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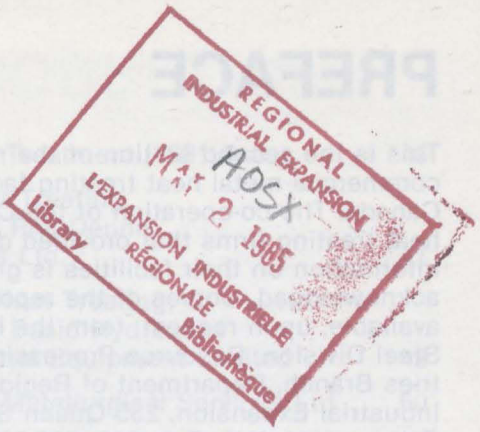
COMMERCIAL METAL HEAT TREATING FACILITIES IN CANADA

Government of Canada
Regional Industrial Expansion

Gouvernement du Canada
Expansion industrielle régionale

Canada



COMMERCIAL METAL HEAT TREATING FACILITIES IN CANADA

Iron and Steel Division
Resource Processing Industries Branch
Department of Regional Industrial Expansion
Ottawa, Ontario, K1A 0H5

PREFACE

This is the second edition of the report on commercial metal heat treating facilities in Canada. The co-operation of the Canadian heat treating firms that provided detailed information on their facilities is gratefully acknowledged. Copies of the report are available, upon request, from the Iron and Steel Division, Resource Processing Industries Branch, Department of Regional Industrial Expansion, 235 Queen St., Ottawa, K1A 0H5; Tel: (613) 992-0025, Telex: 053-4124.

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INTRODUCTION

The need to keep up with new technological and engineering developments is probably nowhere as pronounced as in the metal processing field. In the shaping and treating of metals into useful products and components, heat treatment plays a vital role by modifying structural and physical characteristics of the metals and creating products unobtainable in the past. While new alloying combinations are being devised and familiar metals and alloys are being improved, all metals and alloys today must meet increasingly difficult specifications and service conditions. At the same time, traditional products, skills and facilities are rapidly becoming obsolete. The impact of change has been marked in the Canadian heat treating industry where the demand for sophisticated services has led to improved and greatly expanded facilities.

In this booklet, Canadian companies and their heat treating facilities are fully detailed, indicating the growing stature of the industry. The list points out the broad geographic base of the industry and the increasing number of firms offering their expertise to meet the exacting requirements of expanding Canadian and American industries. This publication describes mainly those Canadian heat treating facilities that are fully or partially available for commercial metal heat treating. It does not generally include captive heat treating facilities fully integrated and utilized for processing specific proprietary lines of products in many industrial corporations. This new, up-to-date edition will assist prospective customers in locating suitable suppliers of heat treating services and serve as an instant reference for users of heat treating services.

INDUSTRY PERSPECTIVE

Commercial heat treaters have traditionally established facilities near their primary customers — machinery, equipment, and automotive parts manufacturers — and close to a wide range of metal forming and fabrication industries. Accordingly, the commercial heat treating industry is concentrated heavily in Ontario and Quebec, the industrial heartland of Canada. As industrial growth has shifted geographically towards western Canada in recent years, market demand for metal heat treatment has encouraged the establishment of new facilities in the western provinces. By its nature, heat treatment is a supportive service to the primary metals manufacturing industries; and the growth and development of heat treaters is tied directly to the growth in these leading industries.

By keeping abreast of technological changes, Canadian heat treaters are able to satisfy most of the requirements of the domestic market. For reasons of geography, heat treatment requirements in western and eastern Canada which cannot be satisfied locally are frequently sourced in the U.S. rather than in central Canada, where a wider range of services is available. This north-south flow of materials is expected to continue in these markets until they reach sufficient size to justify investment in the required additional facilities.

SUMMARY OF FACILITIES BY PROVINCE

ONTARIO

ALTYPE HEAT TREAT INDUSTRIES LIMITED

ATLANTIC HEAT TREATING

AUSTEMPER INC.

BAYSON HEAT TREATING INC.

B.C.L. MAGNETICS LTD.

BUDD HEAT TREATING LIMITED

B & W HEAT TREATING (1975) LTD.

CANADIAN INDUCTION PROCESSING INC.

CAN-ENG MANUFACTURING LTD.

CHT STEEL COMPANY

COMMONWEALTH HEAT TREATING LIMITED

COOPERHEAT OF CANADA LTD.

EUREKA TOOL STEEL WELDING PRODUCTS, LTD.

EX-CELL-O CORPORATION OF CANADA, LTD.

HAWKER SIDDELEY CANADA INC., ORENDA DIVISION

HORTON CBI LTD.

H & S HEAT TREATING

INDUSTRIAL HEAT TREATING

IPSENLAB OF CANADA LTD.

JOY MANUFACTURING COMPANY (CANADA) LTD.

MAGNETIC METALS LIMITED

MATERIAL PROCESSING

METRO HEAT TREATING CO. LTD.

O&K ORENSTEIN & KOPPEL CANADA LIMITED

ONTARIO FLAME HARDENING CO. LTD.

OPUS FERRUM LIMITED

PROCOR LIMITED

SPAR AEROSPACE LTD.

STANTON PIPES LIMITED

SUMMERS MANUFACTURING LTD.

THERMO-BOND FLAME HARDENING LIMITED

TIW INDUSTRIES LTD.

TC INDUSTRIES OF CANADA LTD.

UNIVERSAL ENGINEERING AND TOOL WORKS

VAC-AERO INTERNATIONAL INC.

WESTERN STRESS RELIEVING SERVICES INC.

QUEBEC

CRESTWELD MANUFACTURING

CRESSWELL POMEROY LIMITED

DAVIE SHIPBUILDING LIMITED

DOMINION BRIDGE — SULZER INC.

HAWKER SIDDELEY CANADA INC., CANADIAN STEEL FOUNDRIES DIVISION

H.P. METAL TREATMENT (1981) INC.

LES TREMPEURS D'ACIER DU QUÉBEC INC.

MARINE INDUSTRIES LTD.

METCOR INC.

NATIONAL TOOL HARDENING INC.

SOMETAL

UNIVERSAL PIPE LINE ENTERPRISES LTD.

VAC-AERO INTERNATIONAL INC., QUEBEC DIVISION

WALL COLMONOY (CANADA) INC.

ALBERTA

ALBERTA HEAT TREATING

CANAPED PIPEWORK & MECHANICAL CONTRACTORS INC.

CANWELD STRESS RELIEVING CO. LTD.

CESSCO

DOMINION BRIDGE — ALBERTA

HANSON HEAT TREATMENT CENTRE LTD.

INTEGRATED METALLURGICAL SERVICES LTD.

STEEL-FLO

WESTERN ROCK BIT COMPANY LIMITED

MANITOBA
WINNIPEG HEAT TREATING

BRITISH COLUMBIA
DAVISON HEAT TREAT INC.

EBCO INDUSTRIES LTD.

LISTER BOLT AND CHAIN LTD.

MAINLAND MANUFACTURING

MCALLISTER SPRING LTD.

MCLEOD & NORQUAY LTD.

VMD INDUSTRIES LTD.

NEWFOUNDLAND
COOPERHEAT ATLANTIC LIMITED

NOVA SCOTIA
HAWKER SIDDELEY CANADA INC.,
TRENTON WORKS DIVISION

ALBERTA HEAT TREATING
Division of George & Nicks Machining Works Ltd.
#7-4312 Ogden Road S.E.
Calgary, Alberta
T2G 4V3

Tel: (403) 262-2969
Telex: 03-827573

Inquiries: A.L. Doerr, Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Age hardening	Carbon steels	Bars, angles and other rolled shapes	Degreasing	30 000
Annealing	Alloy steels	Pipe and tubing		30 000
Hardening	Stainless steels	Tools and dies		30 000
Normalizing	Tool and die steels	Machine and equipment components		30 000
Stress relieving	Copper alloys	Castings, forgings		20 000
Carburizing	Precipitation hardening grades			20 000
Martempering				20 000
Austempering				
Nitriding (liquid)				

PHYSICAL TESTING AND QUALITY CONTROL: hardness testing, Wilson Rockwell Testers

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							Age hardening
3	Procedyne Fluidized Bed	Electric	1 850°F	22" x 36"	30 000	N_2	Hardening
							Tempering
2	Park	Gas	1 750°F	20" x 30"	40 000		Annealing
1	Park	Electric	1 000°F	24" x 36"	40 000		Normalizing
1	Park	Electric	1 200°F	16" x 20"	20 000		Stress relieving
1	Lindberg	Electric	1 250°F	24" x 46"	40 000		Carburizing
							Marquenching
							Nitriding
							Tempering

ALTYPE HEAT TREAT INDUSTRIES LIMITED
3246 Wharton Way
Mississauga, Ontario
L4X 2C1

Tel: (416) 625-1212

Inquiries: George Kodama, General Manager
Alex Ironside, Metallurgist

HEAT TREATING FACILITIES

Description	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
		PRODUCTION EQUIPMENT			
Surface combustion Super Alcase Line	1 750°F	30" x 30" x 48"	400 000	Endothermic enriched with lira feed back	Carburizing Carbonitriding Carbon restoration Clean hardening Atmosphere anneal
Carbonitrider Wash Draw 2 400 CHH Endo Generator Automatic lira feed back carbon concentration control					
Sunbeam carbonitrider Wash and drawline	1 750°F	30" x 30" x 12"	96 000	Endothermic enriched with lira feed back	Same as above
Surface combustion Shaker furnace line	1 650°F	3" x 24" x 120"	300 000	Endothermic enriched	Hardening of fasteners, nails springs, stampings, screw machine parts
WESTINGHOUSE Pit furnace line carburizing pit furnace	1 750°F	30" dia. x 48" d	80 000	Endothermic enriched	Long shafts, miscellaneous parts, carburizing and/or hardening
Homo pit draw furnace	1 400°F	38" dia. x 50" d	480 000	Neutral atmosphere	Clean rempering moulds tools and production parts
Surface combustion pit draw furnace	1 200°F	40" dia. x 50" d	120 000	Air atmosphere	Solution treats and age aluminum
Surface combustion pit draw furnace	1 200°F	40" dia. x 50" d	120 000	Air atmosphere	Temper hardened steel parts, nail, & fasteners — SMP parts
Normalizing and stress-relieving furnace line No. 1 Furnace	1 700°F	48" x 48" x 80"	80 000	Air atmosphere	Normalizing, annealing stress-relieving
No. 2 Furnace	1 700°F	24" x 36" x 54"	50 000	Air atmosphere	Same as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
TOOL HEAT TREATING EQUIPMENT							
Upton neutral salt bath line Hi-heat bath		2 500°F	13" x 13" x 30"	96 000	Rectified neutral salt		High speed, air hardening and shock-steel tools
Pre-heat bath		1 650°F	17" dia. x 30" d	96 000	Rectified neutral salt		Stainless steel parts
Marquench bath		950-1 300°F	24" dia. x 26" d	96 000	Neutral salt		
Tempering bath		950-1 300°F	24" dia. x 26" d	96 000	Neutral salt		
Oil hardening salt bath line Hi-heat bath		1 650°F	24" dia. x 30" d	72 500	Neutral salt		Oil hard, tool steel, shock tool steel, 4140, 4340 etc.
Marquench bath		275-800°F	22" x 36" x 26"	120 000	Neutral salt		Oil hard, tool steel, shock tool steel, 4140, 4340, etc.
Temper bath		275-800°F	18" dia. x 24" d	36 000	Neutral salt		Same as above
Air temper furnace		300-1 400°F	18" x 18" x 36"	36 000	Air atmosphere		
Air temper furnace			18" dia. x 32" d				
Air temper furnace			12" x 12" x 24"				
Carburizing salt bath line No. 1. Bath		1 700°F	24" dia. x 26" d	40 000	Carburizing salt		Salt carburizing Long shafts Misc. parts — washers fasteners
No. 2. Bath		1 700°F	24" dia. x 26" d	40 000	Carburizing salt		Same as above
No. 3. Bath		1 700°F	24" dia. x 26" d	40 000	Carburizing salt		Same as above
VACUUM HEAT TREATING EQUIPMENT							
IPSEN vacuum furnace		2 000°F	32" x 50" x 22"	80 000			H 13 moulds — tools D-2 tools etc. A-2 tools etc. Stainless steel — 300 Series — 400 Series Special precipitation hardening — stainless steel
IPSEN vacuum furnace		2 000°F	22" x 48" x 12"	48 000			Same as above
MISCELLANEOUS EQUIPMENT							
100 Ton straightening press							
LABORATORY FACILITIES AVAILABLE							
5 Rockwell hardness testing machines 3 Portable Rockwell hardness testing machines 1 Knoop hardness testing machines							
METALLURGICAL ENGINEER — on staff with 42 years technical background in research, automotive, aircraft industries							

ATLANTIC HEAT TREATING
1 Golden Gate Court
Unit 3
Scarborough, Ontario
M1P 3A4

Tel: (416) 291-7935

Inquiries: A.J. Leach, Partner

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Plates	Sandblasting	Plates 2 000
Stress relieving	Alloy steels	Bars, angles and other rolled shapes	Pickling	Tools and dies 4 000
Normalizing	Stainless steels	Tools and dies		Machine and equipment components 4 000
Quenching and tempering	Tool and die steels	Machine and equipment components		Fasteners 4 000
Carburizing	High speed steels	Fasteners		Castings, forgings 4 000
Nitriding	Aluminum alloys	Wire products		
Cyaniding	Copper alloys	Castings, forgings		

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Bath furnaces							
1	General Electric		1 850°F	22" x 10" x 7"	2 000		Pack hard
1	Hayes			24" x 7" x 13"	2 500		Pack hard
1	Walker		2 400°F	30" x 12" x 15"	4 000		Tempering and stress relieving
2	Leeds and Northrup		1 400°F	4" x 21"	16 000		Tempering
3	Salt Draw	Gas					
Salt baths							
1	Salt Draw	Electric					Quenching and tempering
Others							
2	Wayne forge cyanides			18" x 14"	8 000		Hardening tensile strength and case hardening
2	Oil quench tanks						Vapor carburizer
1	Water quench tank						
1	Leeds and Northrup			18" x 12"			Rockwell tester RC-RB
1	Albert Gnehm						Vickers-Brinell

AUSTEMPER INC.
30 Baywood Road
Unit 4
Rexdale, Ontario
M9V 3Z2

Tel: (416) 745-4040

Inquiries: Frank Miklas, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Austempering	Carbon steels	Stampings		Varies according to shape
Hardening	Alloy steels	Stampings		150 000
Carbonitriding	Alloy steels	Stampings		85 000
Tempering	Alloy steels	Stampings		250 000
Hardening	Tool steels	Dies and punches		15 000

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: the company is qualified and certified by de Havilland Aircraft of Canada, Limited for aircraft springs

