Word/Term	Definition	IsiXhosa Term
Actuator	*A transducer that converts electrical, hydraulic, or pneumatic energy to effective motion. For example, in robots, actuators set the manipulator in motion through actuation of the joints. Industrial robots are equipped with motors that are typically electric, hydraulic, or pneumatic.*	iakitshuweyitha
Amplifier	*An electronic device that receives on input voltage or current signal and modifies the signal into a driving voltage or current at a different level.*	isandisimandla; iemplifaya
Analogue	*A signal represented in a continuous form with respect to continuous time, as contrasted with digital signal represented in a discrete (discontinuous) form in a sequence of time instant,*	ianalogu
Attenuation	*The exponential decrease with distance, in the amplitude of an electric signal traveling along a very long transmission line due to losses in the supporting medium.*	ucuthomandla; iathenyuweyishini
Autonomous	*Operation of a sequential circuit in which no external signals, other than clock signals, are applied. The necessary logic inputs are derived internally using feedback circuits.*	zimeleyo
Bandwidth	*(1) The frequency range of a message or information processing system measured in hertz. (2) width of the spectral region over which an amplifier (or absorber) has substantial gain (or loss); sometimes represented more specifically as, for example, full width at half maximum. (3) the property of a control system or component describing the limits of sinusoidal input frequencies to which the system/component will respond*	ibhendiwithi
Bus (electronics context)	*A collection of wires, usually forming part of a circuit board, that is used to transfer data between components inside a computer, or between computers.*	isidlulisideyitha; ibhasi
Capacitance	*The measure of the ability to store electric charge. Also, the measure of the ability to store energy in an electric field.*	ulinganiselomthamo
Capacitor	*A device that stores electrical energy in an electric field. It is a passive electronic component with two terminals.*	isigcinimbane; ikhaphasitha
Circuit	*A physical device consisting of an interconnection of elements, or a topological model of such a device. For example, an electric circuit may be constructed by interconnecting a resistor and a capacitor to a voltage source.*	indlela yombane; isekethe
Compensation	*(1) Operations employed in a control scheme to counteract dynamic lags or to modify the transformation between measured variables and controller output to produce prompt stable response. (2) the alteration of the dynamic behavior of a process by the addition of system blocks.*	uguqulomo yohambisombane
Compile / Compilation	*act of converting programs written in high level programming language, which is understandable and written by humans, into a low-level binary language understood only by the computer.*	uguqulelokhompuyutheni; uguqulelolwimi kwikhompuyutha
Deadband	*(1) The portion of the operating range of a control device or transducer over which there is no change in output. (2) referring to an automatic controller behavior, a range of values of the controlled variable in which no corrective action occurs.*	idedibhendi
Deadtime	*The time that elapses between the instant that a system input is perturbed and the time that its output starts to respond to that input.*	idedithayim; ixesha lonqumamo; ixesha lobuyelo
Debugger	*(1) A program that allows interactive analysis of a running program, by allowing the user to pause execution of the running program and examine its variables and path of execution at any point. (2) program that aids in debugging.*	isichongingxaki; isichonginkathazo; isalathingxaki; idibhaga

Digital	*Circuits or systems that employ two valued (binary) signals denoted by the digits 0 and 1. Normally binary 1 is used to indicate high/true and binary 0 to indicate low/false (Positive Logic).*	**idijithali**
Electromagnetic	*Used to describe the electrical and magnetic forces or effects produced by an electric current.*	**isicacisimandla ombane; isibonisimandla ombane**
Electronics	*The branch of science that deals with the study of flow and control of electrons (electricity) and the study of their behavior and effects in vacuums, gases, and semiconductors, and with devices using such electrons.*	**inzululwazi ngezombane**
Encoded	*The process of putting a sequence of characters (letters, numbers, punctuation, and certain symbols) into a specialized format for efficient transmission o*	**enkhowudedi; -banekhowudi**
Feedback	*(1) Signal or data that is sent back to a commanding unit from a control process output for use as input in subsequent operations. (2) the provision of a path from the output to the input of a system, such that the output may be made a function of both the input and the previous outputs of the system. (3) the technique of sampling the output of an amplifier and using that information to modify the amplifier input signal. A portion of the output is "fed back" to the input.*	**ingxolo erhirhizayo**
Filter	*In processing signals, a device that passes a specified range of frequencies and blocks others. Normally used in low-pass, high-pass, or band-pass forms.*	**isihluzi**
Fluidic	*The science or technology dealing with the control of a flow of air or some other fluid, used like an electronic circuit to perform functions of sensing, control, computing, etc.*	**fluwidikhi**
Hardware	*The computer's tangible components or delivery systems that store and run the written instructions provided by the software.*	**isisebenzisisofutiwe; ihadiwe**
Holonomic (nonholonomic)	*Holonomic refers to the relationship between controllable and total degrees of freedom of a robot. If the controllable degree of freedom is equal to total degrees of freedom, then the robot is said to be Holonomic.*	**iholonomikhi**
Hydraulic	*An adjective applied to any device in which the working fluid is a liquid, usually water or an oil.*	**ihayidrolikhi; -sebenza ngolwelo**
Impedance	*An expression of the opposition that an electronic component, circuit, or system offers to alternating and/or direct electric current*	**ukumelana nophazamiseko; imphidensi**
Inertial-frame	*Frames in which Newton first law of motion holds i.e. an object at rest and an object in motion remains in constant motion unless acted on by a net force. An inertial reference frame is either at rest or moves with a constant velocity.*	**intshukumo ezinzileyo; isalanguquko**
Instability	*A system has instability when the system output grows without bound to any one type of bounded input signal*	**ukungazinzi**
Linear	*A circuit or element in which the output spectrum is proportional through gain(s), attenuation(s) and delay(s) to the input spectrum, and in which no spectral shift, conversion or generation takes place.*	**Ulungelelanisoseketheе**
Microcontroller	*An integrated circuit chip that is designed primarily for control systems and products. In addition to a CPU, a microcontroller typically includes memory, timing circuits, and I/O circuitry*	**isilawuli esincinane**
Modulation/demodulation	*(1) Variation of the amplitude or phase of an electromagnetic wave. (2) the process of encoding an information carrying waveform onto a carrier waveform, typically in preparation for transmission.*	**ukufaka esitishini**
Noise	*(1) Any undesired disturbance, whether originating from the transmission medium or the electronics of the receiver itself, that gets superimposed onto the original transmitted signal by the time it reaches the receiver. (2) any undesired disturbance superimposed onto the original input signal of an electronic device.*	**ingxolo**
	(1) the process of reformatting a floating point number into a	

Normalisation	*standard form at the completion of a floating point arithmetic operation. (2) the process of equalizing signal energies, amplitudes, or other features prior to comparison*	**ulungelelaniso**
Overshoot	*The amount by which an output value momentarily exceeds the ideal output value for an underdamped system.*	**ugabadelo; uchatha; ukratya**
Pneumatic	*Pertaining to or operated by air or other gas.*	**nyumathikhi; -senza ngomoya**
Program (noun)	*A set of coded instructions that enables a machine, especially a computer, to perform a desired sequence of operations.*	**iprogramu; inkqubo**
Program (verb)	*To provide (a machine) with a set of coded working instructions.*	**ukuprograma**
Rails	*A rail is simple a wire/path that carries electricity of a certain voltage.*	**izihambisimbane**
Resistance	*Ratio of the potential of an electrical current applied to a given conductor to the current intensity value.*	**umelwano namandla ombane**
Resistor	*A passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.*	**irezista**
Rotation (operator)	*A conversion from one coordinate space onto another.*	**ujikelezo**
Sensor	*A transducer or other device whose input is a physical phenomenon and whose output is a quantitative measurement of that physical phenomenon. Physical phenomena that are typically measured by a sensor include temperature or pressure to an internal, measurable value such as voltage or current.*	**isensa**
Shielding (of cables)	*Insulated wire covered with a metal shield, usually of tinned braided copper wire, to protect pieces of equipment from the effect of electrostatic fields that are external to the equipment itself.*	**ugqumongcingo**
Singularity	*A location in the workspace of the manipulator at which the robot loses one or more DOF in Cartesian space, i.e., there is some direction (or directions) in Cartesian space along which it is impossible to move the robot end effector no matter which robot joints are moved.*	**isindyularithi**
Software	*A set of instructions, data or programs used to operate computers and execute specific tasks.*	**isofutiwe**
Steady-state	*An equilibrium condition of a circuit or network that occurs as the effects of transients are no longer important. Steady state is reached after transient state has subsided. During steady state, a system is in relative stability.*	**simo sozinzo**
Timer	*An electronic counting device.*	**ithayima; isibali**
Transducer	*A device that converts a physical quantity into an electrical signal. Typically, transducers are electromechanical energy conversion devices used for measurement or control.*	**itransidyusa**
Transmit	*The transfer of data or information through an authorized electronic data interchange system consisting of, but not limited to, computer modems and computer networks.*	**dlulisela; uhambisolwazi ngezobuxhakaxhaka**
Axial	*Situated around, in the direction of, on, or along an axis. Extending in a direction essentially perpendicular to the plane of interest.*	**ieksiyeli**
Bending Moment	*The reaction induced in a structural element when an external force or moment is applied to the element, causing the element to bend.*	**ukugoba; ukugobeka**
Buckling	*The sudden change in shape (deformation) of a structural component under load, such as the bowing of a column under compression or the wrinkling of a plate under shear.*	**goso; ujijeko**
Coaxial	*A term for components having a common axis such as concentric shafts.*	**ikhoekziyali**
	A load on a component which is distributed over a very small area,	

