effect exerted by the exhaustion on the quench air stream.

[0119] The arrangement of the exhausting device directly upstream of the filaments prevented any vision to the filaments during the operation, which implied a strong restriction of the operability. For routine inspection purposes during the operation it was necessary at each time to remove the exhaustion. This handling always included the risk of producing spinning errors.

[0120] A slight smoke development occurred in the lateral portions of the nozzles, due to the incompletely entrained process exhaust air, which created a slight odor burden in the operating area.

[0121] In the operating area a temperature of approximately 30° C. was adopted at head level.

EXAMPLE 3

[0122] Example 3 was conducted analogously to example 2. However, instead of a laminar quench air stream with a moderate quench air velocity, a turbulent quench air stream with a high velocity was passed through the yarn sheet. Said air-quenching device consisted of single-row multi-channel nozzles of the Lechler Whisperblast type. The air volumes (additional process air and process exhaust air) of approximately 10.7 m^3/kg were essentially smaller than in the preceding examples.

[0123] In this example, too, the spinning behavior was negatively influenced by the presence of the exhausting device. In these examples, too, white smoke with an accompanying odor burden occurred in the marginal portions of the exhaustion. Due to the clearly smaller quantities of process air the burden was, however, slightly smaller than in example 2.

EXAMPLES 4 to 6

[0124] In examples 4 to 6 the air-quenching device of examples 1 and 2 (laminar quench air stream with moderate quench air velocity, but large volume flow rate) was employed.

[0125] In contrast to examples 1 and 2, an exhausting device was used in these examples, allowing, due to its geometric design, the exhaustion also of room air in addition to the process air, and additionally also the possibility to see the filaments. The geometric arrangement of the exhausting device was varied in these three examples such that the secondary air factor, the relation between additional process air volume and process exhaust air volume, ranged between 1.7 and 2. Moreover, different spinning solution temperatures were tested, and process air volumes of 28 to 45 m^3/kg were applied (depending on the spinning temperature).

[0126] In all these examples, the temperature in the direct spinning area was adopted at a value of approximately 30° C. There was no odor burden and no white smoke plumes. The operability, without an influence on the spinning process or on the ability to see the filaments during the operation, was provided due to the described geometric arrangement. The spinning behavior turned out to be good.

EXAMPLES 7 and 8

[0127] In examples 7 and 8 the air-quenching device of example 3 (turbulent quench air stream with high velocity by using single-row multiple channel nozzles of the Lechler Whisperblast type) was employed. The additional process air volume ranged between 8.5 and 10.5 m^3/kg, i.e. it was substantially smaller than in the preceding examples.

[0128] The exhausting device was constructed analogously to examples 4 to 6.

[0129] The secondary air factor of the exhausting device, the relation between additional process air volume and process exhaust air volume, ranged between 2 and 2.5.

[0130] In said two examples, the temperature in the direct spinning area was adopted at a value of approximately 30° C. There was no odor burden and no white smoke plumes. The operability, without an influence on the spinning process or on the ability to see the filaments during the operation, was provided due to the described geometric arrangement.

[0131] The spinning behavior in examples 7 and 8 turned out to be very good. Even an increase in the production density (kg/h product per m^2 spinning hall surface) did not entail any negative effects.

[0132] Summarizing, it can be noted in connection with the performed tests that the performances of examples 7 and 8 are preferable in comparison with the other variants as far as the air conditions in the spinning area, the spinning performance, the operability and the fiber quality are concerned.