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Austempering	Park Thermal	Gas	1 650°F	6" x .080"		Endothermic	
Continuous belt furnace	Surface Combustion	Gas	1 850°F	6" x 1"		Endothermic	
Continuous temper	Surface Combustion	Gas	1 200°F	Various		Oxidizing	
Batch furnace	Sunbeam	Gas	1 750°F	Various		Endothermic	
Austemper batch	Park Thermal	Electric	1 650°F	Maximum 24" long		Neutral salt	
Quench batch	Park Thermal	Electric	1 000°F	Various		Thermoquench	
Submerged salt bath	Park Upton	Electric	1 950°F	18" x 22" x 32"		Salt	

BAYSON HEAT TREATING INC.
120 Falcon Street
London, Ontario
N5W 4Z1

Tel: (519) 453-7240

Inquiries: J.E. Bates, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Plates	Sandblasting	Poundage varies
Annealing	Alloy steels	Bars and angles	Glass beading	According to size and shape
Normalizing	Stainless steels	Rolled shapes		
Quenching and tempering	Tool and die steels	Tools and dies		
Carburizing	High speed steels	Machine equipment components		
		Fasteners		

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch							
1	General Electric	Electric	2 300°F	20" x 18" x 42"	10 000	Endothermic	Hardening and carburizing
1	General Electric	Electric	2 500°F	8" x 12" x 30"	2 500	Endothermic	Hardening
1	Leeds and Northrup	Electric	1 800°F	20" x 26"	10 000	Endothermic	Hardening
1	Lindberg	Electric	2 000°F	24" x 20" x 52"	10 000		Stress relieving and carburizing
1	General Electric	Electric	1 200°F	24" x 18" x 60"	7 500		Tempering and stress relieving
1	Park	Electric	1 350°F	16" x 16" x 30"	5 000		Tempering
1	Walker	Electric	1 250°F	10" x 16" x 20"			Tempering
1	Lindberg	Electric	1 000°F	20" x 30"			Tempering
Salt bath							
1	Park	Electric					Quenching and tempering

B.C.L. MAGNETICS LTD.
5040 Benson Dr.
Burlington, Ontario
L7L 5N6

Tel: (416) 335-2530

Inquiries: Ed Muzak, Plant Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Stampings		900 000
Stress relieving	Alloy steels	Fasteners		
Normalizing		Wire products		
		Plates		

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Roller Hearth furnace							
1	H.E.A.T.	Electric	1 650°F	30" x 36" x 11"	1 250 lbs./hr.	Exothermic	Annealing and stress relieving
Batch furnace							
1	Lindberg	Electric	2 150°F	18" dia. x 36" l.	1 000 lbs./day	Hydrogen	Annealing alloys

BUDD HEAT TREATING LIMITED
3096 Devon Drive
Windsor, Ontario
N8X 4L2

Tel: (519) 966-0270

Inquiries: V.J. Decker, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Tools and dies	Shotblasting-barrel and table	Tools and dies 230 000
Bright anneal	Alloy steels	Machine and equipment components	Sandblasting	Machine and equipment components — varies
Stress relieving	Stainless steels	Fasteners	Anti-rust and oil coating	Fasteners 750 000
Normalizing	Tool and die steels	Wire products	Vibratory finishing	Wire products 750 000
Quenching and tempering	High speed steels	Castings, forgings		Castings, forgings 900 000
Carburizing	Aluminum alloys			
Cyaniding				
Brazing				
Flame hardening				
Induction hardening				

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above

NOTE: pick up and delivery in Ontario and Michigan, USA. For special equipment not shown, please enquire

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
Carbonitrider	Ipsen	Gas	1 900°F	36" x 24" x 18"	172 000	Endothermic	Ferrous metal processing
Carbonitrider	Ipsen	Gas	1 900°F	36" x 24" x 18"	172 000	Endothermic	Carburizing
Carbonitrider	Ipsen	Gas	1 900°F	36" x 24" x 18"	172 000	Endothermic	Carbonitriding
Carbonitrider	Ipsen	Gas	1 900°F	84" x 24" x 18"	400 000	Endothermic	Neutral hardening
Carbonitrider	Ipsen	Gas	1 900°F	84" x 24" x 18"	400 000	Endothermic	Carburizing
Carburizer	Lindberg	Gas	1 700°F	144" x 24" x 20"	400 000	Endothermic	Carburizing and neutral hardening
Continous furnaces							
Copper brazer	Custom Elec.	Electric	2 100°F	20" x 10"	200 000	Exothermic	Copper braze
Copper brazer	General Electric	Electric	2 100°F	20" x 10"	200 000	Exothermic	Copper braze
Bright anneal	General Electric	Electric	1 900°F	20" x 10"	200 000	Exothermic	Annealing fasteners
Continuous belt-harden, wash and temper				36" x 60'	500 000	Endothermic	Fasteners, neutral hardening

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Continuous belt-harden, wash and temper				36" x 60'	600 000	Endothermic	Neutral and carbonitride hardening
Wash and temper	CAN-ENG	Gas	1 400°F		300 000	None	Tempering and stress relieving
Salt batch							
Cyanide salt	Surface Comb.	Gas	1 700°F		150 000		Cyanide hardening and carburizing
Induction systems							
450 kC x 30 kW	Welduction						Selective hardening
450 kC x 30 kW	Welduction						Brazing and annealing

COMMENTS: oxygen probe automatic carbon control equipment on all furnaces, batch and continuous

B & W HEAT TREATING (1975) LTD.
262 Manitou Drive
P.O. Box 430
Kitchener, Ontario
N2G 4A1

Tel: Office: (519) 894-2780
Plant: (519) 893-6941

Inquiries: J.A. Beingessner, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Pipe and tubing	Shotblasting	Pipe/tubing 600 000
Bright annealing	Alloy steels	Tools and dies	Glass bead	Tools and dies 40 000
Stress relieving	Stainless steels	Machine and equipment components	Liquimate	Machine and equipment components 1 000 000
Normalizing	Tool and die steels	Wire products	Oiling	Wire products 400 000
Quenching and tempering	High speed steels	Wire (coils)	Tumble (wet and dry barrel)	Wire (coils) 40 000 180 000
Carburizing, nitriding	Aluminum alloys	Castings, forgings		Castings, forgings, 800 000
Brazing	Copper alloys	Stampings, extrusions, powdered metal		Stampings 450/500 000
Induction hardening	Titanium alloys	Bar stock		Aluminum 1 100 000
Aluminum H.T.	Powdered metal	Steel fabrication and weldments		
Triniding				
Carbonitriding				
Tumble blasting				
Wet tumble				
Straightening, cleaning, etc.				

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: contact Clare J. Beingessner, Ph.D., P. Eng.

COMMENTS: the company has approvals from the Department of National Defence, most aircraft companies and four automotive companies. Field engineers, certified professional engineers and staff consultant are available as well as pick up and delivery services in major Ontario markets. The company also works for automotive, farm machinery, aircraft, defence, mining, appliances, heavy equipment and other industries

PLANT LOCATION: B & W Heat Treating
60 Steckle Place
Kitchener, Ontario

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
5 Controlled atmospheres	Surface	Gas	1 800°F	30" x 30" x 48"	1 200 000	Nitrogen/ methanol	Trinide, carburizing and carbonitriding castings, stampings, machined components Neutral atmosphere hardening, and annealing Auxiliary equipment to surface units above
1 Car bottom carrier unit	B & W	Gas	2 100°F	10'w x 8'h x 23'l	1 600 000		Stress relieving, annealing normalizing and pack carburizing and hardening of large items

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
6 Tempering box type units	B &W	Gas	1 400°F	400" max. × 48" × 42"	2 600 000 (total)		Tempering steel heat treating aluminum
Salt baths							
2 Neutral/ 2 chloride	B & W	Electric	1 650°F	22"w × 49"l × 50"d 22"w × 49"l × 62"d	1 500 000		Automotive and agricultural implement components
6 Marquench/ austempering	B & W	Gas	1 000°F	60"w × 48"l × 62"d			Neutral hardening, austempering and martempering tools, dies aircraft components, atomic energy parts
1 Highspeed	B & W	Electric	2 400°F	12" × 15" × 40"d	40 000		
1 Preheat	B & W	Electric	1 650°F	18" × 22" × 40"d			
3 Quench	B & W	Electric	1 300°F	18"w × 22"l × 40"d			
4 Tempering	B & W	Gas	1 300°F	16" dia. × 40"d			
Induction systems							
2-25 kW 450Kc/s	Radyne	Electric		Unlimited to length	1 600 000		All classes of induction hardening — rolls, bars, gears, surface and through hardening up to 35" lengths. Continuous hardening and annealing
1-30 kW 450Kc/s	Radyne	Electric					
1-40 kW 450Kc/s	Radyne	Electric					
1-50 kW 450Kc/s	Radyne	Electric					
1-50 kW 100Kc/s	Radyne	Electric					
1-100kW 450Kc/s	Radyne	Electric					
1-125kW 3c/s	Radyne	Electric					
1-300kW 3c/s	Bogue	Electric					
1-400kW 3 000c/s	I.P.E.	Electric	1 900°F	-weight limit/part 10 000#			
1-600kW 2 650c/s	I.P.E.	Electric	1 900°F	-diameter limit 48"			
Aluminum furnaces							
1 Solution	B & W	Gas	1 050°F	14'l × 6'w × 4¾'h	1 100 000		Solution treating and precipitation of aluminum bumpers, bumper accessories plus a variety of other items
2 Solution	B & W	Gas	1 050°F	14'l × 6.8'w × 5.2'h			
3 Precipitators	B & W	Gas	600°F	12½'l × 9¾w × 8'h			
1 Precipitator	B & W	Gas	600°F	26.2'l × 12½'w × 8½'h			
Nitriding #1	Custom	Gas	1 100°F	24"w × 18"h × 96"l	N.A.		Dissociated ammonia nitriding
#2	Custom	Gas	1 100°F	36"w × 30"h × 240"l	N.A.		
Straightening press	Astron			200 ton capability open throat-16" press depth	N.A.		Straightening of shaft, bars, round, flats, etc.
1-Shot blast	Wheelabrator			24" × 36" (10 cu. ft. nominal)	250 000		Cleaning forgings, stampings, etc.
2-Wet tumble	American			28 cu. ft. per unit	N.A.		Burnishings, deburring, cleaning
1-Glass bead blasting	Blastech Inc.			16 cu. ft.	N.A.		Cleaning tools, dies, etc.

Inspection equipment includes: — Standard Rockwell, superficial Rockwells, microhardness testing, Charpy Impacter
— Magnaflux/Zyglow, metallurgical microscopes and full labs
— Brinells, sceleroscopes, etc.
— Professional engineering consultants

CANADIAN INDUCTION PROCESSING INC.
1153 Pioneer Road
Unit 6
Burlington, Ontario
L7M 1K5

Tel: (416) 336-3700

Inquiries: E. Madjanovich

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Induction hardening	Carbon steels	Pipe, bar, tubing, centered parts forgings, castings, stampings	Tempering	Forgings, shafting — 254 000
Brazing	Alloy steels		Magnaflux	Small shafts 40 000
Selective annealing	Stainless steels			Small components — 2 million pieces

PHYSICAL TESTING AND QUALITY CONTROL: Rockwell hardness testing, magnetic particle suspection

ENGINEERING SERVICES: as above

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Induction systems		Electric					
2-450 kC	G.E.	25 kW	Melting				Small parts
1-450 kC	TOCCO	10 kW	Melting				Small parts
1-450 kC	RADYNE	6 kW	Melting				Small parts
1- 10 kC	TOCCO (with scanner)	100 kW	Melting				Shafts and forgings
1- 10 kC	TOCCO	75 kW	Melting				Shafts and forgings

CAN-ENG MANUFACTURING LTD.
Metal Treating Division
74 River Road, West
Kitchener, Ontario
N2B 2E6

Tel: (519) 744-6301

Inquiries: K.W. Kaye, General Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Tools and dies	Pickling, liquid honing tumbling	Tools and dies 20 000 - 100 000
Bright annealing	Alloy steels	Machine and equipment components		Fasteners 400 000
Stress relieving	Stainless steels	Fasteners		Wire products 400 000
Normalizing	Tool and die steels	Wire products		Machine and equipment components 1 300 000
Quenching and tempering	High speed steels	Castings, forgings		Castings, forgings 1 300 000
Carburizing	Aluminum alloys			Aluminum 80 000
Carbonitriding	Copper alloys			
Nitriding				
Ferritic nitro carburizing				
Cyaniding				
Brazing				
Induction hardening				

PHYSICAL TESTING AND QUALITY CONTROL: quality control systems approved for automotive critical parts and defence work

ENGINEERING SERVICES: services of qualified metallurgist available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
3 Casemaster	CAN-ENG	Gas	1 850°F	36" x 48" x 27" h	900 000	Endothermic	Carburize, clean harden, carbonitride
1 Fludized bed	CAN-ENG	Gas	1 850°F	24" dia. x 30"	208 000	Nitrogen	Clean hardening, carburizing, ferritic nitrocarburizing
3 Air draw	CAN-ENG	Gas	1 250°F	36" dia. x 48" d	1 000 000		Stress relief, tempering
Continuous furnaces							
2 Shuffle hearth	CAN-ENG	Gas	1 700°F	Parts up to 1 lb.	700 lbs./hr.	Endothermic	Carbonitride, hardening, carburizing
1 Conveyor bed	CAN-ENG	Gas	1 250°F		350 lbs./hr.		Tempering
Salt baths							
1 Neutral	Ajax	Electric	1 650°F	18" x 18" x 45"			
2 Neutral preheat	Custom Built	Gas	1 650°F	16" ID x 45" d			Tool steel hardening
1 Hi-speed	Lindberg-Upton	Electric	2 400°F	13½" x 13½" x 44" d			

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
2 Neutral draw	Custom Built	Gas	1 400°F	16" ID x 45" d			Neutral hardening
2 Salt draw	Custom Built	Electric	1 000°F	24" x 48" x 30" d			
1 Salt draw	Custom Built	Electric	1 000°F	24" x 36" x 30" d			
1 Carburizing salt	Custom Built	Gas	1 700°F	16" dia. x 45" d			Cyanide
1 Nitriding salt	Custom Built	Gas	975°F	16" dia. x 24" d			Nitriding
Others							
1 Horizontal box		Gas	1 850°F	12" x 30" x 8" d			Normalizing, annealing
1 Induction	Cycle-Dyne	Electric	50 kW				Hardening, annealing

CANAPED PIPEWORK & MECHANICAL CONTRACTORS INC.
7127 Fairmount Drive, S.E.
Calgary, Alberta
T2H 0X6

Tel: (403) 255-0111
Telex: 03-822615

Inquiries: P.J. Wood, President
W.D. Walton, Manager of Marketing and Business Development

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steel alloys	Pipe	Prefabrication	Fabrication: 80 000 lbs.
Hot bending	Stainless steels	Tubing	Gritblasting	Heat treat: as required
Normalizing	Aluminum alloys	Pressure vessels	Painting	
Annealing	Monels, Inconel	Structural shapes	Field installation	
	Hastelloys	Plates		
	Clad steels			

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above. Also facilities available in South Africa, India and the United Kingdom

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Stress oven		Natural gas		14'w x 10'h x 48'l			Stress relieving
1 Bending oven		Natural gas	As req'd by spec.	30" dia. pipe to 2" wall			Bending tubular material

