

# Sir M Visveshwaraya engineer and the foremost Diwan of Mysore

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## Abstract

Mokshagundam Vishveshwaraya was born on 15 September 1861. Visveswaraya was born in Muddenahalli village (now located in Chikballapur District, but part of Kolar district at the time of his birth) in the princely state of Mysore (now Karnataka), India. Sir M Visveswaraya, fondly known as Sir MV, began his career in March 1884 with his first assignment in the district of Nashik, as Assistant engineer with Public Works Department, Government of Bombay. After this initial work of general nature for a few months, he was encountered with his first assignment of constructing a pipe siphon across a channel which carried water from the Panjra River to Datarti, a village about 35 miles away from Dhulia and thus began the story of an engineer par excellence. Sir MV, played an important role in many technical projects across the undivided India and almost immortalised them too. It is practically impossible to find a parallel to Sir MV whose span of active working life covers about eight decades. In this long period he worked practically all the waking hours (leaving five hours of sleep in a day) excepting for his cherished constitutional walks and lunch time. He walked the talk what he believed, "It is better to work out than rust out", "Work, work hard, hard work does not kill, it is worry that kills." "Work is worship and service to the nation is the goal and purpose of all education and knowledge". Even his personal life was as well planned as his public activities.

He was most regular in his habits. He himself attributed his longevity and remarkably sound health and vitality to his strict diet and self-discipline. Engineering, in all its branches, particularly those of irrigation, reservoirs, dam and water supply, power generation and bridge building to university education, technical and occupational training, town planning, industry and manufacture, banking, commerce - in every one of these he established new benchmarks and left indelible marks for the future generations to know and fathom the depths of his knowledge. He tried his best to infuse the modern spirit, ideas and methods in the political, social and economic fields. Sir MV earned love and admiration of all the country men. He never sought publicity or fame but honours came to him from many quarters spontaneously and deservedly. After India attained independence, he was conferred the nation's highest honour, the Bharat Ratna, in 1955. Sir M V was appointed a Companion of the Order of the Indian Empire (CIE) in 1911.

*Key words: diwan of Mysore, Bharat Ratna, engineer, KRS Dam, Engineer's Day*

## Objective

This paper aims to study the legacy of Sir M Visveshwaraiah, as engineer and administrator; diwan of Mysore

## Introduction

Sir M Visweshwaraiah, an Engineer par Excellence is one of the most eminent Engineers ever produced by India. A proud Kannadiga who was the chief architect behind the construction of the Great KRS Dam in Mandya. This work of him was instrumental in converting the barren lands into fertile grounds for farming. Words fall short to describe his excellence. His birthday is celebrated as Engineer's Day

After completing his education Visvesvaraya took a job with the PWD of Bombay and later was invited to join the Indian Irrigation Commission. He implemented an extremely intricate system of irrigation in Deccan. He designed and patented a system of automatic weir water floodgates that were first installed in 1903 at Khadakvasla Reservoir near Pune. These gates were employed to raise flood supply level of storage in reservoir to the highest level likely to be attained without causing any damage to the dam. Based on the success of these gates, the same system was installed at the Tigris Dam in Gwalior and Krishna Raja Sagara (KRS) Dam in Mandya/Mysore, Karnataka.

In 1906–07, Government of India sent him to Aden to study water supply and drainage systems. The project prepared by him was implemented in Aden successfully. Visvesvaraya achieved celebrity status when he designed a flood protection system for city of Hyderabad. He was instrumental in developing a system to protect Visakhapatnam port from sea erosion. This dam created the biggest reservoir in Asia when it was built. Visvesvaraya gave his valuable technical advice for the location of Mokama Bridge over Ganga in Bihar. At the time, he was over 90 years old.

He was called "Father of Modern Mysore State". During his service with the government of Mysore State, he was responsible for founding of (under the patronage of the Mysore government) Mysore Soap Factory, Parasitoid Laboratory, Mysore Iron & Steel Works (now known as Visvesvaraya Iron and Steel Limited) in Bhadravathi, Sri Jayachamarajendra Polytechnic, Bangalore, Bangalore Agricultural University, State Bank of Mysore, Century Club, Mysore Chamber of Commerce (presently known as the Federation of Karnataka Chambers of Commerce & Industry (FKCCI) the apex Chamber of Commerce in Karnataka, University Visvesvaraya College of Engineering Bangalore and numerous other industrial ventures. He encouraged private investment in the industry during his tenure as Diwan of Mysore. He was instrumental in charting out the plan for road construction between Tirumala and Tirupati. There were no single accident and rockfall occurred till today on the road between Tirumala and Tirupati. This shows his Expertise.