Concentrated Loads	*idealized as the line load of a wedge or knife edge, and the point load of a cone.*	**ukufomba; ubunzima obundawonye**
Couple	*If the resultant of two or more force vectors applied to an object is zero, the moment of those forces, tending to rotate the object about an axis, is termed a couple. Two parallel forces of equal magnitude F but with opposite sense, separated by a distance d, give a couple of magnitude Fd.*	**ikhapuli**
Deflection	*The linear or angular movement of a component, structure or assembly subjected to a force or torque.*	**idiflekishini**
Deformation	*In solid mechanics, any change, reversible (elastic) or permanent (plastic), in the shape or size of parts of a body, or the whole body, caused by external or internal loading. It includes extension, compression, bending, and twisting.*	**ulahlosimo**
Discontinuity Functions	*A discontinuous function is a function in algebra that has a point where either the function is not defined at the point or the left-hand limit and right- hand limit of the function are equal but not equal to the value of the function at that point or the limit of the function does not exist at the given point*	**uqhawuqhawuko**
Distributed Load	*A load acting on a structure or component which is spread out rather than concentrated at a point.*	**ulungelelanisekobunzima**
Dynamics	*That branch of mechanics which deals with the motion of a system of material particles under the influence of forces, especially those which originate outside the system under consideration.*	**idayinamiksi**
Eccentric Loading	*An applied load that does not pass through the centroid of a section.*	**iekisentrikhilowudingi; ukutenxa kobunzima; ukushenxa kobunzima**
Equilibrium Equations	*The state in which the resultant force and resultant couple on a body are simultaneously zero, so that the body is either at rest or under uniform motion with respect to a fixed frame of reference*	**iekhwilibhriyam ikhweyizhini**
Fatigue	*A term referring, in components and structures subjected to either random or cyclic periodically-varying loads, to a progressive reduction in strength leading to failure at stresses lower than those that cause failure under monotonic loading. Variable loads arise from out of-balance machinery and other vibration sources, wind gusts, etc., and a large proportion of service failures is caused by fatigue. Fatigue results from the initiation and slow propagation of cracks.*	**ukunikezela; ukuphelelwa; ukuguga**
Freebody Diagram	*When using force-equilibrium calculations in statics and dynamics, the physical limits of the system under consideration, and the nature of all forces and moments which act upon it, must be identified clearly. Any part of a body may be isolated by means of an imaginary system boundary to give a 'free body', the equilibrium of which is determined solely from the forces and moments acting upon it as shown by the freebody diagram.*	**ifribhodi dayagramu**
Inertia	*The property of an object that resists change of angular or linear velocity.*	**isalanguquko; i-inetshiya**
Modulus	*A coefficient that expresses how much of a specified property is possessed by a specified substance.*	**imodyulasi**
Moment	*The tendency of a force to rotate an object to which it is applied. If the force vector is F and the displacement vector is r, r being the length of the lever arm from the putative axis or point of rotation to the point at which the vector is applied, $M = r \times F$.*	**imomenti**
Moment of inertia	*A measure of the resistance of a body to angular acceleration about a given axis that is equal to the sum of the products of each element of mass in the body and the square of the element's distance from the axis*	**imeko yeineshiya; imeko yesalanguquko**
Neutral Axis	*(neutral fibre, neutral plane, neutral surface) In bending of a beam, that location within its depth where stresses, which are tensile on the convex side, change to compressive on the concave side, i.e. where the stress and deformation are both zero.*	**inyutrali ekisisi**
Pin Supported	*In two dimensions, a pin support restrains two translation degrees of*	**xhaswe ngentsinjana; xhaswe ngepini**

	freedom but does not restrain rotation. When considering reaction forces, a pin support is usually considered to have two force components.	
Plane strain	*A strain field in which deformation is restricted to two dimensions.*	**ipleyinisitreyini**
Plane stress	*A stress field in which the total stress can be reduced to two orthogonal components, the third being zero throughout the stress field.*	**ipleyinisitresi**
Poisson's Ratio	*When an isotropic test piece of a solid is loaded uniaxially within the elastic range, it contracts uniformly as well as extends. The opposite occurs for compression. The ratio of the magnitude of the lateral contraction strain to the longitudinal extension strain is called Poisson's ratio (a positive quantity).*	**imiyinge ngokukaPoisson; ireshiyo ngokukaPoisson**
Principal Stress	*One of the three normal stresses σ1 , σ2 , or σ3 (where σ1 > σ2 > σ3) on the faces of an element of a loaded body in the special case where all the shear stresses on those faces are zero.*	**uxinzelelo olungundoqo; uxinzelelo olumandla; iprinsipalisitresi**
Prismatic	*The cross sections are the same all along its length.*	**ulingano ngobude; ulinganomacala**
Radius of gyration	*The radial distance to a point which would have a moment of inertia the same as the body's actual distribution of mass, if the total mass of the body were concentrated there.*	**ubunzima obujikeleza embindini; ijayireshini yeradiyasi**
Rigid	*An idealized concept meaning something which does not deform under loading. In fact, all objects deform under loading, but in modelling it can be useful to idealize very stiff objects as rigid.*	**qinileyo; lukhuni**
Shear Force	*A force, determined from a free-body diagram, which acts tangentially to a surface which may be a real external surface or a defined surface within a material, such as the cross section of a beam*	**ishiyefosi**
Shear Stress	*A stress in which the material on one side of a surface pushes on the material on the other side of the surface with a force which is parallel to the surface.*	**ishiyesitresi**
Statically determinate	*Bodies, structures, or systems in which the loads in the members can be determined from the equations of equilibrium alone are said to be statically determinate. Statically-indeterminate is where the equations of equilibrium alone are insufficient to determine the loads in the members.*	**isitathikhalidethaminethi**
Statically indeterminate	*A structure is statically indeterminate when the static equilibrium equations – force and moment equilibrium conditions – are insufficient for determining the internal forces and reactions on that structure.*	**isitathikhali-inditheminethi**
Statics	*Branch of classical mechanics that is concerned with the analysis of acting on physical systems that do not experience an acceleration, but rather, are in static equilibrium with their environment.*	**isitathikhi;**
Superposition	*The principle that when two or more forces act on a particle at the same time, the resultant force is the vector sum of the two.*	**isuphapozishini; indibanisomandla**
Torsion	*The twisting of an object about an axis due to an applied couple (torque). Results in shear stresses and strains.*	**ithoshini; ujijeko**
Truss	*A statically-determinate framework comprising one or more triangular units connected at the ends by pin joints such that the individual members are in tension or compression but carry no moments.*	**ithrasi; intsika; ikapu**
Uniformly Distributed Load	*A load which is evenly spread across the length and width of that part of a structural member under consideration*	**ubekekomthwalo ngokulinganayo; ulungelelanisomthwalo**
Blower	*Blowers are equipment or devices which increase the velocity of air or gas when passed through equipped impellers. They are mainly used for flow of air/gas required for exhausting, aspirating, cooling, ventilating, conveying etc.*	**ibhulowa; isivutheli**
Boiling	*Boiling is the rapid vaporization of a liquid, which occurs when a liquid is heated to its boiling point, the temperature at which the vapour pressure of the liquid is equal to the pressure exerted on the*	**ukubila; ukubilisa**