CANWELD STRESS RELIEVING CO. LTD.
5824-82 Avenue
Edmonton, Alberta
T6B 0E7

Tel: (403) 466-1121
Telex: Geo. C. Ried 037-2458 — Canweld Stress Relieving

Inquiries: Ernie Higson
President & General Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Piping and tubing	Contracting service with fully mobile control units — temporary furnaces to be erected on site — pre-heating and post weld heat treating site services — refractory curing in situ	Not specified
Stress relieving	Alloy steels	Structural		
Normalizing	Stainless steels	Castings, forgings		
	Aluminum alloys	Vessels and complex fabrications		
	Copper alloys			

COMMENTS: in addition to services offered, we are manufacturers for retail, rental or lease purchase

Pre- and post-weld heat treatment control equipment, temperature monitoring equipment, electrical resistance heating elements and associated materials. Electric and fuel fired furnaces

PLANT LOCATION: as above

CESSCO, FABRICATION AND ENGINEERING DIVISION
7310-99 Street
Edmonton, Alberta
T6C 4E9

Tel: (403) 433-9531

Inquiries: James A. Howes, Marketing Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Plates, pipe	Machining	
Normalizing	Alloy steels	Rolled shapes	Shearing	
	Stainless steels	Pressure vessels	Cutting	
		Equipment components	Forming	
		Forgings, castings	Mechanical testing	
			Non-destructive testing	

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1	Canefco	Gas	2 000°F	16'7" x 18' x 47'l (both ends will open)			Stress relieving Normalizing

CHT STEEL COMPANY
P.O. Box 447
300 Newkirk Road, North
Richmond Hill, Ontario
L4C 4Y8

Tel: (416) 884-5000
Telex: 06-986626

Inquiries: J.P. Clair, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Plates	Shotblasting	Plates 10 000 000
Stress relieving	Alloy steels	Sheets	Prime painting	Sheets 1 440 000
Normalizing	Stainless steels	Bars, angles and other rolled shapes	Flame cutting to shape	Rolled shapes on application
Quenching and tempering (water)	Titanium alloys	Other material shapes on application		

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: production facilities for normalizing and quenching and tempering plates. Capable of ultrasonic inspection

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Continuous furnaces							
3	CHT	Gas	2 000°F	96″ x 50′	3 320 000 each		Plates — quench and temper
3	CHT	Gas	2 000°F	150″ x 60′	3 840 000 each		Plates — quench and temper and normalize
1	Drever	Gas	2 000°F	60″ x 24′	1 440 000		Plates — quench and temper

COMMONWEALTH HEAT TREATING LIMITED
82 Signet Drive
Weston, Ontario
M9L 1T2

Tel: (416) 745-7277

Inquiries: Vince Giamblanco, Administrator

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Misc. shapes		Poundage varies according to size and shape
Gas carburizing	Carbon steels	Fasteners, nails, casters		
Carbonitriding	Stainless steels	Stampings, bar, angles and other rolled shapes		
Normalizing	Alloy steels	Springs, washers, shafts		
Stress relieving	Alloy steels	Tools & dies		
Hardening	Tool & die steels	Machine and equipment components		
Tempering	Tool & die steels			
Quenching & tempering	Carbon steels			
Black oxiding				

LABORATORY FACILITIES AVAILABLE
2-Wilson Rockwell hardness testing machines

PHYSICAL TESTING AND QUALITY CONTROL: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Continuous furnaces							
2 — Shakerhearth with wash and draw	Ipsen	Gas	1 800°F	1" dia. x 5" l	800 lbs./hr.	Endothermic	Harden, temper carbonitriding, carburizing
1 — With carbon sensor probe							
1 — 500 Shaker-hearth	Surface-Combustion	Gas	1 750°F 0-1 250°F		500 lbs./hr.	Endothermic	Harden, temper carbonitriding, carburizing
1 — 500 Draw furnace							
4 — T4/600	Ipsen	Gas	1 900°F	22" x 32" x 16"	800 lbs./hr.	Endothermic	Hardening, annealing, carbonitriding, carburize
1 — Draw furnace			0-1 250°F				
1 — With carbon sensor probe							
3 — 2 400 Endo generators		Gas				Endothermic	Stress relieve, normalizing
2 — Alloy dew point							

COOPERHEAT ATLANTIC LIMITED
Torbay Road
P.O. Box 9545
St. John's, Newfoundland
A1A 2Y4

Tel: (709) 753-8455

Inquiries: R.J. Lambe, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Rope heaters		
Normalizing	Alloy steels	Finger elements		
Wire annealing	Nickel alloys	Ceramic tapes		
Malleabilization of castings	Copper alloys	Ceramic pads		
Electrical heat tracing	Aluminum alloys	Channel elements		
Pipe/tank heating	Chromium	Braided heaters		
Quenching/tempering	Molybdenum	Expandable braided heaters		
Refractory drying	Vanadium	Preheat wraparounds		
		Flexible insulated preheaters		
		Braided heater wraps		
		Braided heater wraparounds		
		Infra-red gas burners		
		'Gasmatic' system		

COOPERHEAT OF CANADA LTD.
2746 Slough Street
Malton, Ontario
L4T 1G3

Tel: (416) 677-7546
Telex: 06-968785

Inquiries: Brian Loesgen — Marketing Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Shafts		1 000 lb/load
Normalizing	Alloy steels			
	Stainless steels			
Mobile — preheat — postheat — stress relieving — normalizing — solution annealing	Carbon steels	Vessels	Brinnell hardness testing	
	Alloy steels	Heavy fabrication		
	Stainless steels	Castings and forgings		
		Piping and tubes		

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 — Batch furnace	Cooperheat	Electric	1 900°F	12' x 8½" O.D.	1 000 lbs./load		Vertical stress relief and normalizing
Mobile units	Cooperheat	Electric resistance or high velocity gas burners	2 900°F				On site preheat and stress relief Refractory bakeouts

QUALITY ASSURANCE: this company can meet the requirements of all levels of the ASME and ANSI codes

COMMENTS: the company offers full on-site heat treatment services, including engineering and erection of temporary or permanent stress relieving furnaces.
The company also markets a full range of heat treatment equipment and accessory items, available on both a purchase or rental basis

CRESSWELL POMEROY LIMITED
553 Leon Harmel Street
Granby, Québec
J2G 3G5

Tel: (514) 378-4611

Inquiries: George R. Ingram, Sales Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Aluminum alloys	Cold roll formed shapes and aluminum alloy extrusions	Cold roll forming	Cold rolled shapes 100 000
Quenching and tempering (water)			Machining	Aluminum alloy forgings and extrusions 100 000
Solution heat treat			Degreasing	
			Stretch straightening after heat treating	

PHYSICAL TESTING AND QUALITY CONTROL: available

COMMENTS: furnace suitable for approval for aircraft quality. Inspection, certification and test facilities are available. All auxiliary equipment required for certification of furnace, including potentiometers, standard thermocouples etc., is also available

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Batch furnace	Custom built	Electric	932°F	25 ft.	100 000	None, other than recirculating type. Completely sealed during heat cycle	Annealing, solution heat treating and aging of aluminum alloy aircraft parts and structural sections

CRESTWELD MANUFACTURING
Division of Corbec Corporation
23, RTE 132
Delson, Québec
J0L 1G0

Tel: (514) 632-9908

Inquiries: Mr. J.R. Hall, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Limited annealing	Carbon steels	Plates	Shotblast rooms	Weldments, castings, bars and plates 200 000
Stress relieving	Limited alloy steels	Bars, angles and other rolled shapes		
Flame hardening	Limited stainless steels	Pipes and tubing		
	Annealing copper alloys	Machine equipment components		
		Wire (in coils)		
		Castings, forgings		
		Shrinking parts together		

PHYSICAL TESTING AND QUALITY CONTROL: limited

ENGINEERING SERVICES: available

COMMENTS: approved by the Québec Department of Labour for stress-relieving pressure vessels

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Batch furnace	Own make	Propane	1 350°F	6' x 6' x 23' l	200 000		Stress relieving

DAVIE SHIPBUILDING LIMITED
22 George D. Davie, P.O. Box 130
Lauzon, Québec
G6V 6N7

Tel: (418) 837-5841
Telex: 051-2254

Inquiries: René Hallé, Assistant Manager-Marketing

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Plates	Grit and sandblasting	
	Alloy steels	Weldment pressure vessels	Painting, flame cutting, machining	

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Batch furnace	Blomm Eng.	Oil	1 650°F	16' w x 16' h x 70' l	125 tons/load		Stress relieving

DAVISON HEAT TREAT INC.
694 Derwent Way
Annacis Island
New Westminster, British Columbia
V3M 5P8

Tel: (604) 525-0241

Inquiries: John R. Davison, L.I.M., Plant Metallurgist,
or: Chuck R. Davison, President/General Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Tooling and dies	Ferric oxide dustblasting	
Spherodize — annealing	Alloy steels	Machinery components	Shotblasting	
Stress relieving	Stainless steels	Bolts, studs, nuts	Glass bead blasting	
Normalizing	Tools and dies	Springs, clips, locks	Dry tumbling	
Quenching and tempering	High speed steels	Gears	Wet tumbling	
Carburizing	Aluminum alloys	Sprockets	Oiling	
Carbonitriding	Copper alloys	Castings, forgings	Cryogenic cabinet and box	
Brazing	Titanium alloys	Stampings	Pick-up and delivery in Greater Vancouver area	
Induction hardening	Sintering alloys and powdered metals	Fabrications and weldments	3 400 gallon circulating oil	
Aluminum H.T.	Defined area carburizing a speciality		Quench with H.P. pump	
Cryogenic treatments			Agitation — tanks to 10' deep	
Shaker hardening and carburizing				

PHYSICAL TESTING AND QUALITY CONTROL: all furnaces have charting facilities maintained against traceable standards. Records kept of charts and hardening tests

ENGINEERING SERVICES: metallurgical consulting offered, generally free to customers. Doing controlled quality work for aircraft, atomic energy and other high technology areas as well as bulk work to broader parameters

PLANT LOCATION: Annacis Industrial Estate, New Westminster, British Columbia

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
4 Pit type	Leeds and Northrup	Electric	1 900°F	to 34" circle x 5' d	to 250 000	Endothermic	Carburizing Carbonitriding Austenitizing
2 Box furnaces	G.E.	Electric	1 900°F	36" w x 24" h x 6' d	to 200 000	None	Austenitizing Stress relieving Tempering
3 Pit type	Leeds & Northrup	Electric	1 450°F	28" circle x 32" d	200 000	None	Tempering
1 Pit type	Hilsbury	Electric	1 450°F	30" circle x 48" d	150 000	None	Stress relieving
2 Box	Blue M	Electric	1 450°F	24" x 20" x 16" d	15 000	None	Tempering

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Box	Pereco	Electric	2 750°F	12" x 12" x 20" d	2 400	None	Tool steels, dies
1 Box	Heavi-Duty	Electric	2 000°F	12" x 8" h x 24' d	2 400		
1 Salt bath	G.E.	Electric	1 200°F	20" w x 32" l x 16" d	2 000		Mar and aus tempering, interrupt quench, tempering
1 — 25KVA 450KHz	Lindberg	Induction unit					Induction hardening pins and bars
1 — 5KVA 450KHz	Lindberg	Induction unit			10 000		
1 — 2KVA 450KHz	Lepel	Induction unit					

DOMINION BRIDGE — ALBERTA
A Unit of AMCA International Limited
803-24th Avenue S.E.
Calgary, Alberta
T2P 2M9

Tel: (403) 264-7900
Telex: 03-821623

Inquiries: John Mitchell, Sales Manager, Plate Products
Croft Ramsey, Sales Representative, Plate Products

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Plates	Sandblasting	100 tons per load
Normalizing	Alloy steels	Rolled shapes	Wheelabrating	
	Stainless steels	Pipes, tubing		
		Machine and equipment components		
		Castings, forgings, pressure vessels		

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1	Canefco	Gas	1 800°F	18' x 18' x 50' l	100 tons/load 3 200 000 lbs./month	Excess air burners	Stress relieving, normalize
1	Canefco	Gas	1 800°F	18" x 18" x 3'	500 lbs./load	Excess air burners	Stress relieving, normalize

DOMINION BRIDGE — SULZER INC.
P.O. Box 555
Montréal, Québec
H8S 4E7

Tel: (514) 634-3551
Telex: 05-821583

Inquiries: Marcel Malo, Sales Supervisor

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Weldments	Sandblasting	
Stress relieving	Alloy steels	Pressure vessels	Painting	
Normalizing	Stainless steels	Castings and forgings	Machining and drilling	
Quenching and tempering (oil and water)	Tool and die steels	Piping and tubing	Magnaflux, X-ray and ultrasonic inspection	
		Tools and dies		

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: 555 Notre Dame St.
Lachine, Québec, Canada
H8S 2B1

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1	Own	Oil	1 750°F	18' x 18' x 85'	6 000 000		Stress relieving and normalizing
1			2 200°F	7'6" x 6'0" x 18'0"	500 000		Stress relieving and normalizing
							Quenching and tempering
1			2 200°F	7'3" x 5'0" x 12'3"	300 000		Stress relieving and normalizing

EBCO INDUSTRIES LTD.
7851 Alderbridge Way
Richmond, British Columbia
V6X 2A4

Tel: (604) 278-5578

Inquiries: Ray Halvorsen, Production Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Steel weldments	Sandblasting	300 tons max. per load
	Alloy steels	Pipes, tubing		

PHYSICAL TESTING AND QUALITY CONTROL: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1	EBCO	Gas	1 500°F	20' x 16' x 50'	150 ton	Excess air burners	Stress relieving

EUREKA TOOL STEEL WELDING PRODUCTS, LTD.
745 Woodward Avenue
Hamilton, Ontario
L8H 5P5

Tel: (416) 545-3006

Inquiries: John G. Stewart, V-P & General Manager
Floyd Hollenbeck, Sales Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Dies and die blocks	Surface grinding	
Stress relieving	Alloy steels	Machine equipment parts	Welding of heat treatable steels	
Normalizing	Aluminum	Castings, forgings	Cast iron welding	
	Tool and die steels	Weldments	Aluminum welding	
	High speed		Speciality welding wires	
	Cast iron			

HARDNESS TESTING: available Rockwell & Brinnell

PLANT LOCATION: above for all

HEAT TREATING FACILITIES

Number and Description	Type	Method of Heating	Maximum Temperature	Dimensions	Weight Capacity (lbs.)	Type of Controlled Atmosphere	Main Use
Furnaces							
1	Frontload	Gas recirculating	1 700°F	64" l x 30 w x 32 h	3 000		S/R
1	Frontload	Gas recirculating	1 700°F	84" l x 57 w x 52 h	12 000		
1	Car bottom	Gas recirculating	1 300°F	15' l x 5' h x 5'.6" w	45 000		
1	Car bottom	Gas recirculating	1 200°F	51" x 33 w x 28 h	12 000		

EX-CELL-O CORPORATION OF CANADA, LTD.
Colonial Tool Operations
Windsor, Ontario
N8Y 4R9

