

Amphibious bicycle³ and other technological contributions

TRANSPORT NATIONAL FIRST LIFE TIME ACHIEVEMENT

Mohammed Saidullah grew up in a small village called Jatva-Jeneva (Purvi Champaran) of Motihari district, Bihar. His father Shaikh Idris was a farmer and a Congress village leader during the time of Independence. Saidullah has studied up to the tenth standard in Ramsingh Chatuani in Gajpura but could not complete his studies due to personal reasons. He married Noor Jahan in 1960 and has three children - two daughters and a son. He is 60 years old and a devout Muslim and proudly claims that he has never asked for help from anyone but Allah. Self respect and self development are two tenets of his character and he is a very compassionate man who often helps out friends who are in financial difficulties.

"An inventor's mind should be free; not bound with conditions"- is the belief that has fuelled Mohammad Saidullah's passion to develop multi-functional products such as the amphibious cycle, the mini tractor, key operated table fan, fodder cutter-operated mini water pump, spring-loaded (shock absorber) bicycle and others. He draws inspiration for his innovations from his experiences in life.

Apart from these innovations, Saidullah nurtures two ideas in his mind. One is to develop a mini electric powerhouse . This would produce electricity to operate at least two fans and two bulbs. The cost of developing this would be Rs.50,000. The second idea is to develop a helicopter, which would cost Rs. 25 lakhs. Most of his innovations have the name 'noor' in them. This is to revere the memory of his late wife whose name was Noor. Thus we have the "Noor bicycle", the "Noor Rahat" electric power house", the "Noor water pump" etc.

Mohd. Saidullah lives with his daughters in Mathia deah village in Purvi champaran (Motihari). Unfortunately his love for innovations has been at a personal price as his son is estranged from him and is demanding land and money but Saidullah has sold all of his 40 acres of land in pursuit of his innovations and his generosity.

Genesis The state of Bihar is prone to floods. In 1975, there was a big flood in Champaran which lasted for about three weeks and Saidullah had to cross the river to get provisions. To cross the river he had to use a boat and in the city he had to use a bicycle. Then it struck him that if he could make the bicycle float on water as well as move on land it would save money. Within three days, he had developed such

a bicycle. This amphibious bicycle is also known as "NOOR Bicycle". Using this cycle he crossed the Ganga from Pahelaghat to Mahendrughat (Patna). Initially he spent Rs.6000/- on the development of the floating bicycle. But now he says he will be able to build it at a cost of Rs. 3000/- .

The Innovation

The amphibious bicycle comprises a



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conventional bicycle modified with two extra attachments attached to it that enables it to run on both water and land. The first attachment consists of four rectangular air floats, which support the bicycle while moving in water. These rectangular floats are in two pairs and each pair is attached to the front and rear wheel of the bicycle with a piece on either side of the wheel. These floats can be folded when the bicycle runs on land. These floats are lightweight and hence the cyclist does not feel any extra burden.

The other attachment comprises the fan blades attached in a radial manner on the spokes of the rear wheel. When the cyclist pedals the bicycle in water, the blades attached to the rear wheel also rotate and force the water to be pushed backwards thus enabling the bicycle to move forward. The blades are arranged in such a fashion that it can be driven in the reverse direction as well.

Advantages

The advantages are obvious as people in rural areas need no longer solely depend on the few overcrowded boats for crossing the river. Further, crossing the river can be done at one's own convenience. As the cycle operates on both land and water, the time and money required for hiring a boat to cross the river and for further transportation on land is saved. Further applications could be in amusement parks or children's parks, for sending provisions to people living around a



lake, for removing aquatic weeds or for dragging a raft carrying goods, nursery plants etc.

NIF has sanctioned Saidullah a sum of Rs.33,750 from the Micro Venture Innovation Fund for the prototype development for market research of the Amphibious Bicycle.

Other innovations

Mini tractor

The mini-tractor comprises a conventional tractor modified in such a manner that it has a clutch-plate free system, uses a dynamometer instead of battery for light and has a hydraulic lifting mechanism for propelling farm implements. An air pressure horn is also used in it. It is easy to handle and costs only Rs.70,000. Moreover it can be used to transport material. The first model of the tractor was made in 1984 and could be used for ploughing and tilling. It consumed five litres of diesel per hour to run for six hours with a 20 quintal load at a top speed of 18kms/hour.

Key operated table fan

In 1960, in the context of irregular electricity supply and its increasing cost, Saidullah thought of developing a fan that would work with a key, to provide some relief from the relentless heat during the summer season. The key operated fan is a conventional fan modified in such a way that there is a coiled spring and hand crank-key attached to it. On rotating the hand crank-key, the fan stores potential energy in the coiled spring and uses it to deliver rotational torque. By hand cranking the key for half a minute, the fan rotates for one hour. The cost of this fan is Rs.1000. Its advantages lie in the fact that there is no running cost for the fan as electricity is not required. This is especially a boon in the rural areas where electricity is scarce.