	liquid by the surrounding atmosphere.	
Compressor	*A compressor is any type of machine used to reduce the size or volume of a material. The term is most often associated with air or gas compressors, in which the machine is used to compact, or compress, the gas molecules, thereby drammatically increasing the pressure of the gas.*	**ikhompresa; isigangathi; isicuthibungakanani**
Condensation	*The change of vapour into the liquid state when its temperature falls below the saturation temperature TSAT . This usually occurs on a surface having a temperature (condensation point, liquefaction point) below TSAT but can also occur spontaneously throughout the vapour.*	**uguqukomphunga; ulwelisomphunga; ikhondenseyishini**
Cooling	*Cooling is removal of heat, usually resulting in a lower temperature and/or phase change. Temperature lowering achieved by any other means may also be called cooling.*	**pholisa**
Cooling tower	*The heat exchanger and everything associated with it that removes the heat from the coolant used in the cooling system. Cooling towers typically utilise air from the atmosphere (outdoors) as a heat sink and can be of either the dry or wet cooling type.*	**inqaba yokupholisa; ithawa yokupholisa**
Dehumification	*The removal of moisture from humid air by cooling it to below the dew point. It can also be accomplished by adsorption on to the surface of a material such as silica gel, or absorption by a substance such as calcium chloride solution.*	**ulungelelanisofuthe lomoya**
Density	*The mass per unit volume of a substance that satisfies the continuum assumption. The reciprocal of specific volume.*	**idensithi; ingxinano**
Duct	*Ducts are conduits or passages used in heating, ventilation, and air conditioning to deliver and remove air.*	**umbhobho**
Enthalpy	*An extensive thermodynamic property of a substance equal to the sum of its internal energy U and the product of its pressure p and volume.*	**ienthaliphi**
Entropy	*A thermodynamic quantity representing the unavailability of a system's thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system.*	**ientropi**
Evaporation	*The change of phase from liquid to vapour that occurs at the surface of a liquid when its temperature is higher than its saturation temperature or its pressure is lower than its vapour pressure. In contrast to boiling, there is no bubble formation.*	**uphungiso**
Fan	*A device with vanes or blades attached to a hub on a shaft that rotates to produce an airflow. There are both axial and centrifugal designs.*	**ifeni; iphiko**
Fluid mechanics	*The study of fluids in motion (fluid dynamics) or fluid statics where there is no relative motion between fluid particles. Fluid statics concerns primarily the variation of pressure with altitude or depth; it includes aerostatics and hydrostatics. Fluid dynamics includes the topics of aerodynamics, gas dynamics, hydraulics, hydrodynamics and many aspects of acoustics, chemical engineering, flight, lubrication, meteorology, non Newtonian fluid flow, oceanography, power-plant technology, propulsion, and turbomachinery. It involves the application of the laws of mass, momentum, and energy conservation.*	**ufundonzulu ngolwelo**
Heat exchanger	*A device in which heat is transferred, by a combination of convection and conduction, between two fluid streams at different temperatures without them coming into contact.*	**isikhuphelibushushu**
Heat transfer	*The transport of energy due to a temperature difference within a solid object or stationary fluid, between solid objects, or between a solid object and a stationary or flowing fluid.*	**uhambisobushushu**
Heating	*The process and system of raising the temperature of an enclosed space for the primary purpose of ensuring the comfort of the occupants.*	**ukufudumeza**

Humidification	*The process of increasing the water vapour content of a gas.*	**ufumisomoya**
Internal energy	*The sum of all the microscopic forms of energy of a system. It is related to the molecular structure and the degree of molecular activity, and can be viewed as the sum of the kinetic and potential energies of the atoms and molecules. It does not include the macroscopic forms of energy of the system as a whole.*	**i-inthenali eneji; intlanganiselamandla**
Mass flow rate	*The mass of a material, usually a fluid or powder, that flows across a surface or through a pipe or other duct per unit time.*	**imasiflowureyithi; isantya sobunzima**
Pipe	*A tube made of metal, clay, plastic, wood, or concrete and used to conduct a fluid, gas, or finely divided solid.*	**umbhobho; uphayiphi**
Pressure	*In thermodynamics and fluid mechanics, the compressive force exerted by the fluid per unit area. The pressure exerted by a fluid on a surface acts normal to the surface.*	**uxinzelelo; ipresha**
Pump	*A machine designed to cause a liquid, gas, vapour, or slurry to flow due to the reciprocating motion of pistons, rotation of vanes, or rotation of an impeller.*	**impompo**
Specific volume	*The volume of a substance per unit mass; it is the reciprocal of the density.*	**isipesifikivoluyum**
Temperature	*A quantitative measure of the molecular kinetic energy of a substance and so how hot or cold it is.*	**iqondo lobushushu; ithempritsha**
Thermodynamics	*The science of the relationship between heat, work and the properties of systems and the ways in which heat energy from fuels can be converted into mechanical work. It involves the study of all aspects of energy use and energy transformation, including power generation,refrigeration, the relevant properties of the substances involved and the relationships between them*	**ithemodayinamikhi**
Turbine	*A turbomachine in which a rotor (turbine wheel) or runner is used to rotate and convert flow energy into shaft power or thrust.*	**ithebhayini; injini yephiko**
Turbo machines	*A machine in which there is a transfer of energy between a continuous stream of fluid and a component, called a rotor, rotating about a fixed axis. Fans and turbines (gas, hydraulic, steam, or wind) are turbomachines in which energy is transferred to the rotor, causing it to rotate.*	**ithebho**
Valve	*Any of various manual or automatic devices that are able to initiate, regulate, or stop the flow of a fluid through a conduit or from a closed container*	**ivaluvu**
ACME stub thread	*Stub Acme threads follow the same basic design as ACME threads, but have a thread depth less than one half the pitch.*	**amaqoqwana eACME**
ACME thread	*A standard thread having a profile angle of 29rzand a flat crest; used on power screws in such devices as automobile jacks, presses, and lead screws on lathes.*	**amaqoqo eACME**
Alternating stress	*Originally, stresses of changing sign (tension-tocompression-to-tension, etc.) in a component produced by alternating forces acting in opposite directions, but now generally used to describe stresses that vary but may keep the same sign, as produced by periodic, out-of–balance, or vibrational loads.*	**utshintshwanoxinzelelo; unikezelwanoxinzelelo**
Asperities (microscopic high points)	*Asperities are high spots on surfaces that come into contact during wear or friction.*	**uburhabaxa; amaqhuqhuva**
Automotive manual transmission	*A multi-speed motor vehicle transmission system, where gear changes require the driver to manually select the gears by operating a gear stick and clutch (which is usually a foot pedal for cars or a hand lever for motorcycles).*	**utshintshozigiya**
Axial loading	*In general, a tensile or compressive load directed along the axis of a component. Strictly the load should pass through the centroid of the cross section to avoid inducing bending moments and be perpendicular to the plane of the section.*	**iaksiyalilowudingi**
Axle	*The cross-shaft that carries the wheels of a vehicle. In a live axle, the wheel is rigidly fixed thereto, and power is transmitted; in a*	**iasi**

