

# Chapter 5

## The DASTUR Story



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**Abstract** The story of M. N. Dastur & Company (P) Ltd. is one of dreams and determination of a young man who set up and grew, over almost 50 years, India's first consulting engineering organization in the private sector, based entirely on indigenous talent and expertise. It is also a tale of challenges overcome and a firm's emergence over time as a globally acclaimed consulting leader. The organization has grown from a handful of professionals, each an expert in his own domain, into a large, vibrant multi-disciplinary team that is synonymous with excellence in engineering, business and technology consulting services.

### 5.1 The Making of a Visionary

In 1945, Minu Nariman Dastur (Fig. 5.1), a bright young engineer from a middle-class Parsi family who had graduated in electrical and mechanical engineering from Banaras Hindu University (BHU) in 1938, moved to the US to take up a Tata Endowment Scholarship at Massachusetts Institute of Technology (MIT). He had already worked for Tata Steel for three years, first as a Graduate Apprentice, then as Second Helper in the open-hearth furnaces at Jamshedpur. Subsequently he helped plan the plant's expansion as a Technical Assistant in the General Superintendent's Office.

At MIT, Dastur worked under the legendary Dr John Chipman, completing his doctorate on 'Principles of Steelmaking' in 1948 while taking a minor in business administration. Over the next six years, Dr Dastur gained experience working for two US consulting engineering firms, H. A. Brassert & Co. (where he also headed their Ore Research and Metallurgical Laboratory in Greenwich, CT), and Ramseyer & Miller Inc. During this time, he became an expert in pelletization, in direct reduction of iron ores, and in conceptualizing/planning steel plants in South America.

In 1954, Dr Dastur was sent to India by the US Agency for International Development, in the capacity of "American expert", to advise Mysore Iron and Steel Works on its plant expansion programme. During this mission, Dr Dastur met Prime Minister

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**Fig. 5.1** Founder Chairman  
Dr M. N. Dastur



Nehru, who, realizing that the American expert happened to be Indian, invited him to return to India to set up a consulting engineering organization to support the government's planned greenfield steel plants. Following a further meeting with the Minister for Commerce and Industry, Dr Dastur decided to return to India to help develop his country's fledgeling national steel industry.

### ***5.1.1 A Firm Believer in the Concept of 'Atmanirbhar Bharat'***

Dr Dastur believed that India's industrial development strategy, especially for the iron and steel sector, should be primarily based on indigenous talent and expertise. As early as 1953, when India was finalizing plans with the German company Krupp and Demag to install a greenfield integrated steel plant at Rourkela, one of three plants to be set up with foreign technical and financial assistance, Dr Dastur expressed strong reservations about the unrestricted import of foreign technical and engineering skills. In a letter to India's Consul General in New York, Dr Dastur cautioned that it is "... absolutely necessary to exercise a check on the work of the foreign engineers on a project of such magnitude costing hundreds of millions of dollars", and that "... 70 to 80% of the engineering can be done locally, a good part of the future plants fabricated in India, and only the most essential items imported from abroad".

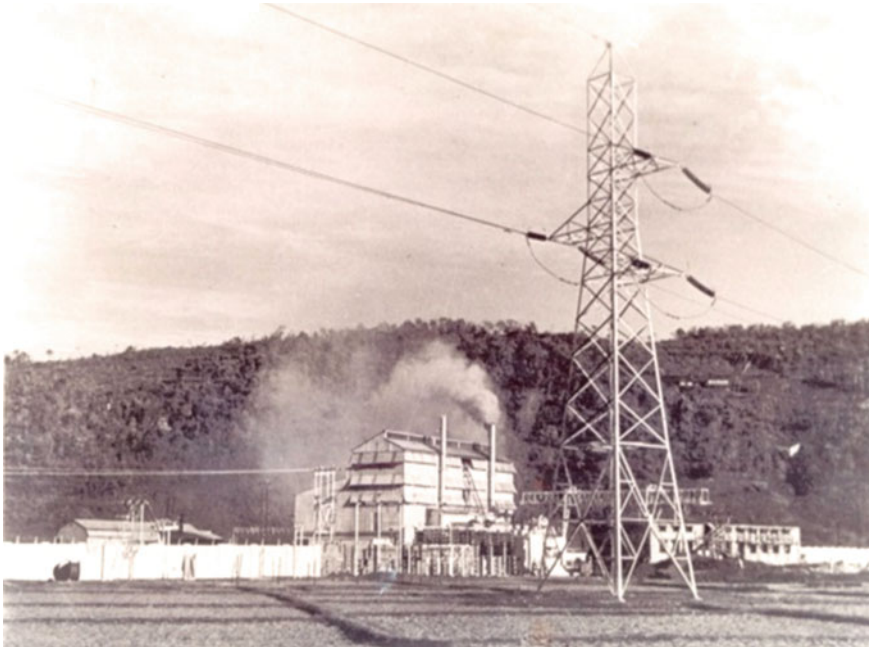
Dr Dastur was convinced that technical control and management of projects in the country should be "concentrated in a group of competent Indian engineers who are familiar with local conditions and future needs". On his return to India in 1955, he set up M. N. Dastur & Company (P) Ltd. (DASTUR) in Calcutta—India's first consulting engineering organization—primarily aimed at providing comprehensive consultancy, design and engineering services for the national iron and steel industry. The young visionary had returned to his roots.