Fodder cutter operated centrifugal pump

The centrifugal pump consists of a flywheel (fodder cutter wheel) attached to the conventional centrifugal pump. The diameter of the flywheel is larger than the

impeller. A handle is provided on the flywheel to rotate it so that the effort required is minimal. When the handle on the flywheel is rotated by hand, the impeller of the centrifugal pump also rotates and the pump delivers water at ground level with a 20 feet suction head and zero delivery head. The discharge capacity is 10,000 litres per hour. The advantage of the pump is its quality of conserving energy, as neither electricity nor diesel is required. Further, only human power is required to supply water to the farm. The manufacturing cost of the pump is Rs. 3000/-

Spring loaded (shock absorber) bicycle

The spring-loaded bicycle is a modified bicycle with a number of springs attached to it, to absorb the shocks on an uneven road. One spring is attached below the seat of the bicycle; two springs are attached to the axis of the front wheel with one end each attached below the handle. The carrier at the back of the bicycle is also supported with two springs with one end of each attached to the axis of the rear wheel. These five springs, by absorbing vibrations from the road, make the bicycle shock-free and provide greater comfort to the cyclist while riding. The springs attached to the rear wheel absorb the shock at the rear wheel thus ensuring a comfortable ride for the person sitting on the rear seat also. The cost of the spring loaded bicycle is Rs. 2500. NIF has sanctioned him a sum of Rs.15,000 from the Micro Venture Innovation Fund for the development of the prototype for market research.

Bicycle operated through conserved energy by pedal operation

This innovation is a conventional bicycle modified in such a manner that two chain drives are used instead of one. While riding the cycle, when the cyclist pedals ten times, the coiled spring is tightened and stores energy in it. After ten times, the cyclist stops pedalling. The stored energy in the coiled spring helps the cycle to move forward for about one kilometre with a speed of 20 km/hr. After covering one kilometre, the coiled spring is unwound. Hence there is no energy stored in it and the cyclist has to repeat the process. This idea originated with a friend's commenting, "Up to what stage

will you drive a cycle, why not purchase a motorcycle?" To this Mohd.Saidullah replied that he could make his bicycle function like a motorcycle. He fulfilled the claim he made to his friend, as the speed of his innovated bicycle is higher than that of a conventional one. It also requires less effort.

Mini turbine for electricity generation

This is a turbine which is attached with bucket-blades in a radial manner. The turbine is placed inside the water surface and when the water falls on the inner curved surface of the bucket-blades, it rotates the blade of the turbine. This rotational energy is further transferred to the dynamo that transfers the energy for lighting the bulb. This turbine gives the energy to run two bulbs simultaneously. The advantages are that it is easy to handle and a low cost alternative. Further, it makes use of a renewable source of energy, flowing water, especially in the context of our looming energy crisis, when every bit counts.

Awards and accolades

Mohd. Saidullah had once sent a letter to Pt. Jawaharlal Nehru regarding his innovations and invited Panditji to come and see them. Though Panditji received his letters and replied that he would come, he was not able to and sent a letter to Mohd.Saidullah regretting his inability to visit his place. Mohd. Saidullah's innovations have also been featured in various newspapers and news channels such as Pratiyogita Darpan, The Times of India, Hindustan, Ankur, Jansatta, Nepal Newspaper and Doordarshan. Many organizations have contacted him including CSIR, CAPART and TIFAC. CAPART contacted him in 1993 regarding his innovative fodder-cutter operated mini water pump. A team from CAPART visited his house and tested this machine in a pond, bore well, and hand pump. They offered him a certain amount and asked him to develop one machine for CAPART. He asked them to approach him through the proper channels with a written non-disclosure agreement and only then would he manufacture it for them. But they did not comply.

Technopreneur Promotion Programme (TePP) of the Technology Information and Forecasting and Assessment Council (TIFAC) also wrote to him and sent a cheque of Rs. 25,000 for the development of the amphibious bicycle. But they stipulated some conditions, which were not acceptable to Saidullah. Saidullah firmly believes that for him to come up with an innovation, his mind must be unfettered and not restricted by any conditions. He continues to keep the cheque with him. On January 26, 1994, Purvi Champaran Collector, Mr. Binod awarded him for his various innovations. Dr. A R Kidwai, governor of Bihar honoured him on January 26, 1995 in Patna with the first prize for a tableaux (*Jhanki*) of his innovations during the Republic Day Parade in Gandhi Maidan, Patna but he is yet to receive any certificate, medal, trophy or award money. In November of the same year, the district collector of Chapra, Bihar honoured him during the Sonepur mela.

A life-long passion for innovation

Since childhood, Saidullah has had an interest in mechanical things. He was always busy solving problems by putting forward innovative solutions in the form of inventions and in one such attempt even broke all the locks in his house. Initially he worked as a mechanic because of his interest in making things with iron and this has proved invaluable in his efforts to construct the innovations himself. A day on which he doesn't work with iron is, according to him, a wasted

day. Carpentry, masonry, tailoring etc., are also part of his repertoire.

A philosopher, his mind is always occupied with innovative ideas which would benefit the family and society. When he gets an idea his whole face lights up with a smile. Impelled by a deep love for nature, which he believes is God's gift to man, he has tried to make his innovations as environment-friendly and agriculture-based as possible. On his innovations, he has worked alone apart from occasional help from his family.

The harsh reality of life

Mohd. Saidullah is currently engaged in the honey business because his income as a mechanic was not sufficient to fulfil his family's needs. Everyday he rides his bicycle for about 30 km to the market to sell honey of Lichi, Cronj, Liptus, Khaisari, and Mustard plants. His monthly income is Rs. 1300. He admits that he often feels quite disheartened due to a lack of land and money as well as people's niggling queries regarding his innovations especially regarding the number of items he has sold. He comments, "*Hamara saman hai agar sahi, to kyon rah gaye wahin ke wahin*" which translated means "If my innovations are of good quality, then why am I not successful?" Out of sheer frustration, he even broke his fodder cutter operated water pump-the sad plight of a grassroot innovator.