Once Hyderabad was affected with floods, and there was a huge loss occurred over there. Then Sir M.V. constructed a dam and designed a flood protection drainage system to Hyderabad. From then onwards there are no floods in Hyderabad. So he was the person responsible for turning Hyderabad into a floodless city. This shows the highest level of quality engineer present in him.

He was known for sincerity, time management, and dedication to a cause. Bangalore Press and Bank of Mysore were established during his tenure. A very important part of his nature was his love for Kannada. He set up the Kannada Parishat for the upliftment of Kannada. He wanted seminars for Kannada lovers to be instituted and conducted in Kannada itself.

In 1915, while he was the Diwan of Mysore, Visvesvaraya was knighted as a Knight Commander of the Order of the Indian Empire (KCIE) by the British for his myriad contributions to the public good. He was feted with honorary

membership of the international Institution of Civil Engineers (based in London) and a fellowship of Bangalore-based Indian Institute of Science. He was awarded several honorary doctoral degrees like D.Sc., LL.D., D.Litt. from eight universities in India. He was president of the 1923 Session of the Indian Science Congress. Sir M.V. was awarded the honorary Membership of London Institution of Civil Engineers for an unbroken 50 years. It is impossible to capture Sir MV's immense contribution in the Indian context through this small article. However, Built Expressions salutes this unmatched technocrat for his unparalleled contributions to the great Indian march and the unprecedented engineering skill and acumen he displayed. As a tribute to this great engineer on his birth anniversary, in all our humility, we list out a few projects of his involvement for the benefit of our esteemed readers. Engineering skills coupled with modern thinking. Great leaders like Mahatma Gandhi and Nehru wanted Sir MV to be associated with certain projects of great importance like the Orissa floods and bridge across the Ganga. In many of these projects, Sir MV used innovations ahead of his time. For the water supply project at Sukkur in Sind, for example, he implemented the concept of 'collector wells' rarely used in those days but found in textbooks on ground water hydrology today. Another example is his automatic flood gate for dams (which he patented) which permits the passage of a flood through a reservoir without the water level exceeding the full reservoir level with the ordinary spillway used at that time; the flood discharge raised the water level above the full reservoir level, submerging additional surrounding land. This gate thus was a forerunner to the present day radial gates, which, however, are not automatic. He foresaw the importance of using a reservoir for flood control considered till then only for irrigation and power generation. His recommendations later resulted in the Hirakud dam being built, taming the Mahanadi river and reducing flood havoc in Orissa.

Similarly, the twin cities of Hyderabad and Secundarabad are protected from floods due to plans drawn up by Sir MV As Special Consulting Engineer in Hyderabad It was in 1908, when Sir MV was travelling in Italy, got a communication to take charge of reconstruction of Hyderabad and prepare a drainage scheme. The city of Hyderabad, then under Nizam, saw a devastating flood that caused damages beyond expectation. He was also expected to suggest remedial measures to prevent such catastrophes in future. Both assignments were completed with immaculate precision benefitting and relieving the population who lived in that area. D Before taking up services at Mysore, he asked His Highness "whether there was any prospect of Government encouraging industries and technical education in the state on a larger scale than they were accustomed to and utilising my services in that connection." The response he got from His Highness was extremely positive and Sir MV decided to join the services at Mysore Sir MV was the driving force behind the construction of many major dams and water supply schemes across the country.

### **Krishna Raja Sagar dam**

The famous Krishna Raja Sagar dam in Mysore is one of these. The use of automatic sluice gates, an engineering innovation applied in many dams across the country, was Sir MV's idea Sir MV supervised the construction of the KRS dam across the Kaveri River from conception to inauguration. This dam created the biggest reservoir in Asia at the time it was built The dam has been constructed across the River Cauvery and is close to Mysore. The dam is at the confluence of three rivers - Cauvery, Hemavathi and Lakshmanatirtha. The dam was built across river Kaveri, the life giving river for the Mysore and Mandya districts, in 1924. Apart from being the main source of water for irrigation in the most fertile Mysore and Mandya, the reservoir is the main source of drinking water for all of Mysore city and almost the whole of Bangalore city, the capital of the state of Karnataka. The water released from this dam is further used as an important source of water in the state of Tamil Nadu, which has its own Mettur dam in the Salem district. Sir Mokshagundam Visvesvaraya served as

the chief engineer during the construction of this dam. The dam is named for the then ruler of the Mysore Kingdom, Krishnaraja Wodeyar.