Tel: (519) 253-2461

Inquiries: R. Ducharme, Heat Treat Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Tool steel hardening	Alloy steels	Moulds	Glass blasting	Volume varies according to size
Gas carburizing	Stainless steels	Dies	Sandblasting	
Liquid nitriding	Aluminum alloys	Locomotive parts	Shot peen blasting	
Gas ammonia nitriding	High speed steels	Machine parts	Salt bluing	
Atmosphere drawing	Copper alloys	Fixtures	Magnafluxing	
Stress relieving	Maraging steels	Fabrications	Hardness testing	
Normalizing	Austenitic irons	Broaches		
Straightening	Low allow steels	Hobs		
Annealing	Copper	Cutters		
Carbon restoration		Roto flo racks		
Steam treating				
Martempering				
Austempering				
Tools steel welding				

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnace	Surface Combustion	Gas	1 900°F	48" x 30" x 30" h	400 000	Endo	Tool steel carburizing and hardening
Batch carburizing	Holecroft	Gas	1 900°F	36" x 96" x 16" h	250 000	Endo	Carburize only, air hardening, annealing
1	Lindberg	Gas	1 900°F	30" x 48" x 22" h	300 000	Endo	Tool steel hardening, carburizing
1	Lindberg	Gas	1 900°F	30" x 48" x 18" h	200 000	Endo	Tool hardening, carburizing, hardening
1	Standard Fuel	Gas	1 300°F	30" x 48" x 30" h	350 000	Oxidizing	Tempering, aging
1	Leeds and Northrup	Electric	1 300°F	22" dia. x 48" d	100 000	Nitrogen, steam, ammonia	Nitriding, atmosphere drawing, steam treating
1	Lindberg	Gas	1 300°F	28" x 84" x 16" h	250 000	Oxidizing	Tempering
1	Lindberg	Gas	1 300°F	28" x 84" x 19" h	150 000	Oxidizing	Tempering
1	Lindberg	Gas	1 400°F	42" x 85" x 27" h	400 000	Oxidizing	Stress relieving, tempering
1	Ipsen	Electric	1 300°F	24" x 83" x 17" h	125 000	Steam	Steam treating, tempering
Salt baths							
1	Upton	Electric	1 250°F	18" x 38" x 20" d	180 000	Neutral	Tempering

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1	Upton	Electric	1 700°F	18" x 18" x 90" d	100 000	Neutral	Tool steel hardening
1	Upton	Electric	2 300°F	13½" x 13½" x 96" d	400 000	Neutral	High speed air hardening
1	Upton	Electric	1 200°F	22½" x 22½" x 90" d	400 000	Neutral	Quenching, tempering
1	Standard Fuel	Electric	1 200°F	13" x 91" x 15" d	80 000	Neutral	Bluing, tempering
1	Leeds and Northrup	Gas	1 200°F	18" dia. x 90" d	65 000	Cyanide	Liquid nitriding
1	Heidman	Gas	1 400°F	18" dia. x 80" d	60 000	Neutral	Tempering, austempering, marquenching

HANSON HEAT TREATMENT CENTRE LTD.
7450-18 Street
Edmonton, Alberta
T6P 1N8

Tel: (403) 464-7916
Telex: 03-825506

Inquiries: Ed Goodwin, Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Pipe and tubing	Shot/glass blasting	Pipe and tubing 100 000
Stress relieving	Alloy steels	Tools and dies	Oiling	Tool and dies 10 000
Normalizing	Stainless steels	Machine components	Mechanical testing	Machine components 30 000
Quenching and tempering	Tool and die steels	Castings, forgings	Nondestructive testing	Castings, forgings 100 000
Carburizing	High speed steels		Hardness testing	
Brazing	Aluminum alloys		Metallurgical laboratory	
Torch hardening	Copper alloys			
High temp heat treating				
Nitriding				

PHYSICAL TESTING AND QUALITY CONTROL: complete metallurgical, mechanical testing, metallographic and chemical laboratory available at plant site

ENGINEERING SERVICES: fifteen metallurgical engineers on 24-hour call with complete laboratory back-up services

COMMENTS: current engineering offices located in Vancouver, Calgary, Prince George and Edmonton, with branch inspection offices in other locations. Services provided to oil and gas, aircraft, farm implements and manufacturing sectors

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Pit line	2 Leeds North	Gas	1 850°F	42" x 108"	130 000	Endothermic	Carburizing or quench and temper of large production parts Stress relieving
Batch furnace	Surface Combustion Alcase	Gas	1 800°F	18" x 24" x 36"	75 000	Endothermic	Carburizing or production hardening
Tempering furnace	Lindberg	Gas	1 200°F	18" x 24" x 36"	50 000		
Nitriding furnace	FCE Leeds Northrup	Gas	1 000°F	37" x 53"	10 000	Gas process	
High speed steel line	Pacific Scientific	Electric Globar	2 550°F	18" x 28" x 26"	10 000	Endothermic	High speed, high temperature heat treating
Salt baths							
5	Ajax-Hultgen	Electric	400-1 850°F	18" x 36" x 28"	100 000	Neutral and cyanide	Tempering, hardening, austempering, martempering, carburizing

HAWKER SIDDELEY CANADA INC.
La Fonderie CSF/Canadian Steel Foundries Division
5227 rue Notre Dame Est
Montréal, Québec
H1N 3K5

Tel: (514) 255-4041
Telex: 05-828734

Inquiries: J.P. Leclerc, Industrial Sales Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Machine and equipment components	Shotblasting	Machine and equipment components 6 000 000
Stress relieving	Alloy steels	Castings	Straightening with a 400-ton press	Castings, 7 200 000
Normalizing	Stainless steels		Rough machining	
Quenching and tempering			X-ray	
			Gamma-ray	
			U.T.	
			Dye penetrant	

PHYSICAL TESTING AND QUALITY CONTROL: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1 Annealer	All own make	Natural gas	2 000°F	24'10" x 13' x 24'4"	13 320 000, depending on mix		Heat treatment of steel castings and fabrications
1 Annealer				20'1" x 12'1" x 35'			
1 Annealer				18' x 15'2" x 20'3"			
4 Annealers				9' x 8'3" x 21'			
1 Annealer				9' x 6'6" x 35'			
3 Annealers				8'6" x 14' x 15'			
1 Annealer				16' x 14'10" x 21'3"			
1 Annealer				9'3" x 8'6" x 19'10"			
1 Annealer				8'6" x 5'4" x 10'10"			
1 Annealer				8'5" x 4'2" x 21'10"			
2 Annealers				4'8" x 4' x 6'9"			

HAWKER SIDDELEY CANADA INC., ORENDA DIVISION
P.O. Box 60001
Toronto A.M.F.
Toronto, Ontario
L5P 1B3

Tel: (416) 677-3250 Ext. 456
Telex: 06-968620 or 06-968727

Inquiries: C.F. Varney, Sales & Contracts Manager, Product Support

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Chrome-molybdenum alloy steels	Sheet metal cylinders	Sandblasting	Not specified
Bright annealing (vacuum)	410 Stainless steels	Truncated cones	Shotblasting	
Stress relieving	Iron, nickel and cobalt base super-alloys	Forged discs	Pickling	
Normalizing		Forged and extruded rings	Grinding	
Quenching and tempering (oil)		Turbine and compressor blades (cast and forged)	Polishing	
Brazing			Machining	
Solution treatment and aging				

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: aero and industrial gas turbines approved by Department of National Defence and Pratt and Whitney

PLANT LOCATION: Hawker Siddeley Canada Ltd., Orenda Division
3160 Derry Road East
Malton, Ontario

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
M/C #2 — Pit	Lindberg	Electric	1 300°F	54" h x 18" w	Not specified		Stress relief, temper, age hardening
M/C #19 — Pit	Lindberg	Electric	1 300°F	26" h x 13" w			Stress relief, temper, age hardening
M/C #25 — Pit	Lindberg	Electric	1 700°F	26" h x 13" w		Exothermic gas	Hardening, tempering, and age hardening
M/C #31 — Horizontal	Ipsen	Electric	2 200°F	44' l x 30" w x 24" h		Vacuum (10^{-4} Torr)	Hardening, solution treatment tempering, high-temperature brazing
M/C #64 — Vertical	Abar	Electric	2 200°F	54" dia. x 48" h		Vacuum (10^{-4} Torr)	Hardening, solution treatment tempering, high-temperature brazing
"	Vac-Aero	"	"	"			
"	Vac-Aero	"	"	"			
M/C #15 — Box	CAN-ENG	Electric	2 200°F	45" l x 45" w x 30" h		Endothermic gas	Hardening, solution treatment

HAWKER SIDDELEY CANADA INC., TRENTON WORKS DIVISION
P.O. Box 130
Trenton, Nova Scotia
B0K 1X0

Tel: (902) 752-1541

Inquiries: G. MacGillivray, Sales Manager, Atlantic Region

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Castings, forgings	Machining	Castings, forgings 4 200 000
Stress relieving	Alloy steels	Welded steel tanks	Shotblasting	Welded steel tank cars 1 000 000
Normalizing				
Quenching and tempering				

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
3 Car type	H.L. Hall Corp.	Electric	1 950°F	5' w x 5' h x 17' l	360 000		Heat treatment of forgings
3 Car type	H.L. Hall Corp.	Electric	1 950°F	5' w x 5' h x 27' l	720 000		Heat treatment of forgings
1 Car type	Canadian General Electric	Electric	1 850°F	5' w x 5' h x 27' l	80 000		Heat treatment of forgings
1 Car type	Salem Eng. Co.	Oil	1 950°F	8' w x 6' h x 62' l	320 000		Heat treatment of forgings
1 Car type	Amco Furnace Co.	Oil	1 400°F	15' w x 15' h x 135' l	780 000		Stress relieving of welded steel tank cars
Continuous furnaces							
1-3 Line furnace	Surface Combustion	Oil	1 800°F	11'6" w x 6' h x 12'10" 11'6" w x 6' h x 12'10" 11'6" w x 6' h x 22'11"	1 600 000		Heat treatment of railway axles

HORTON CBI, LIMITED
P.O. Box 601
Fort Erie, Ontario
L2A 5N4

Tel: (416) 871-1500

Inquiries: A.W. Sherwin, Plant Engineering Supervisor

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Normalizing	Carbon steels	Plates		
Stress relieving	Alloy steels	Weldments		

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 — Batch furnace	Gas Machinery Corp	Natural gas	2 400°F	12' x 10' x 2'6"	20 tons/load	Air	Stress relieving Normalizing
1 — Batch furnace	Horton Steel Works	Natural gas	1 500°F	58' x 16' x 16'	100 tons/load	Air	Stress relieving only

H.P. METAL TREATMENT (1981) INC.
LES TRAITEMENTS DE MÉTAUX H.P. (1981) INC.
501 Marien
Montréal-Est, Québec
H1B 4V8

Tel: (514) 645-8791

Inquiries: Jack McKinnon, Vice President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Normalizing Annealing Stress relieving Pre and post weld heat treatment	Carbon steels Alloy steels Stainless steels	Pipe and tubing vessel	Non destructive testing: — radiography (X-ray, gamma-ray) — ultrasonics — magnetic particle — liquid penetrant — visual inspection	1 000 000

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 — Batch		Natural gas	1 600°F	49' x 12' x 12'	1 000 000	N/A	Stress relieving
1 — Batch		Natural gas	2 000°F	22' x 8' x 8'	20 000		Normalizing
1 — Batch		Electricity	2 000°F	8' x 4' x 8'	100 000		Annealing
1 — Batch		Electricity	2 000°F	3' x 3' x 2'	5 000		
Local stress relieving			2 200°F	30'			Preheat and postheat treatment
6 — Mobile stress relieving units							

H & S HEAT TREATING
Division of Phil Dennis Enterprises Ltd.
R.R. 1
Welland, Ontario
L3B 5N4

Tel: (416) 732-6521

Inquiries: P.B. Dennis, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Plates	Glass bead shot cleaning of tools and dies	Tools and dies 120 000
Stress relieving	Alloy steels	Sheets	Degreasing	Machine and equipment components, 100 000
Normalizing	Stainless steels	Bars, angles and other rolled shapes	Industrial washing to remove oils	Castings, forgings 5 000 000
Quenching and tempering (oil and water)	Tool and die steels	Tools and dies	Oiling and rust prevention	Fasteners 60 000
Carburizing	Aluminum alloys	Machine and equipment components		
Carbonitriding	Copper alloys	Fasteners		
Induction	Ductile and malleable iron	Castings, forgings		
Fluidized beds				
Deep freezing				

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATIONS: Plant 1: 515 Lyons Creek Rd.
R.R. 1
Welland, Ontario
L3B 5N4
Tel: (416) 732-6521
732-6600

Plant 2: **Head Office**
South Street North
Port Robinson, Ontario
L0S 1K0
Tel: (416) 384-9355
384-9358

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
3	Eclipse Box Furnace	Gas	2 000°F	42" x 31" x 50"	300 000		Normalizing, tempering, annealing
1	Eclipse Box Furnace	Gas	2 000°F	42" x 31" x 84"	275 000		Normalizing, annealing, stress relieving, tempering
1	CAN-ENG	Gas — excess air firing	1 400°F	42" x 31" x 50"	150 000		Tempering, solution annealing aluminum
1	CAN-ENG Car Bottom Furnace	Gas — excess air firing	1 800°F	54" x 40" x 120"	600 000		Normalizing, annealing, stress relieving
1	Park Thermal Car Bottom Furnace	Gas or oil	1 850°F	72" x 48" x 288"	1 600 000		Normalizing, annealing, stress relieving
1	Park Thermal Rotary Hearth Furnace	Gas or oil Excess air	2 000°F	120" dia. 10 stations 18" x 24" x 36"	1 000 000		Hardening, solution annealing, stainless, aluminum, water and polymer synthetic quenchants
1	Kozma Pit Furnace	Gas	2 000°F	48" dia. x 72" d	250 000		Quenching, solution annealing, water and synthetic

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
3	Sunbeam AF10 Casemaster	Radiant tube endothermic atmosphere	1 850°F	28" x 22" x 48"	800 000		Bright hardening, carburizing, carbonitriding
1	Surface Combustion Super 30 Allcase	Radiant tube endothermic atmosphere	1 850°F	30" w x 48" l x 30" h	500 000		Bright hardening, carburizing, carbonitriding
1	I.P.C. Draw Oven	Gas	650°F	36" x 36" x 48"			Tempering
1	Cyclone Draw	Gas	1 250°F	30" x 30" d			Tempering
1	Park Thermal Draw Furnace	Gas	1 250°F	36" x 36" x 72"	320 000		Tempering
1	100 kW 10kC Beaver Induction	Electric					
1	Park Thermal Draw Furnace	Gas	1 250°F	36" x 36" x 96"	400 000		Tempering
1	Apollo FB2 fluidized bed plus N_2 subcombustion	Gas	1 900°F	17" x 24" d	28 000		Tool steel hardening and hi-temp carburizing
1	Apollo FB3 fluidized bed plus N_2 or argon subcombustion	Gas	1 900°F	28" x 36" d	60 000		Tool steel hardening and hi-temp carburizing
1	Apollo preheat and tempering fluidized bed plus N_2 subcombustion	Gas	1 400°F	28" x 36" d	60 000		Tool steel tempering — preheat
1	Apollo cooling fluidized bed	Air or nitrogen	Cooling modes				