	Ex. 1	Ex. 2	Ex. 3	Ex. 4	Ex. 5	Ex. 6	Ex. 7	Ex. 8	
Production density (kg/h product per m^2 spinning hall surface)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	3.3	kg/hm^2
spec. room volume (m^3 per kg/h fiber production)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	2.5	m^3 per kg/h
Room thermal load from drives, thermal radiation, etc.	231.5	231.5	231.5	231.5	231.5	231.5	231.5	165.3	W per kg/h
Process air volume per kg product	28.4	28.4	10.7	28.4	33.8	44.4	8.9	10.2	m^3/kg
Spinning solution temperature on nozzle**)	95	95	95	95	110	125	95	105	° C.
Room temperature	25	25	25	25	25	25	25	25	° C.
Additional air temperature - air quenching	17	21	23	18	20	21	26	24	° C.
Secondary air factor process exhaustion (ratio exhausted volume/ additional process air)*)	0.0	1.0	1.0	2.2	1.9	1.7	2.5	2.0	
Room air exhausted by process exhaustion - for exhaust air purification	—	28.4	10.7	62.6	64.2	75.6	22.2	20.3	m^3/kg
Air temperature prior to exhaust air purification	—	33.3	55.8	29.6	30.1	29.6	46.0	47.0	° C.
Room exhaust air (room exhaustion via roof on ceiling)	48.3	23.1	23.1	0.6	4.3	3.6	4.0	2.2	m^3/kg
Exhaust air temperature to environment	30.4	31.0	31.0	29.0	29.0	29.0	33.0	33.0	° C.
Ventilation number in room (change of air volume per hour)	5.8	6.7	6.7	10.1	10.1	10.1	5.0	5.0	
Temperature difference additional room air/ room exhaust air	7.0	6.0	6.0	4.0	4.0	4.0	8.0	8.0	° C.
Air temperature in the direct operating area	35–40	25–30	25–30	25–30	25–30	25–30	25–30	25–30	
Odor burden in the direct operating area	yes	small	some	no	no	no	no	no	
Spinning behavior	good	bad	average	good	good	good	very good	very good	
Accessibility, operability	good	bad	bad	good	good	good	good	good	

*)0 . . . Open System, 1 . . . Closed System, >1 . . . Partially Opened System
**)At spinning solution temperature 110° C. or, respectively, 125° C. the cellulose concentration was increased to 13.5%.

1. Method for controlling the air condition at least sectionwise in a room, in which a spinning process is performed in a spinning area open with respect to the opposite room, comprising extruding endless molded articles from a spinning mass containing water, cellulose and tertiary amine oxide in the spinning area and air-quenching the extruded endless molded articles with a gaseous substance stream in an air gap prior to their immersion in a precipitating bath, and whereby the spinning plant can be inspected and maintained by operating staff staying in a staying area adjacent to the spinning area, and whereby the exhaust air from the and/or the additional air into the room is controlled by taking the gaseous substance stream into account, such that predetermined room air conditions are adjusted in the spinning area and/or the maintenance area.

2. Method according to claim 1, wherein a predetermined content of amines and/or degradation products of tertiary amine oxide in the room air is adjusted in the spinning area and/or the staying area.

3. Method according to claim 1, wherein a predetermined content of degradation products of the spinning process in the room air is adjusted in the spinning area and/or staying area.

4. Method according to claim 1, wherein a predetermined humidity of the room air is adjusted in the spinning area and/or staying area.

5. Method according to claim 1, wherein a predetermined temperature of the room air is adjusted in the spinning area and/or staying area.

6. Method according to claim 1, wherein the room air conditions are adjusted by controlling the volume flow rate of the exhaust air.

7. Method according to claim 1, wherein the room air conditions are adjusted by controlling the volume flow rate of the additional air.

8. Method according to claim 1, wherein the exhaust air is at least partially sucked out directly from the spinning area.

9. Method according to claim 1, wherein the exhaust air is at least partially sucked out directly from the staying area.

10. Method according to claim 1, wherein the exhaust air is at least partially sucked out from a portion of the room close to the ceiling.

11. Method according to claim 1, wherein between 10 and 80 m^3, exhaust air primarily containing process air per kg produced quantity of endless molded articles are sucked off in the spinning area and/or the proximity of the spinning area.

12. Method according to claim 1, wherein between 3 and 50 m^3 gaseous substance per kg produced endless molded articles are blown into the air gap by means of the air-quenching device.