## 5.2 Giving Shape to a Vision

Dr Dastur started operations from a single floor at P-17, Mission Row Extension, in the busy commercial area of Calcutta, with a small team of talented and experienced professionals with substantial expertise in the design and operation of iron and steel units. Initially, he faced considerable challenges in convincing potential clients of DASTUR's capability to handle projects effectively without recourse to off-shore expertise.

The first project was for Tata Steel to set up a ferromanganese plant at Joda, designed to produce 30,000 tons annually, with a provision for expansion to 100,000 tonnes per annum. The project was awarded based on global tenders, and DASTUR had to compete with bidders from the United States, Britain, Germany and Japan. The plant was to be set up on a turnkey basis, which included stringent penalty clauses for each month of delay. In spite of numerous local problems involving local tribes, and the Suez crisis, the project was completed eight months ahead of schedule, earning DASTUR a bonus (Fig. 5.2).

The Joda ferromanganese plant not only laid the foundations of India's ferroalloy industry, but it also established DASTUR's credibility as an Indian firm capable of putting a metallurgical plant into operation in only 24 months, starting with nothing but a bare site and under adverse conditions.



**Fig. 5.2** Joda ferromanganese plant

The success of Joda gave shape to Dr Dastur's vision of being a partner in the industrialization efforts of India by providing comprehensive consulting engineering services "from concept to completion". A spate of assignments followed, including design of an electric arc furnace shop, continuous casting and wire rod mill for Mukand Iron & Steel Works, Bombay; a ferro-alloy plant utilizing low-grade ores for the Raja of Sandur; a uranium milling plant at Jadugoda for the Atomic Energy Commission; an industrial estate for manufacturing light engineering goods for Voltas Limited, Bombay; and civil engineering of the Rourkela Fertilizer Plant.

In the early 1960s, the government appointed DASTUR as consulting engineers to set up an alloy steels plant for Hindustan Steel Limited (now SAIL) at Durgapur. The plant, an excellent model of international collaboration, was designed to produce 80,000 ingot tonnes per annum of a complete range of alloy and special steels in bar and sheet form. While DASTUR had overall responsibility for the engineering and supervision of the construction of the plant, Atlas Steels of Canada provided specialized training and know-how for the alloy steel production. The equipment was purchased from leading international suppliers on the basis of global tenders and recommendations by DASTUR.

It was around this time that Dr Dastur was invited by the Institution of Engineers (India) to deliver the fourth Sir M. Visvesvaraya Lecture at the 41st Annual Convention in Bombay in February 1961. Dr Dastur's lecture, entitled 'Steel in India—Economic and Technological Possibilities' had all the hallmarks of a visionary par excellence. The ground-breaking ideas presented in the lecture included:

- the need for India to plan for a potential steel demand of 110 million ingot tonnes by the turn of the century, considering the pivotal role of steel in ensuring the growth of the country's economy;
- a phased programme of capacity build-up through an appropriate mix of large multi-million-tonne integrated plants and a number of smaller-capacity integrated/non-integrated plants;
- planning the layout of steel plants to provide for rational and unrestricted growth and diversification to cater to evolving markets;
- conservation of coking coal resources through the blending of inferior coking coals with prime varieties;
- introduction of more intense burden preparation techniques and the adoption of appropriate modern technologies/operating practices to suit indigenous raw materials.

