

HADEN
DEGREES OF EXCELLENCE SINCE 1816

excellence in heating, ventilation and
air-conditioning since 1816



Haden's largest & most complex design and construct project underway, The Australian Tax Office, Precinct C & B, ACT.

In the ACT the Company recently completed work on the new Coles Retail Store in Gungahlin. Work in hand includes Haig/Landmark apartments and, working with Bovis Lend Lease, the two buildings that make-up the Section 84 – Precinct C of the Australian Tax Office.

In Victoria contracts have included the redevelopment of the Crown Casino, Cancer Services Unit at Geelong Hospital for Kane Construction and the Skilled Stadium also in Geelong and Epworth Hospital in Box Hill with work in progress at Mornington Peninsular's Aged Care Centre for Abi Group and clean rooms for Alisco Laundry.

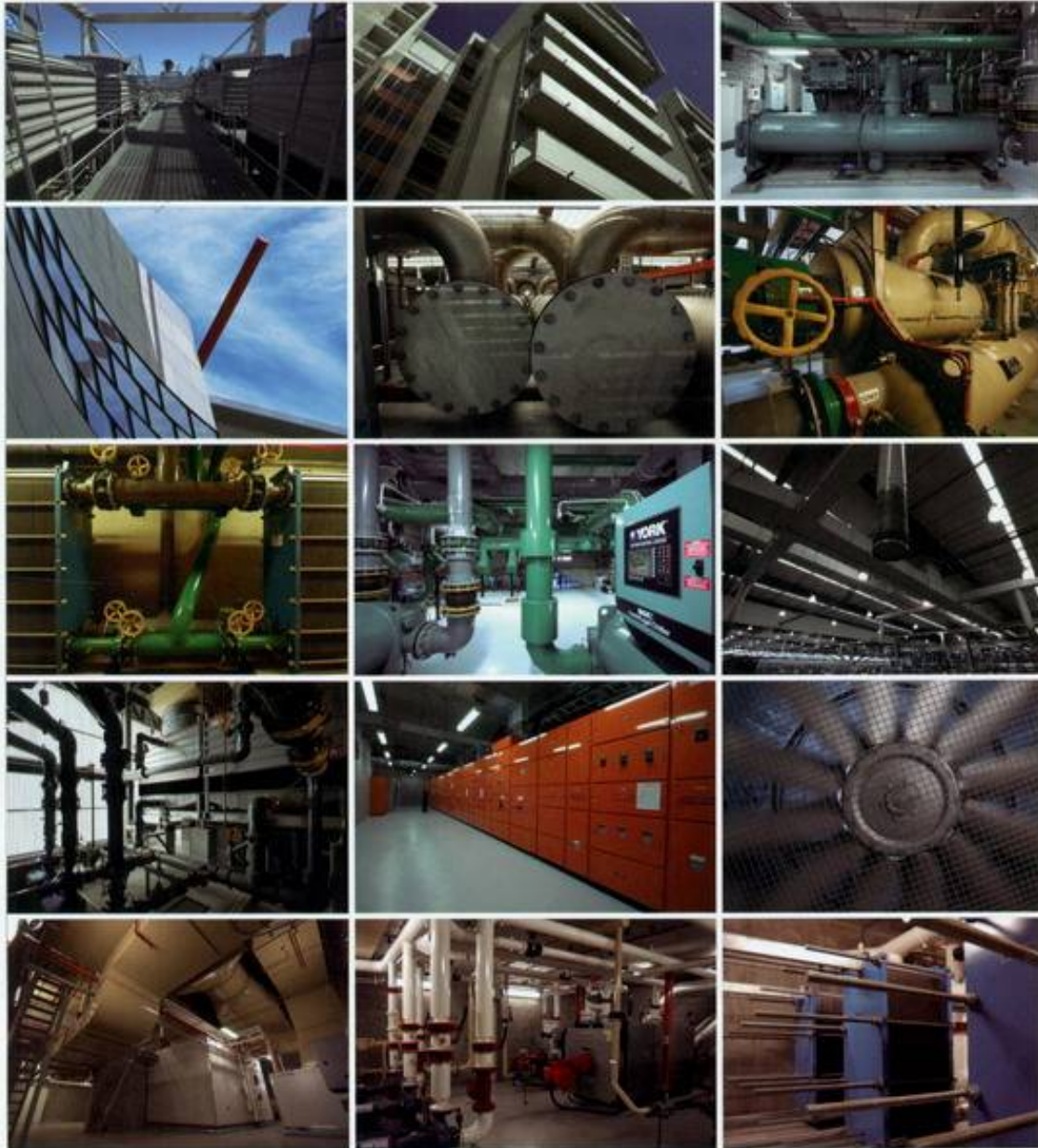
In South Australia, Haden Engineering's contracts have included Adelaide Convention Centre Extension for Baulderstone Hornibrook, installation and relocation of process equipment for Civil & Civic at National Foods and the upgrading of services at Onkaparinga TAFE – Noarlunga Campus for Bassett Consulting Engineers.