INDUSTRIAL HEAT TREATING
Division of Basic Hydraulics and Industrial Equipment Limited
490 West Side Road
Welland, Ontario
L3B 5X7

Tel: (416) 563-5306 or (416) 735-0510

Inquiries: A. Pizzacalla

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Tools and dies	Sandblasting	Tools and dies 36 000 kg (80 000 lbs.)
Stress relieving	Alloy steels	Machine and equipment components	Grinding	
Normalizing	Stainless steels	Castings	Machining	Machine and equipment components 36 000 kg (80 000 lbs.)
Quenching and tempering	Tools steels	Forgings	Painting	Castings 45 000 kg (100 000 lbs.)
Carburizing	Aluminum alloys		Drilling	Forgings 45 000 kg (100 000 lbs.)
Flame hardening	Copper alloys			
Solution annealing	Cast iron			
Precipitation hardening				
Sursulf aerated bath nitriding				

PHYSICAL TESTING AND QUALITY CONTROL: available

COMMENTS: comprehensive shop facilities include Moog vertical N.C. mills, horizontal boring mill, turret and engine lathes, multi-spindle drills, drill presses, 70 ton brake press, band saw, surface grinder, and Mig welding machines

PLANT LOCATION: Industrial Heat Treating
Union Road
Beamsville, Ontario

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
3 Air circulatory furnaces	Lindberg	Electric	1 250°F	36" w x 36" h x 60" l			Tempering, stress relieving, solution annealing of copper and aluminum alloys, precipitation hardening
1 Internal quench atmosphere furnace	Lindberg	Natural gas	1 850°F	24" w x 18" h x 36" l	50 000	Endothermic	Neutral hardening of alloy and stainless steels
3 Box furnaces	Westinghouse heavi-duty custom	Electric	2 100°F	48" w x 48" h x 72" l			Pack carburizing, annealing, normalizing, stress relieving, hardening larger parts
1 Walk-in oven	Grieve Hendry	Electric	650°F	54" w x 72" h x 72" l			Low temp stress relieving, preheating for shrink fitting
Salt baths							
1 Neutral	Upton	Electric	1 700°F	12" w x 18" l x 30" d			Neutral hardening
1 Carburizing (no cy)	Park	Electric	1 750°F	20" w x 24" l x 20" d			Carburizing
2 Quench/temper Preheat	Upton	Electric	1 100°F	33" w x 33" l x 30" d			Preheating, quenching, tempering
1 Sursulf nitriding	Custom	Electric	1 200°F	20" dia. x 24" d			Sulphurized nitriding of all ferrous metals

INTEGRATED METALLURGICAL SERVICES LTD.
1165A 44 Avenue, S.E.
Calgary, Alberta
T2G 4X4

Tel: (403) 243-5335

Inquiries: A.L. Jones, Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Plates	Sandblasting	
Normalizing	Alloy steels	Pressure vessels	Painting	
Pre and post weld heat treatment		Piping		
		Machined parts		
		Forgings		

HEAT TREATING FACILITIES

Number and Description	Make or Tradé Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 — Batch 44' x 12' x 12'	I.M.S.	Natural gas	1 800°F	80' x 12' x 12'	60 tons/load	Excess air	Stress relieving Normalizing
2 — Portable stress relieving units 150kW	I.M.S	Electrical resistance heating			12 welds per unit per heat individually controlled		Pre and post weld heat treatment

IPSENLAB OF CANADA LTD.
27 Bermondsey Road
Toronto, Ontario
M4B 1Z7

Tel: (416) 757-3233

Inquiries: Ravi Bhatia, C.E.T., Plant Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Misc. shapes	Strightening	Stampings 50 000
Bright annealing	Alloy steels, brass	Fasteners	Deep freezing	Sheets 50 000
Stress relieving	Aluminum	Stampings	Complete lab facilities for testing	Rolled shapes 50 000
Normalizing	Stainless steels	Bars, angles and other rolled shapes	Black oxiding	Pipe/tubing 50 000
Quenching and tempering (oil, nitrogen)	Weldments	Pipe and tubing		Tools and dies 20 000
Gas carburizing, carbonitriding and bright hardening	Tool and die steels	Tools and dies		Machine and equipment components 50 000
Copper, silver brazing	Carbon steels	Machine and equipment components		Fasteners 200 000
Vacuum	Alloy steels	Fasteners		Wire products 100 000
Heat treat	Aluminum alloys	Tools, dies		Wire (coils) 100 000
Induction hardening	Alloy steels	Spinnings		Castings, forgings 50 000
	Carbon steels			Aluminum and stainless steel spinnings, weight not provided
	Titanium alloys			
	Gold, silver and cobalt alloys			
	Stainless steels			
	Air hardening			
	Tools steels			

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: Consultant, B.W. Wittig, B.Sc., P.Eng.

COMMENTS: the company has an IBM quality certificate and is approved by General Motors, Ford and Chrysler for safety and critical parts. It is approved also for Garrett Mfg., Orenda, deHavilland, Spar Aerospace, Bell Aerospace, Ford Aerospace and the Department of National Defence by special arrangement

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
4 T400/600	Ipsen	Gas	1 900°F	22" x 32" x 16"	300 000	Nitrogen Methanol	Hardening, annealing, brazing, carbonitriding, carburizing, stress relieving, normalizing
Continuous furnaces							
2 Shakerhearth with wash draw	Ipsen	Gas	1 800°F	1" dia. x 4" l 1" sq. x 4" l	200 000	Nitrogen Methanol	Harden, temper, carbonitriding, carburizing

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Belt furnace	Hoskins	Electric	2 100°F	12″ x 5″ x 48″	100 000	Exothermic	Copperbrazing, bright annealing
Others							
2 Vacuum furnaces	Ipsen CF324	Electric	2 200°F	22″ x 40″ x 12″	150 000	Nitrogen quench	Harden, temper, air harden steels, bright annealing, silver copper-brazing, stress relieve, stainless steel hardening
1 Airdraw	Ipsen	Gas	1 200°F	22″ x 16″ x 100″		—	
1 Atmosphere draw	Ipsen	Electric	1 400°F	22″ x 10″ x 32″		Endothermic, exothermic	
1 Belt air draw	Ipsen	Gas	1 000°F			—	Tempering
1 Induction	Radyne	Electric	12kW				Specialized hardening

JOY MANUFACTURING COMPANY (CANADA) Ltd.
175 Beverley Street
P.O. Box 100
Cambridge, Ontario
N1R 5T4

Tel: (519) 623-1550

Inquiries: John Morris, Plant Superintendent

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Tools and dies	Shotblasting	Not specified
Stress relieving	Alloy steels	Machine and equipment components	Glass bead	
Normalizing	Stainless steels	Castings, forgings	Vibratory cleaning	
Quenching and tempering	Tool and die steels			
Pack and gas carburizing	High-speed steels			

PHYSICAL TESTING AND QUALITY CONTROL: available on request

ENGINEERING SERVICES: available on request

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1	General Electric	Electric	1 600°F	36" w	Not specified		Annealing
1	General Electric	Strip elements	1 600°F	60" l			Stress relieving or pack carburizing
1	American Electric Co.		1 600°F	20" h			
Continuous furnaces							
1 B & L	Lindberg Hevi-Duty radiant tube carbon-itriding furnace	Radiant tubes with gas burners	1 800°F	36" x 20" x 6"		Carburizing and neutral carbonitriding	Carburizing and neutral hardening
Salt baths							
1	Ajax-Hultgen	Submerged electrodes	1 800°F	29" x 28" x 15"			Tool steel hardening
1	Upton	Electric	2 400°F	8" x 6" x 20"			High speed tool hardening
1	B & L Furnace	Submerged heater coil	950°F	36" x 236" x 15"			Draw for tool steels
Other							
1	Leeds and Northrup	Electric strip elements	1 000°F	24" dia. x 30" d			Low temperature draw
1 Box type draw furnace	CAN-ENG	Gas radiant tubes		26" x 20" x 20"			Draw parts from continuous furnace (B&L)

LES TREMPEURS D'ACIER DU QUÉBEC INC.
560 Sauvé Blvd.
St. Eustache, Québec
J7R 5A8

Tel: (514) 473-1884

Inquiries: Georges Henry, Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Bars	Sandblasting	Tools and dies 27 000
Bright annealing	Stainless steels	Tools and dies	Shotblasting	Machine components 227 000
Stress relieving	Tool steels	Machine components	Blacking	Bolts and nuts 270 000
Normalizing	Alloy steels	Bolts and nuts	Oiling	Castings and forgings 70 000
Quenching and tempering	Copper alloys	Screws	Laboratory services	Machine components 45 000
Vacuum hardening		Miscellaneous products	Sandblasting	Screws 180 000
Carburizing				23 000
Carbonitriding				23 000
Flame hardening				
Induction hardening				
Aging				
Lindure				
Boroloy				

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: Department of National Defence approval for heat treating. Also has approvals from the leading aeronautical and astronautical entrepreneurs

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
3 Integral quench atmospheric furnaces	Surface Combustion	2 Gas	1 100°C	0.8 x 1.2 x 0.5 m	800 kg/hr.	Endothermic Infrared control	Natural hardening, carburizing
Batch tempering	Ipsen furnaces	1 Electric				Exothermic (dry)	
2 Box furnaces	Lindberg	Electric	1 100°C	0.6 x 1.5 m		Endothermic	Various
Vacuum oil quench furnaces	Hayes	Electric	1 300°C	0.6 x 0.9 x 1.2 m	230 kg/hr.	Vacuum in micron range	Bright hardening, annealing, brazing, stainless and alloy steels
Annealing furnace	Various	Electric or gas	930°C	0.7 m dia. x 1.8 m	to be determined	Pack or open annealing, tempering, stress relieving	Full and sub-critical, annealing, tempering and stress-relieving
Continuous furnaces:							
2 Shakerhearth	American Gas	Gas	930°C	Small parts	400 kg/hr.	Endothermic (neutral, carburizing, carbonitriding)	Neutral and case hardening

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Rotary		Gas	950°C	Small parts	230 kg/hr.		
Salt baths							
5 Units	Various	Electric	1 290°C	0.5 x 0.7 x 2.0 m	320 kg/hr.		Neutral hardening including non-quenching, water or oil quench, air cooling, isothermal annealing
Induction system							
2 Units	Lepel	Electric		Approx. 2.5 cm dia. for area to be hardened or heated	Depends on specific job		Local hardening, tempering, soldering, brazing, etc.
Others							
Flame hardening		Gas		Depends on requirements of work	Depends on work		Local and surface hardening, tempering
Marconizing							Very light gall-resistant surface treatments
12 Forced circulating air furnaces		Gas	700°C	Varying			Tempering, aging

LISTER BOLT & CHAIN LTD.
1771 Savage Road
Richmond, British Columbia
V6V 1R1

Tel: (604) 273-5411
Telex: 043-55637

Inquiries: W.V. Stobbart, Vice-President and General Manager
Bryan Townsend C.E.T. Technical Sales Representative

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Forgings	Shotblasting	Batch quench and temper 200 000
Stress relieving	Alloy steels	Fasteners	Tumbling	Batch carburizing 150 000
Normalizing	Tool steels	Fabricated parts	Forging shapes to 2"Ø	Continuous induction 500 000
Bright hardening		Machine components	Threading shapes to 4"Ø	
Carburizing		Chain in short batches or continuous	Electric weld chain to 2"Ø	
Carbonitriding			Proof testing and calibrating of chain, fasteners, and other load rated gear	
Tempering				
Induction hardening				
Induction tempering				

PHYSICAL TESTING AND QUALITY CONTROL: as required by specification. Test facilities include a 250 ton tension test machine approved by Lloyd's and ABS for the proving of ship's gear

ENGINEERING SERVICES: available

COMMENTS: the company produces the following range of products:
- — custom forged heavy fasteners for the mining, construction, and heavy equipment industries
- — poleline hardware for public utilities
- — carbon, alloy and stainless kiln and marine chains for the shipping and cement industries
- — high strength conveyor and log boom chains for the lumber industry

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
2 Casemaster	CAN-ENG	Electric	1 850°F	30" x 48" x 24" h	400 000 (combined)	Endothermic	Bright hardening, gas carburizing, carbonitriding, normalizing
1 Roller hearth box furnace	CAN-ENG	Electric	1 200°F	30" x 48" x 30" h	300 000		Stress relief, tempering, pre-heating
1 Solid hearth box furnace		Gas		48" x 96" x 48" h			Annealing, normalizing
Continuous induction furnace	TOCCO	250 kW Electric induction	as required	5½" workpiece dia.	500 000		Hardening and tempering chain

MAGNETIC METALS LIMITED
10 Spalding Drive
P.O. Box 1118
Brantford, Ontario
N3T 5T3

Tel: (519) 753-8675
Telex: 061-81267

Inquiries: Hiel Wood, Vice-President

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Roller hearth furnace							
1	Lindberg & Heat Engineering	Gas & electric	1 650°F	double 36″ x 58″ x 14″	3 500 lbs./hr.	Exothermic	Annealing and stress relieving
1	Lindberg	Electric	1 650°F	37″ x 37″ x 14″	2 000 lbs./hr.	Exothermic	Annealing and stress relieving

PLANT LOCATION: as above

MAINLAND MANUFACTURING
Division of Bow Valley Resources Services Ltd.
15100 River Road
Richmond, British Columbia
V6V 1L5

Tel: (604) 273-1455

Inquiries: Brian DeBeck, Foundry Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Any	Sandblasting	
Stress relieving	Alloy steels		Shotblasting	
Normalizing	Steel fabrications		Fabrication	

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
2		Gas	2 000°F	5'10" x 9'6" x 11'6"			Annealing Stress relieving Normalizing

MARINE INDUSTRIES LTD.
MARINE INDUSTRIE LTEE (See also "SOMETAL")
C.P. 550
Sorel, Québec
J3P 3P5

Tel: (514) 743-3351

Inquiries: Charles E. Billard, P. Eng., Director, Welding & Metallurgical Engineering
Normand Daoust, P. Eng.
Claude Lincourt, P. Eng.