13. Method according to claim 1, wherein between 1.2 and 2.5 times the exhaust air is sucked out of the room in comparison to what is supplied to the room by the gaseous substance.

14. Method according to claim 1, wherein 3 to 10 times the volume of the room is exchanged per hour.

15. Method according to claim 1, wherein the exhaust air is supplied to a purification stage with a washing system, in which the portion of the exhaust air portions deriving from the spinning process are reduced.

16. Method according to claim 1, wherein a substantially biological purification by means of a microbial degradation of reaction products of the spinning process takes place in the purification stage.

17. Method according to claim 15, wherein the exhaust air is supplied to a demister.

18. Method according to claim 15, wherein the exhaust air is supplied to an aerosol separator.

19. Method according to claim 1, wherein the exhaust air is supplied to an electrostatic filter with a washing stage connected upstream or downstream thereof.

20. Method according to claim 1, wherein at least a part of the additional air is supplied in the direct proximity of the spinning area.

21. Method according to claim 1, wherein at least a part of the additional air is supplied in the staying area.

22. Device for controlling the room air conditions in a room having a spinning area associated with a spinning plant, wherein the spinning area comprises an air gap open with respect to the room and limited by a precipitating bath, through which endless molded articles extruded from a spinning mass containing water, cellulose and tertiary amine oxide are passed and in which an air-quenching device is arranged, by which the endless molded articles are air-quenched with a gaseous substance stream, and having a staying area for the maintenance and inspection of the spinning plant by operating staff, wherein the device comprises an exhaust air device, an additional air device, and a controller, said controller being adapted to adjust predetermined room air conditions in the spinning area and/or the staying area.

23. Device according to claim 22, wherein a room air sensor is arranged in the spinning area, by which a signal representative of the contamination of the room air by the spinning process can be outputted.

24. Device according to claim 22, wherein a room air sensor is arranged in the maintenance area, by which a signal representative of the contamination of the room air by the spinning process can be outputted.

25. Retrofit kit for a spinning plant for the production of endless molded articles from a spinning mass containing cellulose, water and tertiary amine oxide, wherein the spinning plant comprises an extrusion head with extrusion openings, an air gap with an air-quenching device and a precipitating bath, and wherein the retrofit kit according to claim 22 is designed to be retrofittingly installable in an existing spinning plant.

26. Spinning plant comprising a spinning plant for the production of endless molded articles from a spinning mass containing cellulose, water and tertiary amine oxide, wherein the spinning plant comprises an extrusion head with extrusion openings, an air gap with an air-quenching device and a precipitating bath, as well as a device according to claim 22.

27. The method according to claim 11, wherein between 10 and 30 m^3 exhaust air is sucked off.

28. Retrofit kit for a spinning plant for the production of endless molded articles from a spinning mass containing cellulose, water and tertiary amine oxide, wherein the spinning plant comprises an extrusion head with extrusion openings, an air gap with an air-quenching device and a precipitating bath, and wherein the retrofit kit according to claim 23 is designed to be retrofittingly installable in an existing spinning plant.

29. Retrofit kit for a spinning plant for the production of endless molded articles from a spinning mass containing cellulose, water and tertiary amine oxide, wherein the spinning plant comprises an extrusion head with extrusion openings, an air gap with an air-quenching device and a precipitating bath, and wherein the retrofit kit according to claim 24 is designed to be retrofittingly installable in an existing spinning plant.

30. Spinning plant comprising a spinning plant for the production of endless molded articles from a spinning mass containing cellulose, water and tertiary amine oxide, wherein the spinning plant comprises an extrusion head with extrusion openings, an air gap with an air-quenching device and a precipitating bath, as well as a device according to claim 23.

31. Spinning plant comprising a spinning plant for the production of endless molded articles from a spinning mass containing cellulose, water and tertiary amine oxide, wherein the spinning plant comprises an extrusion head with extrusion openings, an air gap with an air-quenching device and a precipitating bath, as well as a device according to claim 24.

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