Western Australia have completed work at the 3 storey Westfarmers building at Murdoch University, a new periscope assembly and repair assembly facility at HMAS Stirling, the 25 storey Deutsche Bank Group building for Baulderstone Hornibrook, services for the Graham Farmer Freeway Road Tunnel and the St. John of God Hospitals at Murdoch and Subiaco.

Two resorts that have employed Haden Engineering in Queensland are Blue on Blue and One Bright Point on Magnetic Island; the first for Abi Group and the second for Bovis Lend Lease.



Darling Park stage 3 Sydney, 2005



Haden is a truly national HVAC construction and maintenance provider, with more than 30 branches delivering a seamless coverage throughout the nation via our 1000 directly employed staff.

We offer our customers total life cycle expertise for their HVAC needs, from initial installation, ongoing maintenance, refurbishment and replacement.

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www.haden.com.au



HADEN ENGINEERING: IT'S ROLE IN THE INDUSTRY

Since its incorporation, Haden Engineering's policy was to ensure that it had good representation on industry bodies. This ensured that it maintained a high profile before its clients and peers as well as furthering its interests as well as those of the industry as a whole.

This policy was first enacted by Charles Chivers who, at the time of incorporation of Haden Engineering, was active in what was to become known as the Federation of Air Conditioning Contractors of New South Wales. In 1971 he was appointed as President of a new national body, the Air Conditioning Council of Australia.

All state managers were encouraged to actively participate in their local industry associations and to take up positions on their executive committees.

Richard Simcock and Gerard Whittaker were both elected President of their respective state bodies, with Whittaker serving as President of the Air Conditioning Council of Australia from 1985 to 1987 and President of the Building Industry Subcontractors Organisation of Australia from 1989 to 1990. He also represented the air conditioning industry on the National Construction Council of the Metal Trades Industry Association from 1985 to 1990. In 1994, Whittaker was appointed by the Minister for Industrial Relations to the Board of the Commonwealth Government's Construction Industry Development Agency.

During his term as MD of Haden Engineering, Philip Leach was influential in the formation of the Australian branch (later ANZ Region) of the Chartered Institution of Building Services Engineers, in 1987. He was appointed as its first Honorary Secretary and played an active role in the early development of the organisation in Australia.