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Plates	Flame and plasma cutting	Poundage varies according to shape and size
Annealing	Stainless steels	Sheets	Sandblasting	
Normalizing	Alloy steels	Bars, angles	Grit blasting	
Quenching	Tools steels	Formed shapes	Painting	
Tempering	Nonferrous metals	Weldments	Metallizing (flame and arc)	
			Welding	
			Machining	

PHYSICAL TESTING AND QUALITY CONTROL: available. Tensile, impact, hardness, drop-weight; M.T., L.P., UT, RT (X and gamma-ray); micrography

ENGINEERING SERVICES: available. Welding and metallurgy, heavy equipment, hydro-electric equipment; shipbuilding, railroad car building

COMMENTS: mainly, our heat treatment facilities are for normalizing and/or stress relieving weldments to the requirements of ASME code. Company certified by CWB to CSA W47.1, Div. 1. QA system to Z-299.2, .3, .4, ASME Section VIII and B31.1

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch type furnaces							
1	Canefco	Oil	2 000°F	15' w x 30' d x 17' h (200 000 lbs. capacity)	1 500 000	Oxidizing	Stress relieving, air quenching and tempering, normalizing
1	N.A.	Oil	2 000°F	8' w x 32' d x 3' h	30 000	Oxidizing	Stress relieving
1	C.G.E.	Electric	2 300°F	23½" w x 57" d x 16½" h	N.A.	Oxidizing or neutral	Stress relieving, quenching and tempering, normalizing

MATERIAL PROCESSING
Division of Havlik Enterprises Limited
679 Bishop Street
Cambridge, Ontario
N3H 4V2

Tel: (519) 653-5774

Inquiries: Sandy Sykes

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Aluminum	Pipe	Degreaser	50 000 lbs.
Stress relieving		Forgings	Penetrant inspection	
Quenching and aging		Castings	Aluminum oxide grit blast	
		Extrusions	Hardness testing anodizing	

COMMENTS: the company has the following approvals for aluminum heat treating: Douglas Aircraft, Boeing Aircraft, de Havilland Aircraft, Spar Aerospace, and Lockheed California Co.

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 — 1 Salt bath	G.E.	Electric	+/– 010°F 1 050°F	40" d x 40" w x 90" l			
1 — 5 Salt bath	Park Thermal	Electric	+/– 010°F 1 050°F	40" x 40" w x 140" l			
2 — 1 Aging and stress relieve	Granco	Gas	+/– 010°F 500°F	26½" x 51" w x 208" l			

MCALLISTER SPRING LTD.
425 West 6th Avenue
Vancouver, British Columbia
V5Y 1L3

Tel: (604) 879-2401

Inquiries: Dick Huff, General Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Castings/forgings		20 000
Stress relieving	Alloy steels	Fabrications		200 000
Normalizing	Stainless steels	Machine components		10 000
Quenching and tempering	Carbon steels	Bars, angles, rolled shapes, machine components		
		Fasteners		

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnace*	J.J. McIsaac	Gas	1 650°F	4' x 8' x 22"			Hardening/annealing
Continuous furnace**	J.M. Graham	Gas	1 650°F	12' x 7' x 2'			Hardening/annealing
Tempering furnace**	J.M. Graham	Gas	1 200°F	9' x 6'2" x 3'6"			Tempering/stress relieving
Oil quench tanks							
1				8' x 6' x 2'6"			
2				6'6" x 3'4" x 1' or 10' x 1'4" x 1'			
Water quench tank				4' x 4' x 2'6"			

* electronic temperature controls
** with chart recorders

MCLEOD & NORQUAY LTD.
520 Raymur Avenue
Vancouver, British Columbia
V6A 3L2

Tel: (604) 255-9381

Inquiries: J.P. McCulloch, P.Eng., President and General Manager
T.B. MacKinnon, Vice-President and Plant Superintendent

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Tools and dies	Pickling	Tools and dies 120 000
Stress relieving	Alloy steels	Machine and equipment components	Shotblasting	Machine and equipment components 120 000
Normalizing	Stainless steels	Fasteners	Sandblasting	Fasteners and wire products 100 000
Quenching and tempering	Tools and die steels	Wire products		Castings, forgings 30 000
Pack batch	High speed steels	Castings, forgings		
Salt carburizing	Copper alloys			
Liquid flame hardening	Aluminum alloys			
Spin hardening				

PHYSICAL TESTING AND QUALITY CONTROL: hardness testing service and certification — Rockwell, Brinell, Vickers Quality Control Manual

ENGINEERING SERVICES: metallurgical consulting, failure analysis, material selection

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1 Pit	Own make	Gas	1 900°F	48" d x 26" dia.			Pack carburizing, annealing, stress relieving
1 Pit	Pacific Scientific	Electric	1 250°F	48" d x 40" dia.			Tempering, aluminum H.T.
1 Tool room tempering furnace	Lindberg	Electric	1 300°F	24" x 15" x 18" l			Tempering
1 Box	Hayes	Electric	2 300°F	6" x 12" x 18" l			Small tool hardening
Salt baths							
4	Eclipse	Gas	1 700°F	28" d x 17" dia.			Liquid carburizing
1	Eclipse	Gas	1 100°F	72" l x 18" w			Tempering
2	Own make	Gas	1 700°F	28" d x 17" dia.			Shallow case hardening and neutral hardening small parts
1	Upton	Electric	1 700°F	60" l x 8" dia. 22" dia. x 4" thick			Neutral hardening, machinery steels
1	Upton	Electric	2 300°F	48" l x 8" dia. 20" dia. x 3" thick			High speed hot work, stainless
2	Park Thermal	Electric	1 700°F	22" x 28" x 22" d			Liquid carburizing
1	Park Thermal	Electric	700°F	30" x 20" x 26" d			Tempering, marquenching

METCOR INC.
8300, 3e Avenue
Anjou (Montréal), Québec
H1J 1B2

Tel: (514) 353-1500

Inquiries: Ivan Roch, General Manager
Réal Lafreniere, Plant Director

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Pipe and tubing	Sandblasting	Pipe/tubing 200 000
Bright annealing	Alloy steels	Tools and dies	Glass bead	Tools and dies 80 000
Stress relieving	Stainless steels	Machine and equipment components	Oiling	Machine and equipment components 250 000
Normalizing	Tool and die steels	Wire products	Tumble (wet and dry barrel)	Wire products 200 000
Quenching and tempering	High speed steels	Wire (coils)	Subzero deep freeze	Wire (coils) 100 000
Carburizing, liquid nitriding, cyaniding	Aluminum alloys	Castings, forgings	Magnetic particle inspection	Castings, forgings 400 000
Brazing	Copper alloys	Stampings, extrusions, powdered metal	Straightening	Stampings 300/400 000
Induction hardening	Titanium alloys	Aircrafts and military parts	Steam degreasing	
Aluminum H.T.	Powdered metal		Riping	
Gas carbonitriding	Military and aircraft alloys			
Flame hardening				
SPECIAL NITRIDING "MELONITE" AND "TUFFTRIDE"				

PHYSICAL TESTING AND QUALITY CONTROL: available chemical and metallurgical facilities

ENGINEERING SERVICES: available

COMMENTS: the company is a licensee for tufftriding and specializes in flame hardening and induction hardening. It is equipped for production heat treating. A heat treating course approved by the federal and provincial governments is given to employees by the company's technical director and supervised by the plant's director. Metcor works under approvals from Abex Industries of Canada Ltd; Canadair Ltd; Department of National Defence; the de Havilland Aircraft of Canada Limited; Douglas Aircraft of Canada Ltd; General Electric Armament Division U.S.A.; Grumman Aircraft Engineering Corp. U.S.A.; Pratt and Whitney of Canada Ltd; General Motors of Canada; and Hydraulic Research (Textron)

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
H1 — Neutral salt bath	Park	Electrodes	1 650°F	20" x 20" x 48"	50 000		Hardening
H2 — Cyanide salt bath	Park	Electrodes	1 650°F	28" x 24" x 36"	50 000		Carburizing, hardening
H4 —	CAN-ENG	Radiant tubes, gas fired	1 850°F	33" x 21" x 20" h	62 000	Endothermic	Same as above
H5 —	CAN-ENG	Radiant tubes, gas fired	1 850°F	44" x 26" x 23" h	125 000	Endothermic	Normalization, carbon restoration, carburization, carbonitride, hardening, annealing
H6 —	A.F.C.	Radiant tubes, gas fired	1 750°F	36" x 22" x 20" per zone	150 000	Endothermic	Same as H5

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
H7 — Furnace	Holcroft	Radiant tubes	1 700°F	40" x 48" x 240"	10 000/charge		Hardening, annealing, normalizing
H8 —	Surface	Radiant tubes, gas fired	1 750°F	48" x 30" x 20"	125 000	Endothermic	Normalization, carbon restoration, carburization, carbonitride, hardening, annealing
H9 —	M.M.H.T.	Gas	2 100°F	38" x 22" x 22" h	25 000		All alloy steels for heat treating except corrosion and heat-resistant steel if not copper place prior to harden. Solution anneal of berylium copper and stainless steel, class 300 — anneal for all alloy steel
H13 —	Kolene	Gas	1 100°F	32" x 48"	50 000		Melonite treatment
H14 —	Kolene	Gas	1 100°F	32" x 48" prof.	50 000		Tufftriding
H15 —	General Electric	Electric	800°F	26" x 15" x 18"			
Induction systems							
1 — 1 Generator	3 to 10 KHz Ako						Induction hardening, tempering, annealing, brazing, welding
1 — 2 Generator	50 kW Thermatool	Electric					
1 — 3 Generator	25 kW Kindberg	Electric					
1 — 4 Generator	4 kW Philips	Electric					
Others							
Forced circulating air tempering furnaces							
T1	Despatch	Gas	1 250°F	29" dia. x 23" d			Temper, solution anneal, age
T2	Birlefco Lindberg	Gas	1 250°F	25" dia. x 56" d			Temper
T3	Leeds and Northrup	Electric	1 400°F	14" dia. x 16" d			Temper, solution anneal, age
T4	Leeds and Northrup	Electric	1 400°F	14" dia. x 16" d			Temper, solution anneal, age
T5	Volta Electric	Electric	600°F	23" x 15" x 23"			Temper
T7	Despatch	Electric	500°F	18" x 15" x 20"			Temper
T8	CAN-ENG	Gas	1 400°F	18" x 24" x 36"			Temper
T9	Lindberg	Gas	1 250°F	18" dia. x 27" d			Temper
T13	Holcroft	Gas	1 250°F	30" x 34" x 48"			Temper
T14	Holcroft	Gas	1 250°F	20" x 34" x 48"			Temper
T15	Holcroft	Gas	1 250°F	20" x 34" x 48"			Temper

METRO HEAT TREATING CO. LTD.
45 Lucy Ave.
Scarborough, Ontario
M1L 1A4

Tel: (416) 699-3151 or 699-3443

Inquiries: Hal Oksa, General Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Misc. shapes	Straightening	
Stress relieving	Alloy steels	Fasteners	Deep Freezing	
Normalizing	Brass	Stampings	— Physical testing and quality control is available	
Quenching and tempering	Aluminum	Bars, angles and other rolled shapes	— Consultant available	
Carburizing, carbonitriding	Stainless steels	Pipe and tubing		
Copper	Weldments	Tools and dies		
Hardening	Tool and die steels	Machine and equipment components		
Salt carburizing	Aluminum alloys	Spinnings		
	Titanium alloys			
	Gold, silver and cobalt alloys			
	Stainless steels			
	Air hardening tool steels			

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
2 furnaces	General Electric	Electric	1 850°F	18" x 12" x 42"			Hardening, annealing, carburizing, stress relieving, normalizing
1 furnace	General Electric	Electric	1 850°F	12" x 10" x 24"			As above
1 furnace	Wayne Forge	Gas	2 700°F	24" x 16" x 44"			As above
1 furnace	General Electric	Electric	1 700°F	12" x 10" x 24"			As above
Salt baths							
1 Bath	Metro	Gas	1 800°F	13" x 24"			Liquid carburizing, tool steels springs
3 Baths	Metro	Gas	1 800°F	13" x 17"			As above
1 Bath	Metro	Gas	1 800°F	13" x 17"			Neutral bath
1 Martemper bath	Metro	Gas		36" x 20" x 24"			Martemper
1 Austemper bath	Metro	Gas		13" x 17"			Austemper
1 Salt temper bath	Metro		300°F				
1 Salt temper bath	Metro		375°F				
1 Salt temper bath	Metro		400°F				
1 Salt temper bath	Metro		550°F				

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Salt temper bath	Metro		600°F				
Tempering furnaces							
2 Furnaces	Lindberg	Electric	1 250°F	16" x 18" x 30"			Tempering
1 Furnace	Lindberg	Electric	1 250°F	12" x 18" x 24"			Tempering
1 Furnace	Lindberg	Electric	1 250°F	24" x 30" x 24"			Tempering
Others							
1 Agitated oil quench tank				36" x 46" x 40"			
1 Oil quench tank				46" x 32" x 48"			
1 Agitated water quench tank				48" x 30" x 40"			
3 Hardness testers							

NATIONAL TOOL HARDENING INC.
TRAITEMENT THERMIQUE NATIONAL INC.
8210 Champ D'Eau
St-Leonard (Montréal), Québec
H1P 1Y3

Tel: (514) 325-3300

Inquiries: Giuseppe Cerro, Vice-President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Tool steel	Punch and dies	Sandblasting	Poundage varies according to shape and size
Bright annealing	Alloy steels	Punch and dies	Same as above	
Stress relieving	Tool steel	Punch and dies	Same as above	
Quenching and tempering	High speed steel	Bars, angles and other rolled shapes	Mar temper	
Carburizing	No carbon steel	Pipe and tubing	Sandblasting	
Flame hardening	Cold rolled	Gears	Same as above	

PHYSICAL TESTING AND QUALITY CONTROL: available

COMMENTS: the company is specialist in process of high speed steel

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1		Electric	750°F	24" x 30" x 36" h	26 000	Salt bath	Tempering
1		Electric	2 000°F	18" x 18" x 52" h	39 000	Same	Tooling Austenite pre-heat
1		Electric	2 300°F	15" x 15" x 52" h	47 000	Same	High speed Austenite
1		Electric	1 400°F	20" x 20" x 52" h	26 000	Same	Pre-heat and tempering
1		Electric	1 400°F	20" x 20" x 52" h	26 000	Same	Same
1		Electric	1 800°F	20" x 24" x 40" h	31 200	Same	Carburizing
1		Electric	1 500°F	36" dia. x 54" h	78 000	Hot-air	Pre-heat and tempering
1	Park liquid nitriding	Electric		24" x 15" x 50" h	300 lbs./hr.		
Other							
2	Clark hardness testers						

O & K ORENSTEIN & KOPPEL CANADA LIMITED
21 Hatt Street
Dundas, Ontario
L9H 5P9

Tel: (416) 628-2233
Telex: 061-8722

Inquiries: R.D. Clark, P. Eng. Division Sales Manager
Industrial Products & Mining Equipment

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels Alloy steels Stainless steels Tool and die steels High speed steels	Tools and dies Machine and equipment components Castings, forgings Weldments	Machining Grinding Shotblasting Straightening	Not specified

PHYSICAL TESTING AND QUALITY CONTROL: hardness testers: Brinell & Rockwell

COMMENTS: technical liaison available if required

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1	Canadian General Electric car bottom with Honeywell Thermal complete control	Electric	1 400°F	15'3" sq. x 27'6" l			Stress relieving

ONTARIO FLAME HARDENING CO. LTD.
13029 Tecumseh Road East
P.O. Box 3001 (Tecumseh)
Windsor, Ontario
N8N 2M3