	dead axle, the wheel turns on a stationary axle.	
Band brakes	*A brake consisting of a flexible band wrapped around the circumference of a wheel or drum. The band is anchored at one end and pulled against the wheel at the other.*	**idram yeziqhoboshi**
Bearings	*A machine part that supports another part which rotates, slides, or oscillates in or on it to reduce friction and wear.*	**ibheringi**
Bell crank	*An L-shaped lever that rotates about a pivot situated where the two arms of the L meet. The angle between the arms can take any value from 0 to 360°, but 90° and 180° are the most common. Motion imposed at the end of one arm produces motion at the end of the other arm.*	**ikhrenki**
Belleville spring washers	*A conical shell which can be loaded along its axis either statically or dynamically. A Belleville washer is a type of spring shaped like a washer. It is the frusto-conical shape that gives the washer its characteristic spring.*	**iBellevillewatshisi; amawatshisi kaBelleville**
Belt pulley	*A pulley designed to drive or be driven by a belt.*	**ipuli yebhanti**
Bench Grinder	*A grinder, typically with a pair of grinding wheels (one at each end of the motor shaft) that is designed to be permanently mounted on a workbench. Used for shaping and sharpening the cutting edges of tools.*	**ibhentshigrayinda; ilolo elibotshelelwayo**
Bevel gear pitch cone	*The pitch surface of a bevel gear, which is also known as the friction surface of a conical friction wheel. The pitch cone is the reference surface on which the teeth are machined on the bevel gear.*	**ibheveligiyepitshi khowuni**
Bevel Gears	*Bevel gears are gears where the axes of the two shafts intersect and the tooth-bearing faces of the gears themselves are conically shaped. Bevel gears are most often mounted on shafts that are 90 degrees apart, but can be designed to work at other angles as well.*	**ibheveligiye-engile**
Brakes	*A mechanism for applying frictional resistance to the wheels of a moving vehicle, or to the driving shaft of machinery, to reduce the speed.*	**iziqhoboshi**
Brinell Hardness Number (BHN)	*The value of hardness of a metal on an arbitrary scale representing kg/mm2, determined by measuring the diameter of the impression made by a ball of given diameter applied under a known load.*	**iBhrinellhadinesi namba; izinga lokomelela ngokukaBrinell**
Buttress thread	*A screw thread whose forward face is perpendicular to the screw axis and whose back face is at an angle to the axis, so that the thread is both efficient in transmitting power and strong.*	**ibhatresithredi; isiqinisimaqoqo**
Cams	*A component of a mechanism that imparts a prescribed reciprocating motion to a cam follower, the output element of a cam mechanism which is in contact with the cam profile. It is typically a rod which slides in a guide with a roller or shaped end (translating follower) or a pivoted arm (oscillating or rotating follower).*	**ikhemzi**
Castle nuts / slotted nuts	*A type of hexagonal nut with a cylindrical portion above through which slots are cut so that a cotter pin or safety wire can hold it in place.*	**ikhasilinathi; inathi esisiqinisi; ibholithi**
Chain sprocket	*A sprocket is a tooted wheel, or gear. A chain sprocket is a sprocket on which rides a chain that is used to rotate one object relative to another. A common example is the set of gears and chain used on a bicycle to drive the rear wheel relative to the motion of the pedals.*	**umzilatyathanga; umzilatsheyini**
Clash Allowance	*Difference in spring length between maximum load and spring solid positions. Usually a clash allowance of 10 percent of the total spring deflection at maximum working load is provided.*	**ukunaba kwesipringi**
Compression and tension springs	*A spring whose dimension, in the direction of the applied force, reduces under the action of that force (Compression spring). A spring whose length, in the direction of the applied force, increases under the application of that force (Tensile spring).*	**ukuvuleka nokuvaleka kwesipringi**
Constant force extension springs	*A pre-stressed flat strip of spring material which is formed into virtually constant radius coils around itself or on a drum.*	**ikhonistenisifosi eksitenishinispringi**
Contact Ratio	*The ratio of the length of the path of contact of two gears to the base pitch, equal to approximately the average number of pairs of teeth*	**ikhontakthireshiyo**

	in contact. Also known as contact gear ratio.	
Corrosion	*The deterioration of an exposed metal surface due to electrochemical oxidation with its surroundings. In the oxidation reaction, metal atoms give up electrons which are transferred to form another chemical species by a reduction reaction, usually with hydrogen and/or oxygen.*	**ukunkumka; ukudleka**
Corrosion film wear	*A type of wear where in the corroded surface film is alternately removed by sliding and then reforming. A typical example is the wear that may occur on cylinder walls and piston rings of diesel engines burning high-sulfur fuels.*	**ukudliwa ngumhlwa**
Crossed Helical Gears	*Helical gears used in motion transmission between non-intersecting shafts.*	**ikhrosihelikhaligiyazi**
Cyclical loading	*Cyclic loading is defined as the continuous and repeated application of a load (fluctuating stresses, strains, forces, tensions, etc.) on a material or on a structural component that causes degradation of the material and ultimately leads to fatigue. Cyclic loading causes materials to deteriorate due to fatigue, often at lower loads and after a shorter time than normally expected.*	**isayiklikhalilowudingi**
Differential band brake	*A band brake acting on the difference of two motions or tensions and tending to be self-tightening when the rotating part turns in the normal direction*	**idifarenshiyalibhendibhreyiki**
Differential gears	*Gear arrangement that permits power from the engine to be transmitted to a pair of driving wheels, dividing the force equally between them but permitting them to follow paths of different lengths, as when turning a corner or traversing an uneven road. On a straight road the wheels rotate at the same speed; when turning a corner the outside wheel has farther to go and will turn faster than the inner wheel if unrestrained.*	**idifarenshiyaligiya**
Disk brakes	*A type of brake in which retardation is the result of brake callipers, activated mechanically, hydraulically, pneumatically, or electromagnetically, forcing pads of a friction material against the surface of a brake disc, a circular disc of metal, often cast iron, carbon fibre, or a ceramic matrix composite, rotating with the wheels of a motor vehicle.*	**idiski**
Double Helical gears (Herringbone gears)	*A gear with both left-hand and right-hand helical teeth and is used for transmitting power between parallel shafts. The double helical form balances the inherent thrust forces.*	**idabuliherikhaligiye**
Driven gear	*The member of a pair of gears to which motion and power are transmitted by the other.*	**isiqhubigiye**
Driving gear	*The gear that transmits the rotational motion of a motor or other device through the drive shaft*	**igiye yoqhuba; isihambisimoto**
Dry and wet clutches	*Wet clutches are covered in engine oil, which allows the clutch plates to cool. Because of this, wet clutches can sustain more abuse than dry clutches. Another reason wet clutches are a more popular choice is because they're quieter at idle, which makes them better for stop-and-go traffic.* *The purpose of a dry clutch is the same as a wet clutch. The only difference between the two types of clutches is that the dry ones aren't covered in oil. Without the oil, the clutch can't stay as cool, which causes dry clutches to be noisier and wear out more quickly.*	**iklatshi eyomileyo neneoli**
Engaged threads	*Are the mating part's threads that are in direct contact with the bolt fastener.*	**amaqoqo abambileyo**
Equivalent uniaxial stress	*A state of stress in one direction only, i.e. where the other two principal stresses are zero.*	**ekhwivalenti anieksiyalisitresi; isinqandintshukumo**
External Drum brakes	*A brake that operates by contacting the outside of a brake drum.*	**idram yeziqhoboshi yangaphandle; isibambintshukumo ngaphandle**
Feather key	*A metal bar of rectangular cross section, with both ends radiused, that fits into a keyslot on a shaft to allow torque to be transmitted to a wheel,*	**ifedakhi**

	gear, or other cylindrical component.	
Flange / flanged covers	*Annular rims at the ends of pipes (flanged pipe) or shafts by which they may be coupled together using bolts that pass through holes in the flanges (flange coupling, flange union), or by toggle clamps around the periphery.*	**iflenji**
Flat belts	*A belt of rectangular or trapezoidal cross section used to transmit power between pulleys.*	**ifenbhelthi; iflethibhelthi**
Fracture mechanics	*Fracture mechanics is the field of mechanics concerned with the study of the propagation of cracks in materials. It uses methods of analytical solid mechanics to calculate the driving force on a crack and those of experimental solid mechanics to characterize the material's resistance to fracture.*	**ufundonzulu ngeentanda; ufundonzulu ngokuchachamba**
Fully reversed loading	*Represents a loading condition where an object is subjected to alternating tensile and compressive stresses and where the mean stress is 0.*	**ifulirivesilowudingi**
Fusion / Welding	*Fusion welding is a generic term for welding processes that rely on melting to join materials of similar compositions and melting points.*	**ukutyhida; ukuwelda**
G-Clamp	*A C-clamp, or G-clamp, is a type of clamp device typically used to hold a wood or metal workpiece, and often used in, but are not limited to, carpentry and welding. G-clamp is used by means of turning the screw through the bottom of the frame until the desired state of pressure or release is reached.*	**iG-klempu; ijiklempu**
Garter springs	*A coiled steel spring that is connected at each end to create a circular shape, and is used in oil seals, shaft seals, belt-driven motors, and electrical connectors. Compression garter springs exert outward radial forces, while extension garter springs exert inward radial forces.*	**igathaspringi**
Gasket / gasketed	*A shaped flat sheet of cork, rubber, soft metal, or other deformable material, sometimes sandwiched between thin sheets of copper or another metal, inserted between adjoining surfaces to act as a seal against the escape of gas or liquid.*	**igaskithi; -negaskethi**
Gear	*A toothed machine element used to transmit motion between rotating shafts when the center distance of the shafts is not too large.*	**igiye**
Geometric stress raisers	*Stress-raisers are sharp corners, grooves, notches or acute changes of section that cause stress concentrations under normal loadings.*	**ijiyometrikisitresireyiza; isiqhubigiye**
Gib head or tapered key	*Tapered and notched machine keys that are used on power transmission keyed shafts to hold pulleys and gears tightly on the shaft. The head of the key serves as a concussion point for hammering without damage to the shaft of the key.*	**igibhuhedi okanye itheyiphadikhi**
Goodman – von Mises shaft method	*This is a fatigue Shaft analysis method that performs fatique analysis at critical points along the length of the shaft.*	**ishaftimethodi kaGoodman-von Mises**
Grinding wheel	*A Grinding Wheel is used to move material via abrasion. Grinding wheels consist of bonded abrasive particles (diamond, SiC, or other hard ceramics), and are classified by bond type, abrasive composition, particle size, wheel grade, etc.*	**idiski yokugrayinda**
Ground (surface finish)	*The bright or smooth microfinish on the last stand of a tandem mill or temper mill; produced by grinding; determines the surface finish of the product where brightness is desired.*	**igrawundi; gudisiweyo; menyezelisiweyo**
Ground spring ends	*Springs where the coils at either end are less parallel, achieved through an end grinding operation that leaves it flat in appearance.*	**incam yegrawundisipringi**
Helical coil spring	*A helical spring is a coiled mechanical device which stores and releases energy to absorb impacts or shock and to resist either compression or pulling forces between objects. It is typically cylindrically shaped and features varying numbers of coils according to its intended use.*	**ihelikhalikhoyilisipringi**
Helical Gears	*A gear with teeth cut at some angle other than at a right angle across the face of the gear, thus permitting more than one tooth to be engaged at all times and providing a smoother and quieter operation than the*	**iihelikhaligiye**

