Electroless nickel phosphorous coatings are widely used in many of the industrial applications because of their unique properties, including such as being highly wear resistant and corrosion resistant, and being highly very hard and tough. The properties as well as a good lubrication. By - a functional nanometer composite coating is produced by an electroless codeposition process that combining nano-sized particles as a reinforcing phase inside of the Ni-P matrix, to obtain functional nanometer composite coating with electroless co-deposition process. The combined properties of the Ni-P coating are to be mainly improvements but and sometimes different nanoparticles new features are fully added to enhance the coating performance by the combination of their totally new features. For an instance, or instance, different nanoparticles like such as nano-SiC, WC, Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, ZnO increase as hardnes or particles in the coatings, and nanoparticles such as polytetrafluoroethylene (PTFE), MoS<sub>2</sub> and graphite as increase lubrication. Particles are added for the coatings out of these nanoparticles, PTFE has got aroused tremendous interest by due to its properties, like including its low surface energy and lower friction coefficient, good being for non-stick surfaces or and, dry lubricants, its anti-fouling properties, and very its good wear and corrosion resistant. Ni-P, PTFE can be used as an anti-sticking coating. Condensed The condensed fluorine atoms in these molecules at-in the outer layer are the main cause-source of the physical properties of PTFE polymer like such as its low surface energy (18.6 mN/m) and vary its remarkably lower friction coefficient, both excellent properties for anti-stick coatings. By co-deposition of PTFE in the matrix of the coating, the properties of both Ni-P and PTFE can be used simultaneously. PTFE has excellent anti-stick properties due to the low surface energy of PTFE polymer (18.6 mN/m). The refence another potential application of a Ni-P-PTFE composite is to the reduction for of fouling. For example, is foreseen as a solution to the serious problem of the formation of deposits resembling limestone with on the surfaces of heat-exchange exchangers or heat-exchange elements is a serious problem. These sediments are one of the natures inherent problems on the designation and operation of many types of production and processing equipments and processes. Unasked for These unwanted sediments can affect the equipment in two ways arell.
• The lower thermal conductivity of the formed-deposited sediments can increase heat-transfer resistance for heat-transfer, and thereby reducing the heat-exchanger efficiency of heat-exchanging exchangers.

• Fouling the ducts reduces the cross-sectional area of the fluid path, causing the increased friction becomes higher, causing to an increase of and a pressure drop across the system.

Any methods for reducing such sediments-sedimentary build-up can decreasing costs. We found that the adhesion of the formed such sediments on the surfaces with low surface energy is poor. For this purpose, many polymeric coatings have been used. The lower thermal conductivity, and low wear resistance as well as the poor adhesion to the substrate of the conventional polymer coatings have limited their industrial applications. Since Because Ni-P-PTFE coating is metallic based on a metallic composite, its thermal conductivity, mechanical strength, and wear-resistant properties are much bigger than PTFE coatings, while also it has a less low friction coefficient and low surface energy.