Tel: (519) 735-5756

Inquiries: Hugh Woods

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Flame hardening	Carbon steels	Plates	None	Unlimited
Straightening	Alloy steels	Rails		
	Tool and die steels	Ways		
	Cast iron	Dies all shapes		
	Meehanite	Castings forgings		
	Nodular iron	Conveyor components		

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: mobile die hardening unit

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Flame hardening equipment	Custom designed and built	Fuel gas					Machine tool parts, die sections up to bumper dies, quarter panel. Conveyor sections

OPUS FERRUM LIMITED
455 Signet Drive
Weston, Ontario
M9L 1V5

Tel: (519) 743-1717

Inquiries: B. Povoden, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Quenching and tempering	Carbon steels	Stampings	Dry honing, painting	Up to 400 000
Carburizing		Fasteners	Tumbling, dacromate	
Nitriding		Nuts and bolts	Pickling, coating	
Carbonitriding			Phosphating	
			Oiling, salt spray test	

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: General Motors, Ford Motor Co., Chrysler, and IBM approved

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch							
1	Ipsen	Gas	1 850°F	22" x 36" x 12"	200M	Nitrogen	Carbon, carburizing, hardening
4	Shaker Hearth	Gas	1 850°F		400M		Neutral
1	Ipsen	Gas	1 250°F		200M	Verbal	Draw

PROCOR LIMITED
Third Line
Oakville, Ontario
L6J 5E1

Tel: (416) 827-4111

Inquiries: M.C. Parker, Vice-President of Manufacturing

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Plates	Shot and sandblasting	Plates 2 000 000
Stress relieving	Stainless steels	Bars, angles and other rolled shapes	Cold roll forming	Rolled shapes 2 000 000
Normalizing		Pipe and tubing	Plate cutting	Machine and equipment components 1 000 000
		Machine and equipment components	Machining	
		Fasteners	N.D.E. (X-ray, L.P., M.P.)	
		Wire products		
		Wire (coils)		
		Castings, forgings		
		Pressure vessels and weldments		

PHYSICAL TESTING AND QUALITY CONTROL: available on request

ENGINEERING SERVICES: available on request

COMMENTS: only ASME approvals. Complete recording devices

PLANT LOCATIONS: Procor Limited
Third Line
Oakville, Ontario

P.L. Robertson Mfg. Co. Ltd.
97 Bronte Street
Milton, Ontario

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Annealing	Salem-Brosius	Gas	1 800°F	15' w x 16' h x 80' l	2 000 000		Stress relieving railway tank cars
Normalizing							
Stress relieving							

SOMETAL
Division of Marine Industries Limited
217 Leonidas
C.P. Box 290
Rimouski, Québec
G5L 7C1

Tel: (418) 723-6508

Inquiries: Guy Bouchard, Sales Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Any from the mills or fabricated	Grit and sandblasting/ painting, metallizing	Up to 1 000 tons of steel fabricated products per month
Annealing	Alloy steels		Flame cutting/straightening	
Normalizing	Stainless steels		Welding/machining	
Tempering	Iron or steel castings or forgings		X-rays, mag. particle, dye penetrant	
			Complete engineering and drafting office	

COMMENTS: Company is a completely integrated steel fabricator. Has supplied major mechanical and structural equipment to most of country's hydro-electric utilities companies. Is owned by Marine Industries Limited which is a leading manufacturer of hydro-electric turbines and generators, ships, and railway cars. Company is certified under CSA W47.1, Division-1, and CSA Z-299.2, .3 and .4

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
One batch furnace (removable for loading)	Combustion Engineering	Oil	1 900°F	20' w x 40' l x 15' h	Up to 20 full furnace loads per month	Stress relieving	

SPAR AEROSPACE LTD.
825 Caledonia Road
Toronto, Ontario
M6B 3X8

Tel: (416) 781-1571

Inquiries: J.W. Fitzpatrick, Director Marketing, Gears & Transmissions Division

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carburization steels (American and European)	Machine and equipment components	Machining	Machine and equipment components 120 000
Stress relieving		Gears	Grinding	
Normalizing	Alloy steels	Spline shafts	Plating	
Quenching and tempering (oil)	Stainless steels		Conversion coatings	
Gas carburizing			Phosphating	
Precipitation hardening				
Sub-zero freezing				

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: Spar is approved to heat treat for aircraft quality for Department of National Defence, Bell Helicopter Company, Lycoming, United Aircraft, Boeing (Vertol Division), Orenda Engines and the deHavilland Aircraft of Canada, Ltd., General Electric, Sikorsky, Westland, Aerospatiale & Hispano Suiza

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1 Box carburizer	Surface Combustion Alcase P	Gas	1 750°F	24" x 30" x 18"	16 000	Automatic CO_2 infrared controller	Carburizing with integral cooling chamber
1 Box carburizer	Surface Combustion Alcase P	Gas	1 750°F	30" x 48" x 20"	30 000	Automatic CO_2 infrared controller	Carburizing with integral cooling chamber
1 Box carburizer	Surface Combustion Super Alcase	Gas	1 750°F	30" x 48" x 24"	40 000	Automatic Co_2 infrared controller	Carburizing with integral cooling chamber
1 Draw	Homo-Draw	Electric	1 300°F	24" dia. x 48"	30 000	Inert	Tempering and stress relieving
2 Draw	Homo-Draw	Electric	1 300°F	24" dia. x 20"	30 000	Air	Tempering and stress relieving
1 Draw	Homo-Draw	Electric	1 400°F	24"dia. x 40"	30 000	Inert	Tempering and stress relieving
Continuous furnaces							
1 Rotary hearth	Lindberg Hevi-Duty	Electric	1 800°F	16" x 11"	40 000	Dew point	Miscellaneous heating of components for hardening
1 Batch	Spar	Gas	1 800°F	30" x 18"	20 000	Dew point	Miscellaneous heating of components for hardening

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Others							
1 Pit carburizer	Homo-Carb	Electric	1 750°F	20" dia. x 24"	12 000	Dew point	Heating for hardening
1 Pit carburizer	Homo-Carb	Electric	1 750°F	24" dia. x 36"	20 000	Infrared CO_2 controller	Carburize and heat for hardening
1 Pit	Homo-Carb	Electric	1 750°F	30" dia. x 40"	40 000	Infrared CO_2 controller	Carburize and heat for hardening

STANTON PIPES LIMITED
Plant #2
1757 Burlington Street, East
Hamilton, Ontario
L8H 3L5

Tel: (416) 547-3251

Inquiries: W. Russell, Customer Service

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Plates		Plates 400 000
Stress relieving	Alloy steels	Bars, angles and other rolled shapes		Pipe/tubing 400 000
Normalizing	Stainless steels	Pipe and tubing		Machine and equipment components 400 000
Air quenching		Machine and equipment components		Wire (coils) 400 000
		Wire (coils)		Castings, forgings 200 000
		Castings, forgings		

PHYSICAL TESTING AND QUALITY CONTROL: available on request

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
2 Batch furnaces	Gas Machinery Company	Gas	2 000°F	30' x 12' x 12'	1 200 000		Stress relief
		Gas	2 000°F	12' x 7' x 3'6"	200 000		Stress relief

STEEL-FLO
Division of Vada Industries Limited
100 Stockton Avenue
Okotoks, Alberta
T0L 1T0

Tel: (403) 938-3172
Telex: 03-826710

Inquiries: Bob Conway, General Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels		Hot and cold rolling	
Normalizing	Alloy steels		Vessel manufacturing	
Stress relieving	Stainless steels		Sand blasting and painting	
Quenching and tempering (water)			Inspection: Dye/pen. U.T., mag/part. radiography	

TRANSPORTATION: Truck from Calgary (20 miles), C.P. Rail — spur track into plant

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Batch car bottom	Canefco	Gas-high velocity	1 800°F	10' x 10' x 30' l	20 tons/load		
1 Batch	Park thermal	Electric	2 000°F	11" x 11" x 23"	—		
1 Water quench tank	—	—	—	10' x 13' h	6 tons/load		

SUMMERS MANUFACTURING LTD.
2450 Finch Avenue, West
Weston, Ontario
M9M 2E9

Tel: (416) 741-3231

Inquiries: E.A. Schmid, Vice-President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Brazing	Carbon steels	Machine and equipment components	Shaft straightening	Large shafts 100 000
Induction hardening	Alloy steels	Fasteners — hardening bolt heads for tractor use		Medium shafts 60 000
	Stainless steels			Small shafts 40 000

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Induction systems		Electric					
1-3 000 cycle	Summers	125 kW	Melting	8" dia. × 12' l			Shaft hardening
1-9 600 cycle	TOCCO	30 kW	Melting				Gears and sprockets
1-9 600 cycle	C.G.E.	30 kW	Melting				Gears and sprockets
1-400 000 cycle	Radyne	12 kW	Melting				Small pins and shafts

TC INDUSTRIES OF CANADA, LTD.
249 Speedvale Avenue, West
Guelph, Ontario
N1H 1C5

Tel: (519) 836-7100

Inquiries: George Berry, General Manager
or Doug Boughner, Assistant General Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Normalize	Carbon steels	Bars	Drilling equipment	2 300 000
Quench and temper	Alloy steels	Flats	Punching equipment	
Annealing		Rounds	Straightening equipment	
Stress relieving		Plate	Prime painting	
		Hexes	Oiling	
		Structural shapes	Quality Control Testing	
		Tubing	Facilities	
		Castings	NC controlled oxy-fuel and plasma arc shape cutting	
		Forgings	Flame cut or saw cut to specific length	
			Hot forming	

PHYSICAL TESTING AND QUALITY CONTROL: available. Rockwell hardness, Brinell hardness, core hardness samples, magnafluxing

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Gas fired, roller hearth	Surface Combustion	Gas	1 700°F	38" w x 20" l x 16" thick	800 000		Quench and temper Normalize
1 Gas fired, roller hearth	Electric Furnace Co. rebuilt to gas fired	Gas	1 700°F	72" x 50' x 16" thick	1 500 000		Annealing Stress relieving

THERMO-BOND FLAME HARDENING LIMITED
1020 Stacey Court
Mississauga, Ontario
L4W 2X8

Tel: (416) 625-6164

Inquiries: J. Bilyk, President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Flame hardening	Carbon steels	Plates	None reported	Tools and dies — any amount
	Alloy steels	Bars, angles and other rolled shapes		Machine and equipment components — unlimited
	Tools and die steels	Tools and dies		Castings, forgings — unlimited
	Cast iron	Machine and equipment components		
	Meehenite	Castings, forgings		
	Nodular iron			

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: the company offers mobile flame hardening facilities

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Vertical and horizontal	Thermo Bond	Oxy-acetylene	Not specified	To customer specifications			Gears, pinions, sprockets, rolls and rollers (any diameter) hoist drums and sheaves, molds and dies, and any other parts requiring flame hardening
Progressive and spin (max. dia. 22" x 16') automatic & manual		Oxy-propane Oxy-MAPP					

TIW INDUSTRIES LTD.
Steel Platework Division
629 Eastern Avenue
Toronto, Ontario
M4M 1E4

Tel: (416) 461-8111

Inquiries: Frank Shields, Manager of Specialty Sales

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Fabricated piping	Cold roll forming	Vessels and weldments 1 000 000
Annealing	Alloy steels	Machine and equipment components	Plate cutting	Machine and equipment components 1 000 000
		Castings, forgings	Machining	Castings, forgings 100 000
		Pressure vessels and weldments		

PHYSICAL TESTING AND QUALITY CONTROL: available on request

ENGINEERING SERVICES: available on request

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Batch furnace	Salem Brosius	Natural gas	1 400°F normal and 1 800°F+ for special heats	1 Heat: 79'0" l x 27' 6" w x 27'6" h	2 100 000	Excess air burners	Stress relieving

Electronic Temperature controls
Dual chart recorders

UNIVERSAL ENGINEERING AND TOOL WORKS
Division of Cline Associates London Limited
14 Firestone Blvd.
London, Ontario
N5W 5L4

Tel: (519) 453-2222

Inquiries: Stanley Kransmicki, Sales Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Tools and dies	None reported	Tools and dies 14 000
Stress relieving	Alloy steels	Machine and equipment components		Machine and equipment components 3 500
Normalizing	Tool and die steels	Castings, forgings		Castings, forgings 2 500
Quenching and tempering				
Pack carburizing				

ENGINEERING SERVICES: available on request

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Furnaces							
Electric — upper	Lucifer	Electric	2 300°F	20" x 20" x 36"	20 000		Tool and die steels
Electric — lower	Lucifer	Electric	800°F	20" x 18" x 36"			Machine and equipment components
Electric	Lucifer	Electric	1 250°F	20" x 20" x 36"			Castings and forgings

UNIVERSAL PIPE LINE ENTERPRISES LTD.
ENTREPRISES DE PIPE-LINE UNIVERSEL LTÉE
10655 Henri-Bourassa Blvd. East
Montréal, Québec
H1C 1G8

Tel: (514) 325-8310
Telex: 05-829525

Inquiries: N. Dumas

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Pipes and assemblies	Pipe shop	800 000
Normalizing	Alloy steels	Plates and castings	Sandblastings	
Stress relieving	Stainless steels	Welded assemblies	Inspections: radiography (R/T) ultrasonic tests (U/T) magnetic particle dye penetrant	
Heat curing (for refractory)	Refractories			

PHYSICAL TESTING AND QUALITY CONTROL: Brinnell tests and spectroscopy

ENGINEERING SERVICES: available

COMMENTS: to ASME I, III, V, VIII div. I, ANSI B.31.1, B.31.3 and CSA Z299.1, 2, 3, or 4

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
One car bottom type	Own	Natural gas	2 000°F	12' x 12' x 50'	800 000	—	Stress relieving

VAC-AERO INTERNATIONAL INC.
1371 Speers Road
Oakville, Ontario
L6L 2X5

Tel: (416) 827-4171
Telex: 06-982313

Inquiries: R.E. Pritchard, President
J. Wright, Vice-President

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.	
Vacuum bright annealing	Carbon steels	Tools and dies	Abrasive blast cleaning	Tools and dies	15 000
Vacuum bright hardening (Inert gas and oil)	Alloy steels	Machine and equipment components	Passivating	Machine, equipment	
Normalizing	Ultra high strength steels	Aircraft components	Nital etch inspection	Aircraft components	50 000
Stress relieving	Stainless steels	Jet engine parts	Stripping of copper plating	Fasteners	5 000
Vacuum brazing	Tool and die steels	Electronic components	Metallurgical analysis	Wire (coils)	20 000
Induction brazing	High speed steels	Fasteners	Electrical discharge machining	Castings, forgings	30 000
Gas nitriding	Copper alloys	Wire (coils)	Repair and overhaul of jet engine parts	Jet engine parts	15 000
Malcomizing	Titanium alloys	Sintering stainless	Design and manufacture of vacuum furnace systems	Nitriding	25 000
Induction hardening	High temperature alloys (nickel, cobalt)	Steel and high alloy powder compacts			
Plasma coating		Braze assemblies			
Electron beam welding		Welded fabrications			