	spur gear.	
Helix angle	*The angle between the direction of the threads around a screw and a line running at a right angle to the shank.*	**iheliksiengile**
Hertzian contact stress	*The localized stresses that develop as two curved surfaces come in contact and deform slightly under the imposed loads. This amount of deformation is dependent on the modulus of elasticity of the material in contact.*	**iHertzian khontakthisitresi; ucudiselwano ngokukaHertz**
Hexagonal head bolt	*A type of threaded bolt, characterised by their six-sided hexagonal-shaped head. Hex bolts can be either fully threaded or partially threaded (featuring a clear shank along part of the body) and are suitable for use in a wide range of applications, typically machinery and construction.*	**iheksagonalihedibholithi; ibholithi entlangothintandathu**
Hexagonal socket head = Allen screw bolt	*A bolt with a hexagonal socket in its head that is designed to be used with an Allen wrench*	**isoketi entlangothintandathu**
Hydraulic cylinder	*A piston-cylinder arrangement in which a force is produced by applying hydraulic pressure to one face of the piston, resulting in linear motion. In double- acting cylinders, hydraulic pressure can be applied to either side of the piston to produce back-and-forth movement.*	**ihayidrolikisilinda**
Hypoid bevel gears	*A hypoid is a type of spiral bevel gear whose axis does not intersect with the axis of the meshing gear. The shape of a hypoid gear is a revolved hyperboloid (that is, the pitch surface of the hypoid gear is a hyperbolic surface), whereas the shape of a spiral bevel gear is normally conical.*	**ihayiphodibheveligiye**
IC engine connecting rod (conrod)	*In a reciprocating piston engine, the connecting rod or con rod connects the piston to the crank or crankshaft. Together with the crank, the connecting rod converts the reciprocating motion of the piston into the rotation of the crankshaft.*	**ikhondrodi**
Internal drum brakes	*A friction brake in which an internal shoe follows the inner surface of the rotating brake drum, wedging itself between the drum and the point at which it is anchored; used in motor vehicles.*	**idram yeziqhoboshi yangaphakathi**
Internal gear	*Internal gear is a gear with its teeth cut in the internal surface of a cylinder.*	**igiye engaphakathi**
Involute profile	*An involute gear profile means that the profiles of the gear teeth are involutes of a circle, while the involute of a circle is the locus of a point on a piece of string as the string is unwrapped from a circle.*	**i-involuyuthiprofayili**
Joint Separation	*At this point, the applied load is sufficient to separate the parts in the joint (all of the compression in the clamped parts has been relieved), and after this point any load applied to the joint is taken entirely by the bolt.*	**isahlulijoyinti; isahlulobholithi**
Kennedy keys	*A square taper key fitted into a keyway of square section and driven from opposite ends of the hub.*	**iKennedy-khi; isitshixo sikaKennedy**
Keys	*A bar inserted into a shallow longitudinal slot (keyway) cut into a hub and a shaft to prevent relative rotation. Keys have different profiles and sizes depending on the application, the torque transmitted, and whether they have to be periodically removed during maintenance.*	**izitshixo**
Keyway	*An opening in a lock for passage of a flat metal key. 2. The pocket in the driven element to provide a driving surface for the key. 3. A groove or channel for a key in any mechanical part. Also known as key seat.*	**umngxuma wesitshixo**
Kinetic vs static friction	*Static friction is what keeps an object from moving without being pushed, and it must be overcome with a sufficient opposing force before it will move. Kinetic friction (also referred to as dynamic friction) is the force that resists the relative movement of the surfaces once they're in motion.*	**ukhuhlwano lwemileyo nehambayo**
Labyrinth seal	*A low-friction mechanical seal that relies upon an extended path, for example a series of narrow closely-spaced grooves, to minimize fluid leakage. Applications include piston-cylinder arrangements and circular shafts especially to protect bearings.*	**isikhuselibheringi; isikhuselikhuhlwano**
Lead	*The distance that a screw will advance or move into a nut in one complete*	**ilidi**

	turn.	
Left and Right "Hand" helical gears	*The teeth of a LEFT HAND Helical Gear lean to the left when the gear is placed flat on a horizontal surface. The teeth of a RIGHT HAND Helical Gear lean to the right when the gear is placed flat on a horizontal surface.*	**inguqulelontshukumo**
Lock nuts = Nylock nuts	*A lock nut is an internally threaded fastener that possesses locking capabilities either by itself or in concert with another component. By design, lock nuts are engineered to resist loosening when subjected to vibration or torque.*	**ilokhunathi**
Long shoe brakes	*A shoe that contacts a large segment of the drum periphery in a brakes application. Usually more than 90 degrees.*	**ilongubheyikhishu**
Lubrication	*The control of friction and wear by the introduction of a friction-reducing film between moving surfaces in contact. The lubricant used can be a fluid, solid, or plastic substance.*	**uthambiso; umanziso; unciphisokhuhlwano**
Major diameter (of a bolt)	*This is the diameter of an imaginary cylinder parallel with the crests of the thread; in other words it is the distance from crest to crest for an external thread, or root to root for an internal thread.*	**imeyijadayemetha**
Mirror polish finish	*A highly-polished commercial finish characterised by a bright, shiny and reflective surface.*	**umenyezeliso; ukhazimliso; ugudiso**
Modified square thread	*Modified square threads have a trapezoidal form with a five-degree flank angle. Since the angle is small, transmission efficiency is practically equivalent to a true square thread.*	**imodifayidiskwethredi;**
Moulded materials	*Molding is a manufacturing process that involves shaping a liquid or malleable raw material by using a fixed frame; known as either a mold or a matrix. The mold is generally a hollow cavity receptacle, commonly made of metal, where liquid plastic, metal, ceramic, or glass material is poured*	**bunjiweyo**
Mounting rigidity	*A set of different mounting factors which depends on how the gears and bearings are mounted onto the shaft.*	**uqinisogiya; uqinisobheringi**
Multi disk clutch	*The Multi Plate Clutch uses multiple clutch plates to make contact with the engine flywheel to transfer power between the engine shaft and the transmission shaft.*	**iklashi eneepleyiti ezininzi**
Multiple starts	*A multi-start thread consists of two or more intertwined threads running parallel to one another. Intertwining threads allow the lead distance of a thread to be increased without changing its pitch. A double start thread will have a lead distance double that of a single start thread of the same pitch, a triple start thread will have a lead distance three times longer than a single start thread of the same pitch, and so on.*	**imalthipulisitati**
Nominal Mean Stress method.	*An alternative method to conducting fatique analysis. The fatique stress concentration factors are only used for the alternating stress. The yield stresses are ignored in the analysis.*	**inominaliminisitresi methodi**
Nomogram	*A graph that enables one by the aid of a straight edge to read off the value of a dependent variable when the value of two or more independent variables are given.*	**inomogram; isifundimahluko; isichazimahluko**
Notch root	*A geometric discontinuity, often having a V-shape, that can be microstructural or much larger in size, which acts as a stress concentrator or, depending on its sharpness, a crack.*	**inotshiruthi**
O-ring	*A toroidal ring of synthetic rubber seated in a groove machined into a flat or cylindrical surface to act as a seal.*	**iO-ringi; iowuringi; isakhelo esimcaba;**
Oldham couplings	*(double-slider coupling) A device for connecting a pair of misaligned parallel shafts, on the end of each of which are flanges having diametral tenons (tongues) that engage with matching slots spaced at 90° in an intermediate disc. As the coupling rotates, the disc compensates for shaft offset by sliding along each tenon in turn.*	**isihlanganisishafti; isixokomezelelishafti**
Overhauling power screw	*A screw that has low enough friction to enable the load to lower itself; that is, a negative external lowering torque must be maintained to keep the load from lowering.*	**iovaholingiphawasikru; isikrufusothobomthwalo**
Overhung (bearing mounting)	*A form of bearing mounting where the gears are outboard of a single bearing or both bearings rather than between two bearings.*	**isixhomimthwalo; ibheringi esisixhomimthwalo;**