According to archives, then chief engineer of Mysore state, Sir MV prepared a blueprint to build a dam across Kaveri river near Kannanbadi. For that, he had to persuade the king and the then dewan T Ananda Rao. Satisfied with the "revolutionary concept which would change the fortune of Mysore state", the king issued GO No. C.13198490 on October 12, 1911, and gave the go-ahead for the project costing Rs 81 lakh. However, it rose to Rs 103.42 lakh later. This is India's first irrigation dam. Sir M. Vishweswariah, the engineer who designed and built this dam, has shown his acumen in converting a dam site into a beautiful garden with colourful fountains and ponds downstream. The dam is named after the then Maharaja of Mysore, Krishnaraja Wodeyar, who financed this novel project. KRS represents a marvel of civil engineering achievement in pre-independence India and was among the first in the world to use automatic sluice gates. Locally available surkhi (a combination of limestone and brick powder as a substitute of cement) was used instead of importing cement from England (a scarce commodity in those days). It was between the foremost in the world to employ automatic sluice gates. Krishna Raja Sagar Dam is a commanding structure and is a great example of state-of-the-art engineering. It is one of the first dams in the world to use automatic sluice gates and stands proud as a symbol of the civil engineering skills of pre-independent India. In fact, it is considered an engineering marvel. The dam is around 8,600 feet long and 130 feet high with its reservoir spread across 130 sq.kms. It is spread over 150 acres and provides irrigation to over 1,20,000 acres of land. Krishna Raja Sagar Dam is an ideal place to head out to for a picnic.

The scintillating Brindavan Gardens are next to the dam. There's a boating pond too which enables you to cross the dam from its northern to southern bank. The dam had the distinction of being the then biggest dam in India and second biggest in the world. KRS (Krishna raja sagara) is one among the well-known tourist attractions in entire Karnataka state. It is constructed across the way of river Kaveri. This wonderful KRS Dam, a genius of civil engineering and is itself other well-known tourist attraction was constructed by Sir M. Vishveshwariah in the year of 1924 employing surkhi. The name of the Dam was titled after the Maharaja of Mysore - Krishnaraja Wodeyar, who invested this narrative project. As per the initial plan, Sir MV wanted to build 194-foot tall dam to hold 41.5 tmcft of water. But it was restricted to 124 feet following objections from Madras presidency state to build the dam. However, the works began with the permission of the British government, and ended in 1932. The dedication behind building such a massive dam is noteworthy, and it is for this reason that thousands of farmers in Mandya district literally worship Krishna Rajendra Wodeyar and Sir MV. All reservoirs should have a device to pass excess inflows safely. Open spillways do this at the cost of a rise in water level. Sir MV invented automatic gates which do this job without a rise in the water level. Such 48 automatic gates in six sets of eight gates each are installed in the Krishnaraja Sagar (KRS) Dam. Each set of 8 gates are connected by means of chains and pulleys to a dead weight, which in turn is connected to a float working inside a masonry well both situated on the rear of the dam. The float and the dead weight called the balance weight are located one in front of the other so as to have 4 gates on each side of it.

When all the 8 gates are closing the sluice vents, the balance weight will be at the top of its run and the float at the bottom of the well. The well has an inlet pipe from the reservoir to allow water into the well at full reservoir level. The well has also an outlet pipe. When the water level in the lake reaches the maximum permissible level, water rushes into the well and the float rises up. The balance weight descends down and all the 8 gates are pulled up. The sluice vents then begin to discharge. He retired as Dewan of Mysore in 1918 but continued his services even after retirement. During his entire

government service, Sir MV laboured with extraordinary zeal and single minded devotion to increase the wealth of the state. His administration as Dewan resulted in important and far reaching developments in education, irrigation, industries, railways, and also laid foundations for a progressive future.

opting for voluntary retirement in 1908, he took a foreign tour to study industrialised nations. After, for a short period, he worked for the Nizam of Hyderabad, India. He suggested flood relief measures for Hyderabad town, which was under constant threat by the Musi river. During November 1909, Visvesvaraya was appointed as chief engineer of Mysore State. Further, during 1912, he was appointed as diwan (second minister) of the princely state of Mysore. He was diwan for seven years.

### **As Diwan of Mysore**

With the support of Krishnaraja Wodeyar IV, Maharaja of Mysore, Visvesvaraya made good contribution as diwan to the all-round development of Mysore state. Not only the achievements listed above, but many other industries and public works owe their inception or active nurturing to him.

He was instrumental in the founding of the Government Engineering College at Bangalore in 1917, one of the first engineering institutes in India. This institution was later named the University Visvesvaraya College of Engineering after its founder. He commissioned several new railway lines in Mysore state.