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: the company has approvals from Department of National Defence; Boeing Aircraft Co.; Canadair Limited; the de Havilland Aircraft of Canada Limited; Douglas Aircraft Co.; General Dynamics; Grumman Aircraft; Pratt and Whitney Aircraft; General Electric, U.S.A.; Garrett Manufacturing; Dowty Equipment; Litton Systems Limited; Hawker Siddeley Canada Inc.; Orenda Division; Menasco Mfg. of Canada Ltée; Spar Aerospace Products; Sikorsky Aircraft; Bristol Aerospace; Lockheed Aircraft; McDonnell Douglas; Avco Lycoming; and Cleveland Pneumatic

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Furnaces							
2 Air circulating & nitriding	Vac-Aero	Electric	1 250°F	20" dia. × 30" l	4 000	Nitrogen, gas Nitriding, air	Tempering, stress Relieving, gas Nitriding, malcomizing
2 Air circulating	Vac-Aero	Electric	1 350°F	72" dia. × 96" l	50 000	Air	Tempering, stress relieving
1 — Retort	Vac-Aero	Electric	2 200°F	15" dia. × 14" l	7 000	Nitrogen, argon Hydrogen	Brazing, annealing Stainless steels, magnetic and electrical alloys
1 — Retort	Vac-Aero	Electric	2 200°F	40" dia. × 48"	25 000	Nitrogen, argon Hydrogen	Brazing, annealing Stainless steels, magnetic and electrical alloys

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 — Retort	Vac-Aero	Gas	2 200°F	46" dia. x 68" l	35 000	Nitrogen, argon Hydrogen, gas Nitriding	Brazing, solution treating stainless and high temperature alloys, annealing electrical steels, gas nitriding
1 — Horizontal gas quench vacuum furnace	Vac-Aero	Electric	2 400°F	18" w x 10" h x 24" l	15 000	Vac. to 1 x 10^{-5} torr, partial pressures of argon, nitrogen, hydrogen	Bright annealing Bright hardening of tool steels, high speed stainless steels solution treating and aging of precipitation
1 — Horizontal gas quench vacuum furnace	Vac-Aero	Electric	2 300°F	30" w x 18" h x 84" l	30 000	" " "	Hardening steels High temperature alloys Vacuum brazing
1 — Vertical gas quench vacuum furnace	Vac-Aero	Electric	2 600°F	48" dia. x 50" h	30 000	" " "	Vacuum sintering Vacuum stress Relieving
1 — Vertical quench/oil quench/vacuum furnace	Vac-Aero	Electric	1 800°F	72" dia. x 84" h	50 000	Vac. to 2 x 10^{-2} Torr, partial pressures of argon and nitrogen	Vacuum hardening of air Hardening and oil hardening Ultra high strength steels, normalizing annealing and stress relieving
1 — Induction system 30 kW, 10 kHZ	TOCCO	Electric					Induction hardening Brazing
1 — Electron beam welder 6 kW, 60 kV	E.B. Welding Inc.			Chamber size: 52" w x 36" d x 36" h		Vacuum to 1 x 10^{-5}	E.B. welding of dissimilar materials, finished machined parts, reactive alloys titanium, zirconium, tantalum, tungsten
1 — Deep freeze cabinet	SO-LO Mfg.		-120°F	Chamber size: 18" w x 18" d x 24" l			Sub-zero treatment of tool steels and martensitic stainless steels

VAC-AERO INTERNATIONAL INC., QUEBEC DIVISION
7450 Verite Street
St. Laurent, Québec
H4S 1C5

Tel: (514) 334-4240
Telex: 05-826506

Inquiries: T. Dahl — Division Manager
J. Ritlop — Plant Metallurgist

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.	
Vacuum bright annealing	Carbon steels	Tools and dies	Abrasive blast cleaning	Tools and dies	15 000
Vacuum bright hardening (Inert gas and oil)	Alloy steels	Machine and equipment components	Passivating	Machine, equipment aircraft components	20 000
Normalizing	Ultra high strength steels	Aircraft components	Ultrasonic stripping of gold and nickel brazing alloys	Fasteners	15 000
Stress relieving	Stainless steels	Jet engine parts	Inert gas welding	Castings, forgings	15 000
Vacuum brazing	Tool and die steels	Electronic components	Fluorescent penetrant	Jet engine parts	8 000
Gas nitriding	High speed steels	Fasteners	Crack inspection	Nitriding	16 000
Malcomizing	Copper alloys	Wire (coils)	Repair and overhaul of jet engine parts		
Plasma flame spray	Titanium alloys	Sintering stainless			
Coating	High temperature alloys (nickel, cobalt)	Steel and high alloy powder compacts			
Ultrasonic stripping of brazed parts	Aluminum	Braze assemblies			
Aluminum heat treat	Precipitation hardening steels	Welded fabrications			
Magnetic annealing					

PHYSICAL TESTING AND QUALITY CONTROL: available

ENGINEERING SERVICES: available

COMMENTS: the company has approvals from Department of National Defence; Avco Lycoming; Boeing Aircraft Co.; Canadair Limited; Douglas Aircraft Co.; Menasco of Canada Ltée; Pratt & Whitney Aircraft Canada; Cleveland Pneumatic; General Dynamics; Grumman Aircraft; Hawker Siddeley, Orenda Division; Litton Systems; Lockheed Aircraft; M.C. Air; Spar Aerospace; Trans-Québec Helicopters; Vestshell Inc.; Heroux Limited; General Electric; Air Canada; Rolls Royce; and the de Havilland Aircraft of Canada Limited. D.O.T. Gas Turbine Engine Components — REPAIR ONLY

PLANT LOCATION: same as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Furnaces							
2 Air circulating	Vac-Aero	Electric	1 250°F	20" dia. x 32" l	10 000	Gas nitriding, air	Tempering, stress relieving, gas nitriding, malcomizing aluminum H.T.
1 Air circulating	Vac-Aero	Electric	1 350°F	42" dia. x 72" l	16 000	Ammonia, hydrogen, argon	Nitriding and malcomizing, aluminum heat treating
2 — Retort	Vac-Aero	Electric	2 250°F	16" dia. x 18" l	15 000	Hydrogen, argon, nitrogen	Brazing, bright hardening, tempering, low alloy, high alloy and stainless steels

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 — Retort	Vac-Aero	Electric	2 250°F	24″ dia. x 30″ l	20 000	Hydrogen, argon, nitrogen, air	Brazing, bright hardening, tempering, annealing, stress relieving, sintering
2 Vacuum furnaces	Vac-Aero	Electric	2 400°F	24″ x 24″ x 48″	25 000	Vacuum to 5×10^{-5} Torr. partial pressures of nitrogen, hydrogen, argon	Bright hardening, stress relieving, annealing, aging, furnace brazing, homogenizing, normalizing, magnetic annealing
1 — Thermo spray system	METCO					Oxygen-acetylene	Application of ferrous and non-ferrous coatings including ceramics, carbides, refractory metals abradables for corrosion, erosion, wear resistance, thermal barriers
1 — Wire spray	METCO					Oxygen-acetylene	Application of ferrous and non-ferrous coatings including ceramics, carbides, refractory metals abradables for corrosion, erosion, wear resistance, thermal barriers
1 — 45 kW Plasma spray system	METCO 3M	Electric				Nitrogen, hydrogen, argon, helium	
1 — 75 kW Plasma spray system	METCO 7M	Electric				Nitrogen, hydrogen, argon, helium	
Freezer							
Cold stabilizer		Electric		20″ x 20″ x 56″		Air	

VMD INDUSTRIES LTD., A SUBSIDIARY OF
VICTORIA MACHINERY DEPOT CO. LTD.
343 Bay Street
Victoria, British Columbia
V8T 1P5

Tel: (604) 382-2141
Telex: 049-7452

Inquiries: M.D. Parfitt, Vice-President — Marketing

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Stress relieving	Carbon steels	Pressure vessels	Cold rolling	
Normalizing	Alloy steels	Castings	Hot and cold forming	
Annealing	Cast irons	Piping	Flame cutting	
Water quenching			Machining	
			Welding	

PHYSICAL TESTING AND QUALITY CONTROL: tensiles, Charpys, hardness, chemical analysis for C and Mn, Magnaflux, die penetrant, ultrasonics, radiography

ENGINEERING SERVICES: available

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
4	VMD	Oil	2 000°F	14'-6" x 16'-3" x 48'-6"	100 000		Stress relieving
	VMD	Oil	2 000°F	10'-10" x 11' x 6'4"	100 000		Hot forming
	VMD	Oil	1 650°F	6' x 7' x 12'	100 000		Stress relieving and normalizing castings
	G.E.	Electric	2 000°F	22" x 24" x 65"	1 000		Testing

WALL COLMONOY (CANADA) INC.
365 Broadway
Montréal East, Québec
H1B 5A7

Tel: (514) 645-1685

Inquiries: W.B. Nagy, Plant Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Bright annealing	Stainless steels	Machine and equipment components	Machining	Machine and equipment components 30 000
Brazing	Carbon steels	Bars, angles, castings and forgings	Welding	
Heat treating	Hi-temp alloys		Grit blasting	
Stress relieving			Degreasing	

ENGINEERING SERVICES: available on request

COMMENTS: material/parts being processed for aircraft under commercial and military specifications

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
1 Batch furnace with G retorts	Wall Colmonoy	Radiation	2 350°F	27" OD x 44" h	10 000	Vacuum hydrogen	High temperature-controlled atmospheric brazing for both new production and repair
1 Vacuum retort			2 200°F vacuum only	17" OD x 33" h (vacuum)		Argon	
1 Vacuum furnace	Wall Colmonoy	Electric	2 300°F	32" x 40"	40 000	Nitrogen	

WESTERN ROCK BIT COMPANY LIMITED
P.O. Box 5214
Station "A"
Calgary 9, Alberta
T2H 1X3

Tel: (403) 255-0141 (local 57)

Inquiries: M.B. Rose, Metallurgist
B.J. Kuhn, Heat Treat Supervisor (Local 14)

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Bars, angles and other rolled shapes	Degreasing	Rolled shapes 90 000
Stress relieving	Alloy steels	Tools and dies	Sandblasting	Tools and dies 40 000
Normalizing	Stainless steels	Machine and equipment components	Shotblasting	Machine and equipment components 40 000
Quenching and tempering (oil and water)	Tool and die steels	Fasteners		Fasteners
Gas carburizing		Castings, forgings		Castings, forgings 90 000

PHYSICAL TESTING AND QUALITY CONTROL: available on request

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1 continuous pusher	Holcroft	Gas	1 750°F	22" × 22" × 24"	100 000	N_2 — Ucar methane	Gas carburizing machine parts
2 Pack carburizing furnaces	Holcroft	Gas	1 750°F	24" × 36" × 16"	48 000	Endothermic and exothermic	Pack carburizing machine parts
2 Hardening	Holcroft	Gas	1 750°F	24" × 36" × 16"	90 000	Exothermic and endothermic or N_2 — Ucar	Hardening carbon and alloyed steels
2 Tempering	Lindberg	Electric	1 250°F	24" × 50" × 18"	100 000		Tempering and stress relieving
1 Tempering	Lindberg	Gas	1 300°F	45" × 78" × 30"	75 000		Tempering and stress relieving
1 Tempering	Holcroft	Gas	500°F	24" × 36" × 16"	180 000		Tempering
1 Box furnace	Lindberg	Electric	1 750°f	24" × 36" × 16"	240 000	Endo-Exo	Normalizing and annealing
Salt baths							
1	Canefco	Gas	2 000°F	14" × 24" d	50 000		Hardening, carburizing
Others							
1 Water quench tank				24" × 36" × 16"	40 000		Water quenching carbon steels
1 Carbon determinator	Leco			12" × 36" round			
1 Metallurgical microscope							
Rockwell hardness testers	Clark						

WESTERN STRESS RELIEVING SERVICES INC.
1260 Fewster Drive, Unit 11
Mississauga, Ontario
L4W 1A4

Tel: (416) 625-9100

Inquiries: Robert J. Feltrin, Contract Sales
Craig Howe, Regional Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Bars, angles and other rolled shapes	Preheat services, stress relieving materials and supplies including finger elements designed to fit particular applications	
Stress relieving	Alloy steels	Pipe and tubing		
Normalizing	Aluminum alloys	Machine and equipment components		
Solution annealing	Copper alloys	Castings, forgings		
	Titanium alloys	Vessels and large fabrications		

COMMENTS: the company offers mobile and console units for on-site heat treating. Professional specialists are available on request. The company custom fabricates temporary furnances

PLANT LOCATION: 5815-92nd Street
Edmonton, Alberta

WINNIPEG HEAT TREATING
DIVISION OF LETCHFORD INDUSTRIES
357 Archibald St.
Winnipeg, Manitoba
R2J 0W6

Tel: (204) 247-3940
Telex: 07-587661

Inquiries: D.L. Martin, Manager

Processes	Material Types	Material Shapes	Subsidiary Facilities	Monthly Weight Capability in lbs.
Annealing	Carbon steels	Bars, angles and other rolled shapes	Degreasing	Rolled shapes 20 000
Stress relieving	Alloy steels	Pipe and tubing		Pipe tubing 20 000
Normalizing	Stainless steels	Tools and dies		Tools and dies 12 000
Quenching and tempering (oil and water)	Tool and die steels	Machine and equipment components		Machine and equipment components 15 000
Liquid carburizing	Copper alloys	Fasteners		Fasteners 25 000
Gas carburizing	Aluminum	Castings, forgings		Castings, forgings 30 000

PHYSICAL TESTING AND QUALITY CONTROL: hardness testing

ENGINEERING SERVICES: available

PLANT LOCATION: as above

HEAT TREATING FACILITIES

Number and Description	Make or Trade Name	Method of Heating	Maximum Temperature	Maximum Part Dimensions	Approx. Monthly Output in lbs.	Type of Controlled Atmosphere	Main Use
Batch furnaces							
1	Lindberg	Gas	1 250°F	14" dia. x 24"	10 000		Tempering and stress relieving
1	Lindberg	Gas	1 400°F	21" dia. x 26"	30 000		Tempering and stress relieving
1	Lindberg	Gas	1 250°F	24" x 26" x 20"	25 000		Tempering and stress relieving
1	Lindberg - Sealed Quench	Electric	1 700°F	24" x 36" x 15"	25 000		Carburizing and carbonitriding
1	Despatch	Electric	1 250°F	6' x 7' x 6'10"	50 000		Solution heat treating
1	Despatch Batch Oven	Electric	500°F	6'6" x 10'9" x 6'6"	50 000		Aging
Salt baths							
1 External fired	Park	Gas	1 800°F	14" dia. x 25" d	20 000		Neutral hardening
1 Immersed electrode	Ajax	Electric	1 700°F	21" x 14" x 25" d	20 000		Carburizing and hardening
1 Submerged electrode		Electric	1 600°F	18" x 18" x 30"	20 000		Hot work and high carbon - high chrome steel
1 Immersed electrode	Park	Electric	1 700°F	20" x 30" x 30"	20 000		Carburizing
1 Immersed electrode	Park	Electric	1 700°F	20" x 36" x 30"	20 000		Carburizing
1	Park	Electric	1 000°F	24" x 30" x 30"	20 000		Tempering

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