Pairs of contact surfaces	*Consists of a contact surface (contact region) and a target surface (target region) .*	**imiphezuluntsebenziswano; imiphezulu esebenzisanayo; imiphezulubambiswano;**
Personal Protective Equipment (PPE)	*Any device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards.*	**izikhuseli; iimpahla yokuzikhusela**
Pinion	*The smaller of a pair of gear wheels or the smallest wheel of a gear train.*	**ipiniyoni**
Pitch circle	*In toothed gears, an imaginary circle concentric with the gear axis which is defined at the thickest point on the teeth and along which the tooth pitch is measured.*	**ipitshisekile**
Pitch diameter	*The diameter of the pitch circle of a gear.*	**ipitshidayametha; ubudepitshi**
Plastic deformation	*Permanent change in shape or size of a solid body without fracture resulting from the application of sustained stress beyond the elastic limit.*	**inguqukomo; utshintshomo**
Polished surface finish	*The finish obtained by buffing with rouge or similar fine abrasive, resulting in a high gloss or polish.*	**ugudiso; umenyezeliso; ukupholisha**
Power screws	*A power screw is a mechanical component which is used to convert rotary motion into the linear motion. Sometimes a power screw is also known as translation screw. It uses helical motion of screw to transmit the power rather than holding the parts together.*	**izikrufumandla; izikrufujikeleziso; izikrufuguqulelo**
Pressure plate	*A plate in a motor vehicle's clutch which is pushed by springs against the clutch disc and flywheel to lock the engine to the transmission input shaft when the clutch pedal is released.*	**ipreshapleyiti**
Pressure Vessel	*A metal container, generally cylindrical or spheroid, capable of withstanding bursting pressures.*	**ipreshaveseli; isikhongozelimandla**
Profiled keyway	*A keyway for a straight key formed by an end-milling cutter. Also known as end milled keyway.*	**igiye; isihambisimoto**
Rack	*A straight or curved bar having equidistant teeth to engage with a spur pinion. It is equivalent to a spur gear having an infinite pitch radius*	**irekhi; umgqala; intsinjana**
Reduction gear set	*A gear train which lowers the output speed.*	**igiye esisicuthi santya**
Reserve factor	*The ratio of allowable to the actual stress. It indicates the margin to failure.*	**irizevufekitha**
Residual Stress Method	*In this stress method, all stresses (both mean and alternating) are multiplied by the fatigue stress concentration factor Kf , and correction is made for yielding and resultant residual stresses if the calculated peak stress exceeds the material yield strength.*	**iResidyuwalisitresi Methodi**
Retaining rings = snap rings = circlips	*An external or internal retaining ring that locates parts of circular cross section in an axial direction. It consists of an incomplete ring, with holes on either side of the gap, that may be expanded by a plier-like tool to pass into a groove in a shaft or contracted to pass into a groove in a bore.*	**iziqhoshi ezilicici; amacici okuqhobosha; ritheyiningiringi**
Rigid shaft coupling = bolted coupling	*A coupling in which two shafts are locked together, for example by mating flanges bolted together. It is essential that the two shafts are precisely collinear*	**isidibanisizishafuti**
Roller chain	*A drive chain made up of a series of connected inner and outer links. The transverse pins which connect the links carry hardened hollow rollers. For heavy-duty applications, two (duplex) or three (triplex) chains may be assembled in parallel.*	**itsheyini elisisihambisi; itsheyini elisisijikelezisi; irolatsheyini**
Roller chain coupling	*A roller chain coupling is a mechanical device composed of a double-strand roller chain and two modified sprockets. The design is simple and highly effective, despite its small size, and is composed of a robust chain and specially cut, hardened-tooth sprockets that allow a high amount of torque to be transmitted.*	**isidibanisitsheyini elisisihambisi; isidibanisitsheyini elisisijikelezisi; isidibanisirolatsheyi**
Roller chains	*A chain drive assembled from roller links and pin links.*	**isiqengqitsheyini; isihambisitsheyini; isiqhubitsheyini**
Safety factor	*The ratio between the breaking load on a member, appliance, or hoisting rope and the safe permissible load on it.*	**ulinganiselobungozi**
Seals	*A component which controls or prevents leakage of fluids into or out of parts of a machine.*	**iitywina; isili**
Self de-energising brakes	*When the applied force opposes the direction of the friction force when applying the brakes for a given application.*	**iziqhoboshi eziziphungulayo; iziqhoboshi ezizikhabayo**

Set screws	*A short, headless screw with a recess at one end to receive a screwdriver or key, the other end being pointed, square, or otherwise shaped. Typically used to secure a pulley, gear, or other component on a shaft.*	**isetisikru**
Shaft	*A rotating machine component, usually cylindrical or conical and supported by bearings, which carries gear wheels, pulleys, etc. and is used to transmit power. For the same volume of material, a hollow shaft has a higher torque-carrying capacity than a solid shaft of the same length.*	**ishafuti**
Shaft Pins (Straight round, tapered round, split tubular and grooved pins)	*Pins are used to fasten the shaft-supported elements to the shaft where they will prevent the axial movement, that might result from thrust load, and at the same time enable the transmission of torque. The simplest type of pins is the Straight pin which has a circular-cross section, and it is specified by its diameter and length.* *Grooved pins are similar to straight pins but they have axial grooves (three groves) on their surfaces. The grooves could extend over the entire length of the pin or part of the length. The purpose of the grooves is to make it easier to compress the pin such that it can be installed tightly into smaller holes.* *Spring pins are hollow cylindrical pins with an axial cut along their length. The cut makes them more flexible and that enables them to be squeezed into smaller holes. They are usually used for making pin joints connecting linkages.* *Tapered pins are typically used to fasten hubs or collars to shafts when the loads are small. According to ISO standards, the size of a tapered pin is specified by to the diameter at the small end and the length (the diameter of the large end is used to specify the pin size according to the American standard). Tapered pins have a fixed taper angle of 1% (i.e., about 0.57 degree).* *Split tubular pins are used for retaining, by inserting into a shaft hole and bending back the ends during installation.*	**iipini zeshafuti**
Short shoe brakes	*A shoe that contacts only a small segment of the drum periphery in a brake's application. Usually less than 90 degrees.*	**ishotishubhreyikhi**
Shot peening surface finish	*A cold-working process for hardening a metal surface by blasting small hard metallic, glass, or ceramic balls against it. Compressive residual stresses are induced in surface layers which improve fatigue life.*	**ukomeleza ngokubandisa**
Single start	*A single start thread has a lead distance equal to its pitch and in turn has a relatively small lead angle. Multi-start threads have a longer lead distance and therefore a larger lead angle*	**isingilistati**
Sled runner keyway	*A type of Keyseat that is cut into a shaft. The sled runner keyseat is produced by a circular milling cutter having a width equal to the width of the key. As the cutter begins or ends the keyseat, it produces a smooth radius.*	**isihlalisitshixishafti**
Slipstick condition	*The movement of two surfaces relative to each other that proceeds by a series of jerks caused by alternate sticking from friction and sliding when the friction is overcome by an applied force.*	**isiliphusitikhikhondishini**
Soderberg method of shaft design	*The Soderberg method looks at the bending moment and torque at any point along a solid circular shaft. By combining the Torsional and Bending stress* *at that point and considering the endurance limit of the shaft material, one can solve for the minimum required diameter. This makes it a really powerful tool to use in shaft Design*	**uyiloshafuti ngokukaSoderberg**
Solenoid	*A coil of electrically-conducting wire wrapped around a metal core, typically iron, to produce a magnetic field and hence a force on the core when an electric current passes through the coil. Solenoids are widely used to produce linear movement to actuate valves (solenoid valves) and other devices.*	**isolenoyidi**
Solid height	*Solid height is the term that refers to the length/height of the spring once it has been compressed to the point where all of the spring's coils are touching. Solid height is an important factor when it comes to spring design and function. It also plays an important role when it comes*	**umphakamo wokucinezelekileyo;**