### **Salient Points in his career**

- Sanitary engineer, Bombay, member, Sanitary Board, 1901; gave evidence before Indian Irrigation Commission, 1901
- Designed and constructed automatic gates patented by him at Lake Fife Storage Reservoir; introduced a new system of irrigation known as the "Block System", 1903; represented the Bombay Government at the Simla Irrigation Commission, 1904; on special duty, 1905
- Superintending engineer, 1907; visited Egypt, Canada, USA, and Russia, 1908
- Services lent as consulting engineer, Hyderabad, to supervise and carry out engineering works in connection with the Musi floods, 1909
- Retired from British service, 1909
- Chief engineer and secretary to the government of Mysore, 1909
- Dewan of Mysore, PWD and Railway, 1913
- Board of directors of Tata Steel, 1927–1955

### **Visvesvaraya the patriot and leader**

Visvesvaraya was dedicated to work. He was also a man of spotless honesty. In 1918 he decided to give up the Dewanship. He had to give the Maharaja his letter. He went to the palace in the Government car. He returned in his own car. Those

were days when people had to work by candlelight. MV used, for official work, the stationery and the candles supplied by the Government; for his private work he used stationery and candles which he had bought. Once, one of his friends was advised rest after some illness. He wanted to spend some days in Bangalore. MV was the Dewan. The friend wrote to him asking for a house for some days. He thought the Dewan would give him a Government Guest House, free of rent. The Dewan gave him a Government House; but as long as the friend stayed there, the Dewan himself paid a rent of Rs. 250 a month.

MV had the courage of his convictions. He did what he thought was right and was not afraid of opposition. We have already seen how much he did for Mysore State. At every step he had to face opposition. The British, who were then the masters here, opposed him. Many Mysoreans could not understand his greatness. He was far-sighted; he could see what the country would need fifty years later, a hundred years later. But the shortsighted and small-minded men made fun of him. Some of the officers under him thought he was not practical and laughed at him. He tried to give -the State a University. Colleges in Mysore State were then under Madras University. The Governor and high off icers of Madras were Englishmen., They did not want a University in an Indian state. Englishmen in Mysore State also opposed the Dewan. In fact, the principal of one college even said, “The Dewan is mad. He must be sent to a mental hospital.” Only because MV was firm, Mysore University was born.

Somebody once said to him, “You have done great service to the country. You are like Bhishmacharya.” MV said, “You make me remember what a small man I am. What am I before Bhishmacharya?” He was so modest. Even at the age of 95, he rose to receive a visitor; he got up again when the visitor was leaving. But he also knew modesty did not mean pocketing insults. In the old Bombay Province the rules did not permit an Indian to become the Chief Engineer. Only an Englishman could sit in the Chief Engineer’s chair. So MV gave up his post in Bombay. The Dewan was the highest officer in Mysore State. He himself gave up that very high office. He had self-respect without arrogance.

Sir MV was a fearless patriot. Those were days when the Englishman was the lord of India and wanted to be treated like a god. The Maharaja of Mysore used to hold a Durbar during the Dasara. On the day of the European Durbar, the Europeans were given comfortable chairs but Indians were required to sit on the floor. MV went to the Durbar for the first time in 1910. The arrangements pained him. The next year he did not attend the Durbar. When the officers of the palace made enquiries he f rankly gave the reason. Next year all – Europeans and Indians -were given chairs. A British officer wrote a letter to MV. He said that in the Maharaja’s Durbar, he wanted a cushion to rest his feet because the chair was too high. MV got the legs of the chair shortened and wrote to him that the height had been reduced. In 1944, an association arranged\* a conference. Visvesvaraya was the Chairman of the association. The Governor of Berar, an Englishman, was to open the conference.

## Conclusion

After stepping down as Dewan, Sir MV took up intermittent government projects in Karachi, Bombay, Orissa, and Hyderabad as adviser and consultant. He travelled in Europe and the United States a few times as part of delegations of industrialists. He was awarded the Bharata Ratna in 1955.



In the heady post-Independence days of nation-building, the imagined and actual deeds of Sir MV became parables for a society trying to find direction. He never used his office for personal favours. He never went late anywhere. He never spoke without prior preparation. He took dress formalities seriously. He worked hard. He was efficient. Delightful anecdotes around such claims surround the mythic figure of Sir MV.

Sir MV's enchantment with modern industrial civilisation is sure-footed. Not a trace of self-doubt exists. His legacy is best commemorated by bringing to it all the ethical questions that modern Indians have offered on the issue of development.

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