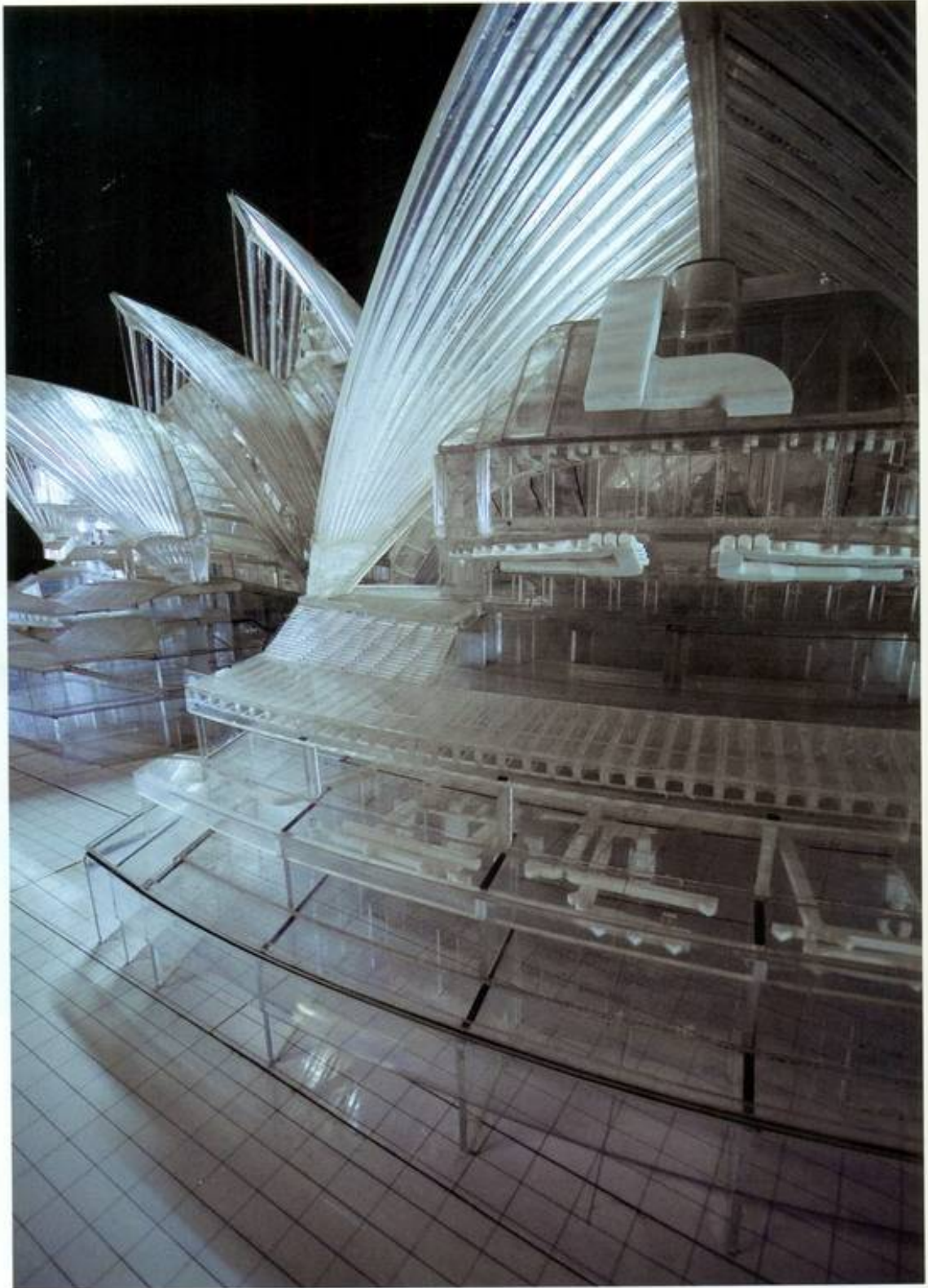
Today, Haden Engineering are active members of the Property Council of Australia, Green Building Council Australia and a Gold Sponsor for 'The Low Energy, High Rise Project' at Sydney University's Warren Centre for Advanced Engineering.

Through Haden Engineering's employment development programme, the company have employees who are 'Green Star Accredited Professionals' and in association with an Engineers Australia Professional Development Agreement also have engineers gaining 'Chartered Professional Engineers' status.



green building council australia
MEMBER





Scale 48:1 perspex HVAC model of the Sydney Opera House

SYDNEY OPERA HOUSE

Much has been, and still is, written about the Sydney Opera House. This chapter, however, is about the building's mechanical services and the role that Haden Engineering played in installing what was, by any standard, a most unusual system to enable the building to operate.

First we must dispel some myths that even persist to this day. Haden Engineering was not 'created' to install the mechanical services at Sydney Opera House nor was it the first contract that the company undertook. Indeed, in the previous chapter we learnt that a number of contracts were undertaken prior to obtaining this order – NSW Art Gallery and the Edgecliffe Centre, for example. That is not to say that the company didn't want the order, on the contrary, they put a team of their best negotiators together to secure this vital contract.