	to understanding max deflection and elastic limit.	
Spiral cut bevel gears	*A Spiral Bevel Gear system is a helical-toothed bevel gear. It provides output rotation at an angle to the input shaft and also provides a reduction in drive vibration when compared to a simple bevel gear system.*	**isipayiralikhathibheveli giye**
Splines (Straight sided and Involute)	*Splines are narrow grooves resembling long gear teeth machined into a shaft (a splined shaft) or hole (using a spline broach). Involute splines feature short and equally spaced teeth that allow for greater strength with more centered stress distribution. Involute splines are made with pressure angles 30, 37.5 and 45 and can include between 60 and 100 splines. Straight-sided splines have straight and parallel tooth flanks.*	**iziplini**
Split washer	*Split ring washers use friction to prevent bolted joints from loosening. They feature a ring that has been split and twisted - creating two sharp edges. These washers are installed between the bolt head/nut and mating surface, the bolted joint is then tightened in the same way as an unsecured bolt. When the nut is tightened, the washer flattens down, pushing the sharp edges into the mating surface.*	**isipilitiwasha; iwatshasahluli;**
Spring constant	*Spring constant is a characteristic of a spring which measures the ratio of the force affecting the spring to the displacement caused by it. In other words, it describes how stiff a spring is and how much it will stretch or compress. Springs with larger spring constants will have smaller displacements than springs with lesser spring constants for the same mass added.*	**ulomelelo lwesipringi; amandla esipringi**
Spring index	*The ratio of the mean diameter to the wire diameter in coil springs. For a helical coil spring of mean diameter D and wire diameter d, C = D/d.*	**isipringi-indeksi;**
Spring set or creep	*Creep is an increase in plastic strain under constant stress or load. It is a process that happens over a long period of time and is accelerated as service temperatures increase. It is unique in that it occurs when the stress condition is in the elastic range of the material's stress-strain curve.*	**isipringiseti**
Springs	*An elastic component which stores mechanical energy and exerts a force when deformed. The slope of the curve of applied force F to the deflexion of a spring x, dF/dx, is termed the spring rate or spring modulus k with unit N/m.*	**izipringi**
Sprockets	*A tooth on the periphery of a wheel or cylinder to engage in the links of a chain, the perforations of a motion picture film, or other similar device.*	**iziprokethi**
Spur Gears	*A toothed wheel with radial teeth parallel to the axis.*	**ikoko; isipegiye**
Square thread	*A screw thread having a square cross section; the width of the thread is equal to the pitch or distance between threads.*	**isikwethredi; ithredi eskwe**
Steam turbine	*A rotodynamic machine in which steam, initially at high pressure and temperature, expands through a series of stages which convert thermal energy into shaft power.*	**istimuthebhayini; isihambingomphunga**
Stiffness ratio	*is defined as the ratio of the stiffness of a clamping member over the stiffness of the bolt within fasterners.*	**ireyishiyo yolomelelo; ireyishiyo yokuqina; isitifunesireshiyo**
Straight cut bevel gears	*A simple form of bevel gear having straight teeth which, if extended inward, would come together at the intersection of the shaft axes.*	**isitreyitikhathi bheveligiye**
Stress concentrations	*(stress raiser) The rapid increase in stress in the vicinity of a concentrated load or a sharp change in the geometry of a component.*	**indawo yoxinzelelo**
Stress range	*The algebraic difference between the maximum and minimum stress in one fatigue test cycle.*	**isalathixinzelelo; isikhombixinzelelo**
Stub axle	*A short axle, such as is used to support an undriven wheel.*	**isitabhuasi**
Surface fatigue	*Surface fatigue is a failure that occurs due to cyclic loading. Surface fatigue is different from other types of fatigue failures because it is found solely on the top layer of a material. Surface fatigue usually appears in the form of microcracks on a material's surface. If left unchecked, the failure could spread past the surface of the material.*	**ukunikezela; ukuguga**

Surface treatments	*Any process, including chemical, electrochemical, mechanical, and thermal, designed to protect a surface against corrosion and wear or to alter its mechanical properties*	**uthintelokuguga; uthintelokonakala**
Surface wear	*In general, wear is mechanically induced surface damage that results in the progressive removal of material due to relative motion between that surface and a contacting substance or substances.*	**ukudleka; ukukhuthuka; ukuxathuka**
Tamper resistant screw heads	*Tamper Resistant Screws are screws with a unique head, that requires specific tools to fasten and remove. Commercial screwdrivers and wrenches cannot fasten or remove these screws. They are also referred to as anti-theft or tamper-proof screws.*	**izikrufu ezingaphazamisekiyo**
Tangential loading	*A load which acts on a moving body in the direction of a tangent to the path of the body, its effect being to increase or diminish the velocity; - distinguished from a normal load, which acts at right angles to the tangent and changes the direction of the motion without changing the velocity.*	**ithenjenishiyalilowudingi**
Tensile	*The nominal or engineering stress given by the maximum load in a tension test divided by the original cross-sectional area of the specimen. The maximum load could be the fracture load for a brittle material, but for a ductile material it is usually taken as the load at which necking begins, beyond which the load falls.*	**ithenisayili; -nokutsalwa; -nwebekayo**
Thread	*A continuous helical rib, as on a screw or pipe.*	**iqoqo; ithredi**
Thread form	*Thread form refers to the profile of a screw thread. Thread standards that define thread form, series, class, allowance, tolerance and designation are usually issued by thread form.*	**imiloqoqo; imilo yethredi**
Thread pitch	*The distance from a point on the screw thread to a corresponding point on the next thread measured parallel to the axis.*	**ithredipitshi; uqaqelwanomaqoqo**
Thread stripping / shearing	*Thread stripping, sometimes referred to as thread shearing, is when the shear stress acting on the threads is such that the threads either shear completely so that the nut becomes detached, or partially, in which case the strength of the thread is severely impaired.*	**uchachamboqoqo; untlekekoqoqo; uchuchekoqoqo; uguzukoqoqo**
Through bolts	*A bolt passing through all the thicknesses or layers which it binds or in which it is fixed and made fast by a nut at the end opposite the head*	**ithrubholithi**
Toothed belts	*A flat belt, typically of a reinforced-rubber material, with transverse teeth that engage with teeth on a wheel or pulley.*	**ibhanti enamaqoqo; ibhanti enamazinyo**
Torque	*For a single force, the cross product of a vector from some reference point to the point of application of the force with the force itself. Also known as moment of force; rotation moment. 2. For several forces, the vector sum of the torques (first definition) associated with each of the forces.*	**itokhu**
Torsion bars	*A spring flexed by twisting about its axis; found in the spring suspension of truck and passenger car wheels, in production machines where space limitations are critical, and in high-speed mechanisms where inertia forces must be minimized. A metal bar designed to act as an elastic spring when torque is applied.*	**ithoshinibha**
Torsion loading	*The load that imparts the turning moment or the torque.*	**ithoshinilowudingi**
Translation screw	*A leadscrew (or lead screw), also known as a power screw[1] or translation screw,[2] is a screw used as a linkage in a machine, to translate turning motion into linear motion.*	**itranisileyishiniskru**
Turnbuckle	*A device for adjusting the tension in a cable, rope, structural element, etc. It consists of two threaded eyelets screwed into opposite ends of a metal loop. The threads at opposite ends have opposite hands, so that rotating the loop either tightens or loosens the item under tension.*	**ithenibhakili; isilungelelanisitsaleko**
Uniform pressure condition	*A condition that occurs when a clutch is new and the cirular disks of the clutch are parallel.*	**iyunifomupreshakhondishini**
Uniform wear condition.	*The condition that occurs when a clutch is old and the cirular disks of the clutch are no longer parallel.*	**iyunifomuwekhondishini; ukuphela kweklatshi**
Universal Joints	*A double-pivoted connection that allows power and torque to be transmitted between two shafts at an angle to each other.*	**iyunivesalijoyinti**