### **5.3 Dreams Take Wings**

As a result of its contribution to the alloy steels plant, DASTUR enjoyed the government's full confidence as a competent, reliable consulting engineering organization. In 1963, the Steel Minister appointed DASTUR as the overall consultants for the Bokaro project, although its role was reduced to the design and engineering of auxiliary units when the government accepted a package of financial and technical

assistance from the Soviet Union. Despite this setback, DASTUR secured several prestigious assignments, many of them pioneering in nature, during the 1960s and 1970s. Notable amongst them were.

- first continuous caster at Mukand Kalwa
- uranium milling project for Indian Rare Earths at Jadugoda
- engineering support for nuclear research at Nuclear Fuels Complex
- first ESR unit for Firth Sterling
- first rotary kiln sponge iron unit at Kothagudem for Andhra Pradesh Industrial Development Corporation
- India's only super alloys plant for MIDHANI

Two significant projects initiated during this period were the modernization/capacity augmentation of Tata Steel's Jamshedpur works, and a large integrated steel plant based on natural gas-based direct reduction and electric arc furnace steelmaking at Misurata in Libya (Fig. 5.3). A unique feature of the Jamshedpur project was the phased implementation, with the surplus revenue generated after implementing each phase being utilized for part-funding the subsequent phases.



**Fig. 5.3** DASTUR engineers at Misurata site

### 5.4 Distinguishing Features of DASTUR

The distinguishing feature of DASTUR has been its capability of providing integrated design and engineering services, from concept to commissioning, for a wide range of projects. With a large multi-disciplinary team of professionals and technical staff, DASTUR provides a unique blend of experience and talent. As client demand grew, the organization outgrew its headquarters in Kolkata, opening branch offices in Madras (Chennai), Bombay (Mumbai), Bangalore (Bengaluru), New Delhi, Bhubaneswar and Hyderabad. An international presence with offices in Düsseldorf, Tokyo, Abu Dhabi and the USA has allowed the organization to also cater to its global clientele.

DASTUR has earned global appreciation for its dedication and teamwork and is internationally recognized as one of the largest independent consulting engineering organizations in the world. DASTUR has advised on the development of India’s steel sector as Retainer Consultant to the Steel Ministry, and as a Member of Steel Ministry Committees has been nominated to prepare a number of White Papers. UNIDO has also invited DASTUR to prepare master plans for various countries. The global recognition of its technical competence has enabled DASTUR to secure international assignments against stiff competition, notable amongst them being SIDOR in Venezuela, ARCO Steel in Egypt, ArcelorMittal Europe, Perwaja in Malaysia, STELCO in Canada, as well as GPH and Basundhara in Bangladesh, Qatar Steel, and Senaat.

The following figure depicts some of the important landmarks in the growth of the DASTUR organization (Fig. 5.4).

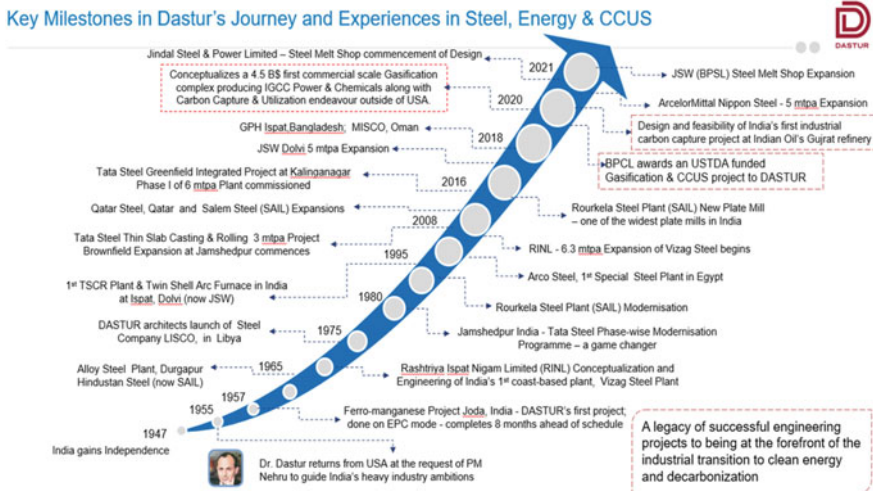


Fig. 5.4 Landmarks in the growth of the DASTUR organization

## 5.5 Professional Integrity and Conviction

As an independent organisation, DASTUR has always provided objective and unbiased advice in the best interests of its client and their project.