The sales team was led by Charles Chivars who, at Carrier, was the company's Contracting Manager and was now a Director of Haden Engineering. Working closely with Chivars was, of course, the MD, Geoffrey Smith, as well as Gerrard Whittaker, Alan Irwin, Ian Casburn and Tony Caldersmith – the last three having all worked with Chivars at Carrier. The significance that can be claimed for the company was that this was the first contract that was negotiated by Haden Engineering from start to finish.

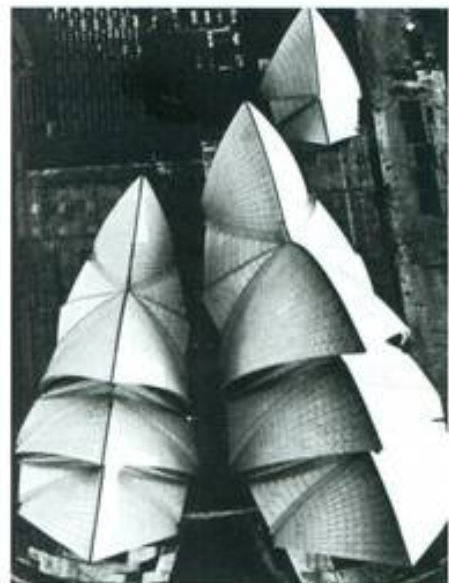
The contract was awarded to Haden Engineering, with Peter Brooks as Project Manager, and work commenced New Years Eve 1969. Haden were in fact awarded two contracts, one for the air conditioning and mechanical ventilation and the other for the hydraulic fire protection. The first contract, valued at \$4.5million, was by far the largest and most complex contract ever undertaken in Australia at that time. To ensure the contract was completed on time, staff were dedicated to this contract and not involved in the many other installations being undertaken at the same time. Haden established local facilities. On-site engineering and drawing office were established, a duct fabrication shop erected on No.3 Wharf on Circular Quay and a pipe work shop was created under the monumental steps.

The sheer scale of the project is quite daunting. By quoting from a leaflet which accompanied a video produced by Haden at the time, 'Song of a City', we can get some idea of the scope of the work to be undertaken:

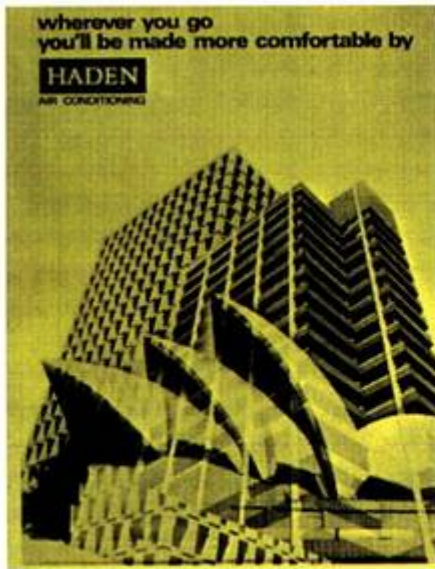
- Eight miles of water piping and over 20 miles of air ducting... pipes and ducting weighing more than 1,000 tons.
- The giant system circulates 60 million cubic feet of filtered, temperature and humidity controlled air through the 900 separate and enclosed areas every hour.
- Over 100 individual fan systems in 27 plant rooms.
- Refrigeration machines generating 300,000 gallons per hour of temperature controlled hot or cold water circulated through the piping system to the various air conditioning plant rooms. The total refrigeration cooling capacity now employed is 1,500 tons.



The large relief duct above the concert hall at Sydney Opera House



Aerial view of Sydney Opera House under construction, Photograph courtesy of Haden Magazine, Winter 1970



Trade advertisement showing the Sydney Opera House as well as the Australia Club & the Prudential building - of course, all air conditioned by Haden Engineering, 1972

- A plant room located on a 'floating' floor 135 feet above sea level (between the ceiling and roof over the Concert Hall) to isolate it completely from the supporting structure and thus avoid noise and vibration.
- Insulated ducting where necessary, with sound-deadening material weighing up to 14.5 pounds per square foot.