V- Belts	*A drive belt having a trapezoidal cross section which runs in pulleys with V-shaped grooves. Higher torques can be transmitted than with a flat belt.*	**iV-Bhelithi; ivibhelithi**
Valve springs	*The spring that restores a valve to its closed position after having been opened, and is also intended to prevent valve bounce.*	**isipringivaluvu**
Volute springs	*A coil spring that is both spiral and helical, made of broad thin strip, adjacent coils of which overlap and slide over each other when loaded axially.*	**ivoluyuthisipringi**
Wire gauge	*Standardized numbered scales to which the diameter of wire and the thickness of sheet material may be referred.*	**igeyiji yocingo; isilinganisi socingo; udondolo locingo**
Woodruff key	*A key in the form of a segment of a disc, the curved part of which fits into a slot of the same radius cut into a shaft and the straight part into a normal keyway in a hub.*	**iwudirafukhi**
Worm gears	*A gear with teeth cut on an angle to be driven by a worm; used to connect nonparallel, nonintersecting shafts.*	**iwemugiye**
Woven materials	*Woven fabric is any textile formed by weaving. Woven fabrics are often created on a loom, and made of many threads woven on a warp and a weft.*	**imathiriyeli eyalukiweyo**
Yield strength	*The stress at which the onset of permanent (plastic) deformation (yielding) occurs in a body under increasing loading.*	**uxinzelelomandla**
Aesthetic	*Aesthetics is a core design principle that defines a design's pleasing qualities. In visual terms, aesthetics includes factors such as balance, color, movement, pattern, scale, shape and visual weight. Designers use aesthetics to complement their designs' usability, and so enhance functionality with attractive layouts.*	**umbukeleko**
Alloy	*A metallic material composed of two or more elements, one of which is usually a metal to which the other elements are added, e.g. iron-carbon or aluminium-copper (binary alloy); nickel-chromium-iron (ternary alloy).*	**ialoyi**
Armature	*The moving part of an electric motor which comprises a piece of iron with loops of wire running around it. The current through the wire is reversed to provide the changes in magnetic fields required to make the motor run*	**iamatsha**
Bearing	*A device that supports a component which rotates (a shaft), slides, or oscillates in or on it.*	**ibheringi**
Buoyancy	*An upward force exerted by a fluid that opposes the weight of a partially or fully immersed object.*	**-dadayo**
Casting	*The process of pouring molten metal into a mould so as to obtain, after cooling, a component having the shape of the mould.*	**-bumba**
Commutator	*A series of bars or segments connected to the armature coils of a generator or motor so that rotation of the armature will in conjunction with a set of fixed brushes convert alternating current into direct current.*	**ikhomuyutheyitha**
Composite	*A general term used for two or more materials or structures acting in combination (e.g. concrete, reinforced concrete, filamentreinforced polymers, laminated materials, particulate-reinforced materials, flitched beams), resulting in values of strength, stiffness, or toughness greater than the base matrix material alone.*	**ikhompozithi**
Conduction	*The transfer of heat or electricity through direct contact of neighbouring objects (including atoms and molecules)*	**unikezelwanobushushu; unikezelwanombane**
Convection	*The transfer of mass or heat due to the bulk motion of a fluid.*	**ikhonvekishini; inguqulomo**
Degradation	*The reduction with time of the physical properties of a material.*	**ukuphelelwa; ukuguga**
Drag	*The aerodynamic or hydrodynamic force exerted on a body as it moves relative to a fluid acting in a direction opposite to that of the relative motion.*	**idregi; isibambezeli; isithobisantya**
Ductility	*Ductility generally refers to the amount of inelastic deformation which a material or structure experiences before complete failure.*	**imbonakalokonakala; ukunikezela; ukuvikiveka**

	Quantitatively, ductility can be defined as the ratio of the total displacement or strain at failure, divided by the displacement or strain at the elastic limit.	
Elongation	*Increase in length which occurs before a metal is fractured, when subjected to stress. This is usually expressed as a percentage of the original length and is a measure of the ductility of the metal.*	**utsaleko; unwebeko; utwebeko**
Ergonomic	*The science which deals with the interaction between people, their work place and environment. It also considers the physiology of workers in the design of tools, equipment, and the work methods needed.*	**iegonomiki; fanelekolwakhiwo; lungelomeko**
Ethics (professional)	*Rules of conduct proposed and recognized by a profession with respect to a particular class of human actions.*	**imikhwa esesikweni; intsulungeko; isimilo**
Forming	*The process of shaping materials (particularly metals) into separate items such as beverage cans, or the manufacture of feedstock (such as rolled sheet) for further processing.*	**ukubumba; ukuyila; ukwakha; ukuqingqa**
Fracture	*The separation of materials, components, or structures into two or more parts by the propagation of one or more cracks. Cracking may be globally elastic (brittle) or accompanied by varying degrees of plasticity (ductile).*	**ukuchachamba; ukuntlekeka**
Gear	*A toothed machine element used to transmit motion between rotating shafts when the center distance of the shafts is not too large.*	**igiye**
Geartrain	*A mechanism with two or more gears meshed in series and its axes interlocked by a proper link to transmit power and to increase/decrease rotary speed*	**umxokelelwano weegiye**
Incompressible	*A substance for which the specific volume (or density) does not change with increasing or decreasing pressure*	**-ngatshintshimthamo**
Insulated	*To cover and surround something with a material or substance in order to stop heat, sound, or electricity from escaping or entering.*	**-gqunyiweyo; -insuleyithiweyo**
Kinetic	*Relates to the motion of material bodies and the forces and energy associated therewith.*	**ikinethiki**
Laminar	*Fluid motion characterized by fluid particles moving in a smooth, orderly fashion, with little mixing.*	**ilamina; uqukuqelo oluthuleyo; uqukuqelo oluzolileyo**
Lift	*The aerodynamic or hydrodynamic force exerted on a body as it moves relative to a fluid, acting in a direction perpendicular to that of the relative motion.*	**phakamisa; funqula**
Meshing	*To engage, as the teeth between two gears.*	**ungenelwanomazinyo**
Milling	*A machining process, typically for metals and plastics, in which a multi-tooth rotary cutter removes material to produce flat or profiled surfaces, slots, grooves, etc.*	**ukuguba; ukugraya; ukusila**
Moral	*Morals are the principles or habits with respect to right or wrong of one's own conduct.*	**intsulungeko; isimilo; imikhwa esesikweni**
Obsolescence	*Decreasing value of functional and physical assets or value of a product or facility from technological changes rather than deterioration.*	**uphelelo; uhayelelo**
Pinion	*The smaller of a pair of gear wheels or the smallest wheel of a gear train.*	**ipiniyoni**
Piston	*A sliding metal cylinder that reciprocates in a tubular housing, either moving against or moved by fluid pressure.*	**ipistini**
Prototype	*A preliminary example, usually full size, of a machine such as a motor vehicle or aircraft used to evaluate design and performance.*	**iprototayiphu; umzekeloqobo**
Quench	*The process of rapid-cooling by plunging an object into a bath of water, oil, salt, molten metal, or other media. It is a method of heat treatment used particularly to form martensite preparatory to tempering steels. The bath temperature is the quench temperature*	**upholiso**
Shaping	*A machining process in which the cutter reciprocates along the workpiece which moves in a direction orthogonal to the cutter after every stroke.*	**ukubumba; ukuqingqa**
Shear	*A form of deformation of a fluid or solid in which adjacent planes in a material are displaced in opposite directions.*	**ishiye**
Sheave	*A grooved wheel or pulley.*	**ishivu; ifolo yepuli**

Sintering	*A solid-state diffusion densification process for the production of objects, particularly porous objects, from raw material in powder, granular, mesh, perforatedsheet, or fibre form by heating to a temperature below the melting point until the constituents bond together*	**uqinisonyibiliko**
Soldering	*Bonding of parts without melting the mating surfaces, using a thin film of molten solder that adheres to the contacting surfaces.*	**ukutshisela**
Strength	*The maximum stress, in tension, compression, shear, or combinations thereof, that may be monotonically applied to a material, component, or structure before failure (defined as fracture, yielding, buckling, etc. as appropriate)*	**amandla; ulomelelo**
Sustainability	*Development of industrial and natural resources that meets the needs of the present without compromising the ability of future generations to meet their needs in a similar manner.*	**ulondolozeko; ukugcineka**
Synchronous	*A term for events occurring simultaneously.*	**-ngaxeshanye; uhambelwaniso**
Thermal	*A term for anything concerning heat. A thermal process is any physical or chemical process primarily dependent upon heat; for example, distillation, heat treatment, sterilization, steam generation, or vulcanization.*	**ngobushushu**
Thrust force	*Thrust is a reaction force described quantitatively by Newton's third law. When a system expels or accelerates mass in one direction, the accelerated mass will cause a force of equal magnitude but opposite direction to be applied to that system.*	**ithrasitifosi**
Tolerance	*The permissible variations in the dimensions of machine parts, (ENG] A permissible deviation from a specified value, expressed in actual values or more often as a percentage of the nominal value.*	**unyamezelo**
Torque	*The twisting moment of a force or couple about an axis which results in torsion.*	**itokhu**
Turbulent	*Fluid motion characterized by chaotic changes in pressure and flow velocity, along with mixing*	**amahlandinyuka; ukungazinzi; ukuzamazama**
Turning	*The rotation of a workpiece held against a cutting tool in a lathe to produce components with a circular cross section.*	**ukujika**
Viscosity	*Viscosity is the resistance of a fluid (liquid or gas) to a change in shape or movement of neighbouring portions relative to one another. Viscosity denotes opposition to flow.*	**iviskosithi**
Welding	*A joining process in which the mating surfaces are at least softened, or more usually melted, unlike soldering and brazing.*	**ukutyhida; ukuwelda**