At the beginning of the Tata Steel Jamshedpur modernization project, intense deliberations took place between Tata and DASTUR's experts over the choice between the proven BOF steelmaking process favoured by DASTUR and the relatively recent and unproven bottom blown process. Ultimately Mr J. R. D. Tata, the final decision maker, chose the BOF process. Another of DASTUR's recommendations that was accepted was the future provision for bottom purging of inert gas.

Similarly, when the Malaysian government awarded work on the integrated Perwaja DR-EAF plant to a Japanese consortium on a turnkey basis under its "look East" policy, although the NSC-DR process being offered had not been proven in commercial operations, project consultants DASTUR insisted on the inclusion of stringent performance guarantee conditions with consequential liquidated damages in the contract to safeguard the client's interest. Ultimately the DR unit failed to perform as per the guaranteed conditions and the contractor had to suitably compensate the Malaysian client.

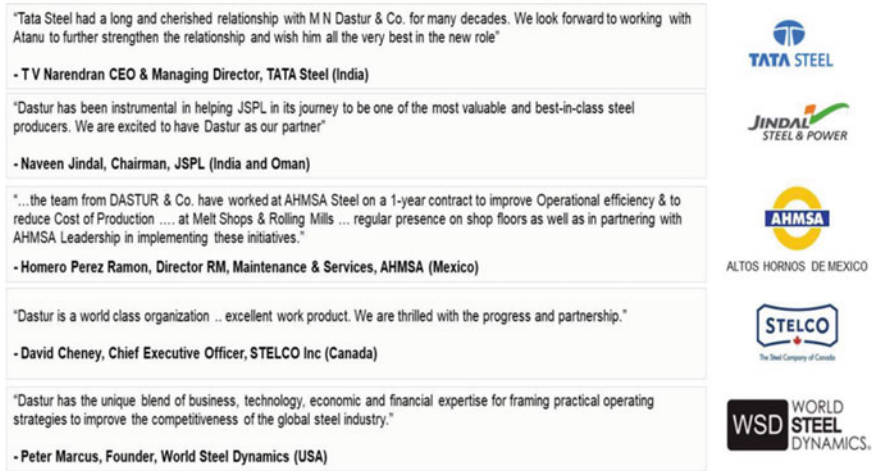
For the first integrated steel plant in Libya, DASTUR had recommended Misurata as the most suitable location for construction of a captive deep-water port to serve the plant, although Col. Gaddafi wanted the plant located at his home town of Sirte. Not to be intimidated, Dr Dastur reiterated to the Libyan authorities that Misurata was the most suitable location, based on a detailed location selection study. Ultimately Col. Gaddafi himself agreed to locate the plant at Misurata.

DASTUR's consistent record of professional excellence, its stringent business ethics, and its pursuit of the sole objective of satisfying customer's needs and expectations have led to numerous accolades from its global clientele. A few such examples are shown below (Fig. 5.5).

## 5.6 Catering to Evolving Market Requirements

In response to the needs of globalization and growth, DASTUR has added a new dimension to its extensive array of services in the form of Dastur Business & Technology Consulting (DBTC). DBTC leverages the wealth of DASTUR's existing in-house capabilities and the combined expertise of its veteran professionals and specialized services to cater to clients globally. DBTC focuses on the development of innovative technology-enabled solutions for clients and operates worldwide, continuously evolving to meet client requirements and market dynamics.

Dastur Innovation Labs (DIL) was founded in Toronto in 2017 and is the applied industrial research wing of DASTUR. DIL carries out cutting-edge technology-driven applied research in the areas of ironmaking and steelmaking, oil and gas,



**Fig. 5.5** Examples of accolades and appreciation from M. N. Dastur's global clientele

chemicals and petrochemicals, gasification and carbon capture utilization and storage (CCUS), and feedstock and fuel supply chains. DIL focuses on the development of industrial solutions that are innovative, sustainable and implementable. The DIL global team consists of multi-disciplinary experts in process modelling and simulation, materials/mechanical/chemical engineering, supply chains and logistics science, sensors and automation, computation, statistics, ML and AI, and works collaboratively with experts from both industry and academia. DIL's industrial solutions are based on the fundamental principles of engineering, multi-scale process modelling, fluid dynamics, mass and energy balance, high-temperature thermochemistry and rate kinetics, coupled with data analytics, process economics and operational expertise.