The original Architect, Jorn Utzon, had not envisaged all areas to be air conditioned at the same time. Therefore the air conditioning plant was undersized and insufficient space allocated. The Consulting Mechanical Engineers, Steensen & Varming, were tasked by the new Architects, Hall, Todd and Littlemore to redesign the complete system. To aid this task, the subsequent installation and future maintenance, a clear and colour plastic model was commissioned from the resident model maker, Bill Lambert. This quarter inch to the foot model, was modified as the contract progressed. It shows the plant rooms, duct and pipe runs and various electrical services.

There are many unique features incorporated in the Steensen & Varming design due to both the nature and the position of the building. It was inconceivable to use a boiler plant with the accompanying chimneys or cooling towers on such a visibly exposed site. With the availability of the harbour waters, it was decided to use a water to water heat pump system. Water is drawn into the building via a 3ft pipe from Sydney Cove and returned into Farm Cove. The incoming water is screened, filtered and treated before passing to three shell and tube heat exchangers. Fresh water then takes over as the medium for the condensers and evaporators of three centrifugal chiller/heat pump units.

Another possible problem, caused by the position of Sydney Opera House, was noise from the traffic on the Harbour. To overcome this potential and unacceptable situation, the 3.6 x 2.4 m inlet and discharge duct is laminated with three layers of galvanised steel with rubber between each layer and a thick layer of mineral wool on the outside.

The Drama Theatre has the first air cooled radiant ceiling in Australia. The aluminium panels of the ceiling are held at a constant temperature by the air moving through the ducts that form an integral part of the ceiling. The system also has the added advantage of cooling the light fittings, a potential source of heat gain.

Haden Engineering was also awarded the contract for Fire Protection System. Again to quote from the 'Song of a City' - 'The fire protection system incorporates 8,000 sprinkler heads fed from 23 miles of water pipe with 78 flow switches. The contract included 135 hydrant stations, three CO₂ gas systems for the kitchen areas and 21 BCF systems for the organ loft, recording studios, electronic control rooms and stage machinery areas'.



Main air intake, Sydney Opera House

SYDNEY OPERA HOUSE TEAM, PHASE 3

Client: The Ministry of Public Works for the State of New South Wales

Architects: Hall, Todd and Littlemore

Structural Consultants: Ove Arup and Partners

Mechanical Consultants: Steensen and Varming

Electrical Consultants: Julius Poole and Gibson

Acoustic Consultants: Vilhelm Lassen Jordan

Main Contractor: The Horniman Group

THE HADEN TEAM

Project Manager: Peter Brooks

Contract Engineer: David Goddard

Construction Engineers: George Parry (Air Conditioning) and David Napier (Fire Protection)

Commercial Engineer: Ken Sartin

Production Engineer: Alec McGaw

Drawing Office Manager: Barry Hyndman

Perhaps the experience of working on the Sydney Opera House can be best summed-up in the words of Bill Hyde, Haden Site Supervisor "I don't imagine I will ever work in a more controversial, impressive or history making building again and I'm proud to be part of the Haden team. There have been periods of frustration on this job but it has always been interesting. Now the end is in sight I think we are all experiencing a feeling of achievement". (The Haden Reporter May 1973)

Following-on the successful completion of these installations, Haden Engineering was awarded the contract for servicing the mechanical services within the Sydney Opera House. The contract also called for the testing of all equipment not installed by Haden, with Haden acting as head service contractor responsible for the other companies involved. They included; Wormold (electric circuits for BFC systems), Graviner (BCF equipment), Fire Control (CO₂ equipment in the kitchen), Pyrene (hose reels and fire hydrants), Marchant (wiring) and Scruttons (pumping equipment in pump room).

Subsequently, Haden Engineering has been involved in a number of other minor additions to the services as the buildings, and the building's use, have evolved. In 1999 Haden were awarded the contract to supply and install custom built air handling plants for The Studio. The equipment was installed in a new purpose built plant room which had been excavated underneath the Sydney Opera House and below the harbour water level.