Dastur Energy was formed in 2020 and designs solutions for the rapidly evolving areas of clean energy systems and carbon abatement. It works with governments, enterprises and institutions on areas related to clean energy systems design, energy policy, energy engineering, and carbon dioxide removal in industrial sectors from petrochemicals, oil and chemicals to iron and steel.

## 5.7 Vision for the Future

As a consulting engineering firm, DASTUR's vision for the future is to help clients solve challenging and compelling engineering problems, be it charting appropriate growth strategies through organic and inorganic routes, increasing operational efficiency and reducing waste, or ensuring the sustainability of their business by managing their environmental impact and carbon footprint. To this end, DASTUR



is increasingly looking at deployment of the latest technologies and know-how in a wide range of service offerings for clients: designing, engineering and assisting in the commissioning of capital projects in the shortest possible timeframes without compromising on quality, safety or environmental considerations; or providing objective opinions to clients to aid in their investment decisions; or providing innovative solutions to manage solid waste and gaseous emissions.

One of DASTUR's key focus areas going forward is clean energy and ensuring the sustainability of industrial systems, and with its expertise, know-how and IP, the organization anticipates being the first port of call for industrial clients in this area. With industry contributing to over 30% of global anthropogenic CO<sub>2</sub> emissions, industrial clients the world over face the key challenge of transitioning to clean energy systems. DASTUR is working with clients across North America, the Middle East and India to design economically viable and flexible industrial-scale clean energy and carbon capture systems enabling clients to transform their clean energy transition and sustainability challenge into a competitive advantage and stay ahead of the regulatory curve.

As a consulting firm, DASTUR's most important and perhaps only assets are its people. DASTUR strives to be a company where employees not only feel fully engaged and intellectually challenged in solving client problems but are also adequately rewarded, recognized and cared for. During the COVID-19 pandemic, DASTUR transformed its operational model from bricks-and-mortar office based to fully functional "work from home" within a matter of days. Working from home is currently the default mode of operations at DASTUR, ensuring employee safety and well-being as well as business continuity.

## **5.8 DASTUR's Association with The Indian Institute of Metals (IIM)**

As a Patron Member, DASTUR has enjoyed a long and enduring association with IIM, and provides support for its various activities. Dr Dastur was intimately involved from the Institute's early formative days. He was its President from 1967 to 1970 and was instrumental in the formation of the Calcutta Chapter in 1966. Mr S. Das Gupta, former Chairman and Managing Director at DASTUR, served as President from 1997 to 1998. In February 1990, DASTUR, in association with the Iron & Steel Division of IIM, organized a two-day national seminar in Kolkata on issues related to the modernization of steel plants, at a time when SAIL was about to embark on a massive program of modernization and expansion of its existing units (Figs. 5.6 and 5.7).



**Fig. 5.6** Dr Dastur with president V. V. Giri during NMD-ATM in Delhi, 1972



**Fig. 5.7** Dr Dastur participating at an IIM function

## **5.9 DASTUR—The Consistent Pursuit of Excellence and Innovation**

DASTUR is a knowledge-based organization continuously striving to solve the engineering problems of clients through the application of experience, expertise, people and IP. Its ongoing success hinges on being relevant to the ever-changing and evolving requirements of clients, and requires continuous learning and innovation. From its inception, DASTUR has continuously evolved and placed the highest importance on the quality and excellence of its work and the independence of its advice. As the world becomes more competitive, DASTUR's quest for excellence and its passion for providing quality service and products to clients, prioritizing their needs and requirements, and being the first port of call for their engineering and technology problems, are the basic tenets to steer the organization going forward. The management of DASTUR is fully committed to this quest for excellence and innovation, both in traditional areas of strength in the metals and mining sectors, and in the new vistas of clean energy and carbon engineering. As a global company but with its roots firmly grounded in India, DASTUR is committed to bringing cutting-edge technology and engineering from around the world and using it to solve India's most pressing industrial problems and challenges.