Early 1970's service vehicle



Late 1970's service vehicle



Service vehicle, 2008

HADEN ENGINEERING OPERATING DIVISIONS HADEN SERVICE DIVISION

At the time of incorporation, Haden Engineering was limited to the design and installation of air conditioning and mechanical services with the warranty and maintenance work being passed back to Carrier. This was not an entirely satisfactory arrangement for Haden as clients preferred this work to be the responsibility of the installing contractor. Eventually, Haden Engineering set-up service divisions in each state in 1970. This task fell to Gerard Whittaker in his role as Co-ordination and Development Manager, prior to his transfer to Melbourne in 1971 to take up the role of State Manager, Victoria.

NSW Service Division commenced operations in October 1970 with one man in the office and two service vehicles. A dedicated 120 foot high mast was raised at the NSW Rosebery premises in 1973 with a range of 30 miles to keep contact with its seven service vehicles. By that time Haden employed 35 operatives in three states.

In an article headed 'On The Waterfront', the house journal for August 1975 gives details of a service contract of an unusual nature – that of servicing the air conditioning of two super tankers, the Amanda Miller and the Robert Miller. Often this work entailed working around the clock to finish within the 22 hours it takes to turn the ships around. The equipment to service on each vessel include two 5H120 Toyo Carrier compressors for the air conditioning, two 5F40 compressors for the refrigeration and two Toyo Carrier 50K packaged units in the engine control rooms.

Haden Service vehicles had been liveried with the company's familiar red Haden logo and black sign writing. In 1977 Adelaide took delivery of new service vehicles incorporating a new 'futuristic' design with sweeping green and gold curves and a silver Haden emblem – thus distinguishing itself, not only from the contracting divisions, but also from the UK. It was not until the following year that NSW and Victoria followed suit. Denis Garnsey, NSW Service Manager commented at the time "The new design gives the company's vehicles a feeling of cool, efficient, speedy service".

It was Haden Service that first took the company to Tasmania and truly gave Haden a 'National' coverage. In 1999 Haden took over the Hobart service operations of A.E.Smith and subsequently opened offices in Launceston and Burnie. In 2006 another acquisition saw the service operation of OP Industries in Albury join the Haden family.

To-day, Haden Service operates from 31 offices covering all states and territories. Current maintenance contracts include Commonwealth Bank, Bankers Trust at Chifley Tower, Mirvac's Optus Tower and Hyde Park Plaza, Jones Lang LaSalle's Australia Square, HSBC Centre and Australia Post's Strathfield Letter Facility.



Haden Service van, circa 1980's



Haden Service equipment label, circa 1980's

HADEN ENGINEERING OPERATING DIVISIONS YORK AIR CONDITIONING AND HEATING

York was incorporated in Australia in 1937 as York Air Conditioning & Refrigeration (A'sia) Pty Limited. The company was founded by G.B.S. Falkiner, a graduate engineer, and his accountant A.T Baldwin, after Falkiner had become dissatisfied with the operation and servicing of the AC at his sheep stud in Haddon Rig, near Warren, NSW. Baldwin was sent to the USA to find a distributorship and came back with an offer from the York Ice Machinery Company of Pennsylvania who took a 20% interest in the new company. The first contract undertaken, from its Spring Street, Sydney premises, was for the supply and installation of plant at the David Jones, Market Street store. The Daily Telegraph recorded that it was 'the first in Australia which provided outside, automatic temperature control and the first plant of over 200 tons capacity using the safety refrigerant Freon 12'. Initially, product was sourced from York's plants in the US & UK. Manufacturing in Australia began in the late 1940's, and even included, for around 10 years, the manufacture of compressors. This coincided with a move to new premises in Waterloo, NSW.

In 1964 Federated Industries Limited purchased the Falkiner family's 80% share and the name changed to Yorkaire Pty Limited. Following the acquisition of York in the USA by Borg Warner, the remaining 20% was acquired by FIL in 1974. In 1966, Borg Warner purchased back first 50% and then in 1968 the remaining balance of FIL's shareholding. As the company expanded they moved first to Artarmon and then to Gladesville.

Geographically the company was also expanding by acquisition – Hawkins & Wilcox, Victoria in 1962 and Australian Sheet Metal, Queensland in 1964. However, in 1972, York decided to withdraw from contracting, to concentrate on manufacturing, supply and servicing, and began to dispose of its contracting activities. Regional distribution centres were then opened in South Australia (1973), Canberra with the acquisition of Canberra Air Conditioning (1974), Queensland (1980) and Western Australia (1981).

In 1997, York formed York Facilities Maintenance Division. Originally based in Broken Hill, the division's first contact was for the district's schools at a time when NSW Public Works were outsourcing their maintenance operations. Contracts for 570 Shell and 340 Mobil service stations followed. Broken Hill remains today as a branch of Haden's NSW Construction Division.

In January 2002, Borg Warner decided to withdraw York from direct involvement in the Australian market and appointed Tyco as its 'Sole Distributor' in Australia. Along with all other HVAC companies in the Group, York Air was integrated into Haden Engineering in 2002.

In November 2006 the Australian distribution of York Products & Parts was sold to Johnson Controls.



York presentation folder, circa 1980



Sole Authorised Distributor - Australia

HADEN ENGINEERING OPERATING DIVISIONS

HADEN DRYSYS PTY LTD

In 1921 Carrier Engineering installed an air heating system for the paint finishing line at Vauxhall Motors in Luton, England. The application of air heating to this process cut the drying time from 36 hours to 8 hours and also improve the finish of what was then a hand applied varnish. Additionally, this could be carried-out overnight. The true significance of this development can better be appreciated when we realise that cars were hand brush painted and, over the oil-based primers, came coat after coat of coach varnish. Each application needed to dry between coats and during this period cars could pick-up airborne dust. This difficult process could take up to two weeks for each car! Thus the significance of this development had quite an impact on the motor industry.

In 1923, Alan Fowler of Carrier, UK visited the USA to study painting operations on conveyerised production lines. He returned with a 'know-how' agreement with Drying Systems inc of Chicago whose trade mark was 'Dry-Sys' - thus Carrier Drysys was born. Some years later, and in order to avoid conflict with the 'Carrier' trade mark, it was decided that car paint finishing work around the world would use the name Drysys and to this end Drysys equipment Limited was registered in 1948.

The first Australian contract was for BMC in Sydney, handled from London, between 1956 and 1958. In the early 60's an agreement with Mechanical Handling Limited was reached to develop the business in Australia and New Zealand. Then in 1970, Haden Young Limited acquired Carrier Engineering in the UK.

In 1972, Drysys Equipment (Australia) Pty Ltd. was formed in Australia, based in Melbourne. Haden's MD, Doug Grosvenor and Company Secretary, Ian Thomsen were appointed to the board of Drysys. The company operated as a separate entity until 1978 when it was combined with Haden Engineering Pty. Ltd. and the operations moved to Haden's Moorabbin, Victoria premises. This move coincided with a transfer of reporting for the Haden/Drysys business from Haden International (former MD Geoffrey Smith was head of Haden International at that time) to Carrier Drysys Division.

During the year Drysys obtained substantial orders from International Harvester, the Nissan Co. and General Motors - Holden. Later in 1978, conveyor system manufacturing was separated from the metal finishing operations and Drysys Conveyor Division was formed to engineer and market Drysys King Conveyors.

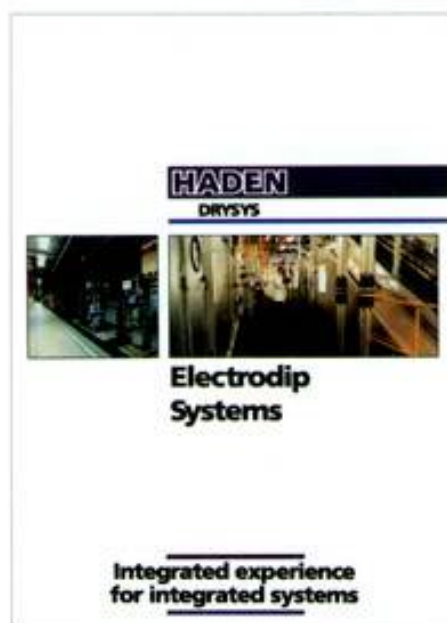
Although Drysys is very much associated with the motor industry other contracts undertaken included a spray room, metal finishing spray booth and filtered supply air system for Telecom in Sydney and a conveyerised drying oven for retread tyres.

By the mid 1980's the paint work on all Australian built cars would have been dried in a Haden Drysys 'Hydrospin' spray booth. In 1988 the company was involved in one of its largest contracts, the \$13.5million project at Ford's Broadmeadows plant in Victoria. In fact there were two assignments running concurrently. The first was for the design, building and commissioning of a two level 240 vehicle body storage conveyor systems and equipment for a satellite paint facility. The second was for a 50metre long primer spray booth, 120 metre long primer bake oven and a similar electro coat bake oven.

The same year, Haden were involved in a \$3.5million project at General Motors' plant in New Zealand for a paint shop upgrade and creating a new repair facility.

HADEN

drysys



Haden Drysys brochure

EVOLUTION/ACQUISITIONS

HADEN ENGINEERING

- 1969 Haden Engineering Pty.Ltd formed. 60%Haden and 40%Carrier – HO in Woolloomooloo
- 1969 G.N.Haden & Sons Ltd (UK) merged with Troughton Young Ltd to become Haden Young Ltd
- 1970 Haden Young purchased Carrier Engineering (UK), becoming, in 1971, Haden Carrier Limited
- 1970 Haden Service Division formed
- 1972 Haden Fire Protection Division formed
- 1972 Drysys Equipment (Australia) Pty Ltd registered
- 1974 Haden Dust Control Division formed
- 1977 Carrier shareholding purchased
- 1978 Drysys Equipment business amalgamated into Haden Engineering as Haden Drysys
- 1981 Group name changed to Haden Limited as a consequence of which Drysys Equipment was renamed Haden Drysys
- 1982 Acquisition of Carrier's contracting business in Queensland & Northern Territory
- 1983 Acquisition of Aeron Mechanical Services, Sydney from ANI
- 1984 Acquisition of Kelvin Industries, Perth from Email
- 1985 Acquisition of Globe Air Conditioning, Sydney
- 1986 A management buyout resulted in name change to Haden Building Services and the Group was then were sold to BICC Group and the Drysys business became Haden MacLellan Holdings plc. Haden Engineering then reported to Balfour Beatty Australia (a BICC subsidiary)
- 1987 Acquisition of Ron Crew Air Conditioning Services, Cairns
- 1989 Acquisition of Hills Refrigeration & Air Conditioning, Mission Beach
- 1990 Haden Engineering Pty Ltd sold to Haden MacLellan Holdings
- 1992 Haden FM started
- 1999 Haden Engineering Pty Ltd purchased by Tyco International

TYCO PURCHASED THE FOLLOWING MECHANICAL SERVICES COMPANIES

- 1996 Environ
- 1997 Complete Engineering, NSW
- 1998 Combined Services, NSW
- 1998 Barlin Scott, VIC
- 1998 Subcool, WA
- 1998 Byrnes AC Systems, NSW
- 1998 Laing Refrigeration, WA
- 1998 Jackson & Jackson, QLD
- 1998 Designair, WA
- 1999 Golden Refrigeration, QLD
- 1999 Haden Engineering
- 2000 All Gas, VIC
- 2000 Raymond Terrace AC, NSW
- 2001 Sandown AC, VIC
- 2001 Smith Brothers Plumbing, SA
- 2002 York Air Conditioning & Heating, Australia
- 2002 Haden became Tyco's Mechanical Services company incorporating all above companies

NORFOLK GROUP HOLDINGS

- 2004 Haden Engineering acquired by Norfolk Group Holdings
- 2005 Ductclean Australia Pty Ltd
- 2006 Albury Service Operations of OPI